



Energy, Mines and Resources
Box 2703, Whitehorse, Yukon Y1A 2C6

July 7, 2017

Gregg Bush
President, Minto Explorations Ltd.
Suite 2100-510 West Georgia Street
Vancouver, BC
V6B 0M3

Dear Mr. Bush,

Re: Approval of Underground Mine Development and Operations Plan, QML-0001

Pursuant to Section 6.0 of Quartz Mining License QML-0001 (the "License") for the Minto Mine, Minto Explorations Ltd. Submitted a plan entitled "*Underground Mine Development and Operations Plan 2017-01*" (the "Plan") to the director for review and approval on April 18, 2017.

After review and consideration I have determined the Plan is approved subject to the conditions listed in Schedule C. Schedule C of the License has been updated to reflect this approval and is attached to this letter. This amended Schedule C replaces all earlier versions.

I wish to remind you that paragraph 9.2 of the License requires that detailed designs be submitted to the Director for review and approval no less than 60 days prior to commencing construction of an engineered structure.

For greater certainty, in reviewing and approving the submitted Plan, neither I nor the Yukon Government make any representations or warranties as to the sufficiency or adequacy of the plans or designs in the Mine Development and Operation Plan. Further, you are reminded that the approval of the Director pertains only to the Director's responsibilities under the *Quartz Mining Act* and that for greater certainty, nothing in this approval limits the applicable federal or territorial laws, including the *Occupational Health and Safety Act* and related regulations.

Please do not hesitate to contact me at (867) 667-3126 if you have any questions or wish to discuss.

Sincerely,

A handwritten signature in blue ink, appearing to read "R. Holmes".

Robert Holmes
Director, Mineral Resources

cc: Chief Sharon Nelson, Selkirk First Nation
Robert Savard, Chief Mining Inspector
Matthew Jenner, Natural Resources Officer
Heather Jirousek, Director, Water Resources
Neil Salvin, Manager, Water Board Secretariat

SCHEDULE C - APPROVED PLANS AND AUTHORIZED ACTIVITIES

In this Schedule the following definitions of the various phases of the Undertaking apply:

"Phase IV" includes the following elements as shown on Figure 5-2 of the *Minto Mine Phase V/VI Reclamation and Closure Plan – Revision 5.1* (Access Consulting Group, June, 2014)

- (a) Area 2 Stage 1 and 2 and Area 118 open pit;
- (b) underground portions of Area 2 and Area 118;
- (c) overburden and waste rock dumps, including the Reclamation Overburden Dump, the Main Waste Dump, the Southwest Waste Dump and the Ice-Rich Overburden Dump;
- (d) the mill;
- (e) the dry stack tailings facility and the Main Pit, the Mill Valley Fill, the South Wall Buttress in the Main Pit;
- (f) the water management infrastructure; and
- (g) other supporting infrastructure, including the camp and office space, as each is described in the above-noted plan.

"Phase V/VI" includes the following elements:

1. As shown on Figure 5-3 of the *Minto Mine Phase V/VI Reclamation and Closure Plan – Revision 5.1* (Access Consulting Group, June 2014)
 - (a) Minto North and Ridgetop North and South open pit;
 - (b) Minto East, Copper Keel and Wildfire underground area;
 - (c) overburden and waste rock dumps, including the Main Waste Dump Expansion, the Mill Valley Fill Extension Stage 2, the Main Pit Dump and the Ridgetop Waste Dump;
 - (d) the mill;
 - (e) tailings facilities, including the Main Pit Tailing Management Facility;
 - (f) the water management infrastructure; and
 - (g) other supporting infrastructure, including the camp and office space, as each is described in the above-noted plan.
2. And, as shown on Figure 1 of the *Area 2 Stage 3 Pit – Mine Development and Operations Plan 2016-01* (Minto Explorations Ltd., October 2016)
 - (a) Area 2 Stage 3 open pit

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Part 1: Authorized Activities

The Licensee is authorized to carry out the following activities as set out below as directed by the approved plans set out in Part 2.

Note that any references to updates in relation to the terms and conditions outlined below include submission of the updates to the Director and as appropriate in the circumstance, approval of the Director as to the sufficiency of the update.

1. Access

The Licensee is authorized to access the Undertaking via a gravel road to the site or by air via an airstrip.

The location of the road must be as shown on Figure 4.1 of the "Site Characterization Plan" dated May 2014 and prepared by Minto Explorations Ltd.

2. Camp

The Licensee is authorized to operate a camp for up to 300 people consisting of bunkhouse accommodation, mine dry, cooking facilities, water and sewage facilities, heating, and recreational facilities.

The location and components of the camp must be as described in the memorandum entitled "Submission of Camp Expansion and Office Space Designs" dated August 30, 2012 and as shown in Figure 1-1 and 2-1 of the document entitled "2013 Annual Report" dated March, 2014 and prepared by Minto Explorations Ltd.

3. Industrial Complex

The Licensee is authorized to operate and maintain an industrial complex, including an explosives storage area and fuel containment facility.

4. Mill and Ancillary Facilities

The Licensee is authorized to operate and maintain a mill consisting of equipment for crushing and grinding ore, copper concentrate flotation, concentrate thickening, tailings filtration, temporary tailings storage, load out of concentrate, ore stockpiles, and ancillary facilities.

5. Open Pit Mining Operations

The Licensee is authorized to carry out production in Area 2 Stages 1 and 2, and 3 and the Minto North open pit using conventional open pit truck, shovel and loader operations, including rotary drills, blasting and ancillary services.

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6. Underground Mining Operations

The Licensee is authorized to carry out production in the Area 2 and Minto East, using conventional underground mining methods, including rotary drills, blasting and ancillary services.

7. Waste Rock and Overburden Management

The Licensee is authorized to deposit waste from the open pit and underground operations in the Main pit, the Main Waste Dump, or the Area 2 Stage 1 and 2 open pit.

The Licensee is authorized to deposit overburden from the Area 2 Stage 3 open pit in the Main Waste Dump Expansion and the Area 118 Backfill Dump. Overburden removed from the Area 2 Stage 3 open pit may be used for progressive reclamation in accordance with the approved Reclamation and Closure Plan.

8. Tailings Management

The Licensee is authorized to deposit tailings in the Main Pit Tailing Management Facility and the Area 2 Pit Tailings Management Facility.

Part 2: Approved Plans

The following plans are approved, subject to the listed conditions.

Environmental Protection and Environmental Management

Adaptive Management Plan

- **"Minto Mine Operations Adaptive Management Plan version 2017-01"** (Minto Explorations Ltd., January 2017)

Emergency Response & Health and Safety Plan

- **"Emergency Response Plan"** (Minto Explorations Ltd., March, 2014)

Environmental Monitoring, Surveillance and Reporting

- **"Minto Mine, Environmental Monitoring, Surveillance and Reporting Plan 2016-02"** (Minto Explorations Ltd., July 2016), Subject to the following conditions:
 - (a) where practical, monitoring of instrumentation installed in previously constructed facilities must continue throughout the life of the mine and be reported as per reporting requirements specified in the License;
 - (b) changes to monitoring instrumentation must be included in the annual report required pursuant to paragraph 13.6 of this License;
 - (c) the selection of vegetation control plots for the monitoring program must take into consideration the proximity of all active mining areas, and those areas located within migration paths of prevailing wind directions (after considering year-round prevailing wind directions);
 - (d) the selection of vegetation species for the monitoring program must consider species that represent good indicators for evaluating airborne transport and metal uptake;
 - (e) opportunities must be made available for Selkirk First Nation participation in the vegetation monitoring program, including the identification of key vegetation species for consideration prior to finalizing the selection of plants; and,
 - (f) a comprehensive soil sampling program must include sampling at various soil horizons to provide a more comprehensive soil profile.

Explosives Management

- **"QML-0001 - Layout of Explosives Storage Area"** (letter dated July 16, 2006 from William Dunn, Sherwood Copper Corp. to Robert Holmes, Yukon Government)
- **"Explosives Management Plan"** (Minto Explorations Ltd., June, 2011)

Hazardous Materials Management

- Incorporated into waste management

Heritage Resource Protection

- **"Heritage Resource Protection Plan"** (Minto Explorations Ltd., April, 2014)

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Sediment and Erosion Control

- **"Minto Mine, 2014 Sediment and Erosion Control Plan"** (Minto Explorations Ltd., April, 2014)

Spill Contingency

- **"Minto Mine, 2014 Spill Contingency Plan"** (Minto Explorations Ltd., March, 2014)

Reclamation and Closure

- **"Minto Mine Phase V/VI Reclamation and Closure Plan – Revision 5.1"** (Access Consulting Group, June, 2014)

Subject to the following conditions:

- (a) opportunities must be made available for Selkirk First Nation participation in the design and implementation of the reclamation research program and the development of post-closure terrestrial, human health and water quality closure objectives;
- (b) a fully functioning water treatment plant must be maintained on site until water quality objectives can be met, and will continue to be met post-closure;
- (c) reclamation of areas that are no longer subject to ongoing operations and that will not be affected by Phase V/VI activities must be progressively reclaimed;
- (d) a report on the progressive reclamation activities undertaken on site must be included in the annual report identified in paragraph 13.6 of this Licence;

Waste Management

- **"Minto Mine, Waste Management Plan"**, (Minto Explorations Ltd., June, 2014)

Wildlife Protection

- **"Minto Mine, 2014 Wildlife Protection Plan"** (Minto Exploration Ltd., April, 2014)

Subject to the following conditions:

- (a) wherever practicable, vegetation clearing shall occur after July 31st. In the event that land clearing activities occur during the core-breeding period of May 1st to July 31st, prior to clearing the Licensee must plan to avoid disturbing or destroying nests of birds listed under the *Migratory Birds Convention Act*, S.C. 1994, c.22;
- (b) if active nests of birds listed under the *Migratory Birds Convention Act* are discovered, the Licensee shall postpone activities in the nesting area until nesting is completed;
- (c) if bears become a problem in the camp the requirement for an electric fence or other alternate enclosure must be discussed with the conservation officer and installed and maintained in working order from April to November each year or as directed.

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Operations Plans

Mine Development and Operations

Phase IV Activities

- **"Mine Development and Operations Plan v1"** (Minto Explorations Ltd., February 2012) [the "MDOPv1"] including Appendix A: **"Pre-Feasibility Geotechnical Evaluation Phase IV Minto Mine, Yukon Territory, Canada"**, (SRK Consulting Engineers and Scientists, December, 2009) to the extent of those sections which were referenced in the MDOPv1
- **"General Site Plan, Minto Mine Phase IV Expansion, April 2011, Revision 1"**, (Minto Explorations Ltd., 2011); and
- **"Minto Mine QML-0001, Underground Mine Development and Operations Plan"** (Minto Explorations Ltd., June, 2014) and the following supplementary reports:
 - **"Area 2 Pit Wall and Crown Pillar Monitoring"**, (Capstone Mining Corp., January, 2014);
 - "
- **"Revision 2015-1 Ground Control Plan – Underground Operations, Minto Mine, YT"**, (Minto Explorations Ltd., December 2015) (the "2015GCP").

Phase V/VI Activities

- **"Mine Development and Operations Plan"** (Minto Explorations Ltd., June, 2014);
- **"Area 2 Stage 3 Pit - Mine Development and Operations Plan 2016-01"** (Minto Explorations Ltd., October, 2016);
- **"Minto North Access Design"**, (Minto Explorations Ltd., September, 2014);
- **"Underground Mine Development and Operating Plan, 2017-01"**, (Minto Explorations Ltd., April 2017).

Subject to the following condition:

Subject to the following conditions:

- (a) pit walls shall be inspected and monitored to detect early evidence of instability. The methods and frequency of the inspection and monitoring program shall be as described in the Plan;
- (b) Area 2, Stage 1 & 2 shall be mined in accordance with the design criteria specified on page 45 of the Pre-Feasibility Report and within the footprint outlined in Figures 1 & 2 of the MDOPv1;
- (c) if final Area 2 Stage 2 highwall designs are modified, sealed engineer designs must be submitted when complete and prior to implementation;
- (d) monitoring survey hubs shall be installed on the final Area 2 highwall perimeter.
- (e) any changes to the mine designs that result in larger stopes of smaller pillars than those presented in the design reports shall be submitted to the Director for approval;
- (f) the *in situ* geological conditions, including geologic structure, shall be determined as the mine is developed, and used to assess stope and pillar stability, and to

- verify assumptions used in the initial design. The mine design shall be continually updated in consideration of the actual geotechnical conditions encountered. This information shall be kept on site, available for inspection by a Safety Officer at any time; and
- (g) stopes and pillars shall be inspected and monitored to detect early evidence of instability. The methods and frequency of the inspection and monitoring program shall be as described in the "**2015GCP**".
 - (h) Escape ways must be constructed and maintained in accordance with *Occupational Health and Safety Regulation 15.26*;
 - (i) Ventilation surveys must be conducted in accordance with *Occupational Health and Safety Regulation 15.58 (1 through 5)*;
 - (j) a schedule for ground fault monitoring and testing schedule must be prepared, as an addendum to the Underground Mine Development Plan, for high and low voltage scenarios, this schedule must be provided to the Director prior to development of the Minto East underground deposit;
 - (k) all updates to the Ground Control Plan, as required by section 11.1 of the 2015GCP, must be consistent with Part 15 of the Yukon Occupational Health and Safety Regulations, and must include as-built drawings of the most current underground view plans; and,
 - (l) an audit of the Ground Control Plan must be completed by an external auditor every two years, as specified in section 11.3 of the 2015GCP, the first audit is required no later than December 2017

Mill Operations

- "**Minto Mine, Mill Operations Plan**" (Minto Explorations Ltd., June, 2014)

Tailings Management

Phase IV Activities

- "**Minto Mine Tailings Management Plan**" (Minto Explorations Ltd., January, 2011)

Subject to the following conditions:

- (a) additional storage of tailings is not authorized in the dry stack tailings facility as described in "**Minto Mine, Tailings Management Plan**" (Access Consulting Group, January, 2007);
- (b) tailings deposit in the Main Pit Tailing Management Facility is authorized only up to its natural spill elevation of approximately 791 metres above sea level

Phase V/VI Activities

- "**Minto Mine Tailings Management Plan Revision 2017-01**" (Minto Explorations Ltd., February 2017)

Subject to the following conditions:

- (a) Tailings deposition is not authorized in the Area 2 Stage 3 open pit until such time as mining of the Area 3 Stage 3 open pit is complete.

Waste Rock and Overburden Management

Phase IV Activities

- **“Waste Rock and Overburden Management Plan, Phase IV Development, Minto Mine, YT”** (EBA, A Tetra Tech Company, September, 2011)

And, for greater certainty, additional storage of overburden and waste rock, other than that from Phase IV underground workings, is not authorized in the following facilities:

- (a) the Reclamation Overburden Dump, as described in **“Geotechnical Design, Proposed Reclamation Overburden Dump, Minto Mine, Yukon”** (EBA Engineering Consultants Ltd., February 2008) and a letter entitled **“Reclamation Overburden Dump Expansion Geotechnical Design Report”** (EBA Engineering Consultants Ltd., June, 2010);
- (b) the Main Waste Dump, as described **“Geotechnical Evaluation Proposed Main Waste Dump Minto Mine, Minto, YT”** (EBA Engineering Consultants Ltd., April, 1998)
- (c) the Ice-rich Overburden Dump, as described **“Geotechnical Technical Design Ice-Rich Overburden Dump, Minto Mine, Minto, YT”** (EBA Engineering Consultants Ltd., January, 2006)
- (d) Southwest Waste Dump, as described in the **“Geotechnical Design Proposed Southwest Waste Dump, Minto Mine, YT”** (EBA Engineering Consultants Ltd., September, 2008)

Phase V/VI Activities

- **“Minto Mine Phase V/VI Expansion - Waste Rock and Overburden Management Plan”** (Minto Explorations Ltd., November 2014), including for greater certainty the following appendices:
 - **“Phase V/VI Main Waste Dump Expansion - Physical Stability Assessment”** (SRK Consulting (Canada) Inc., November, 2013);
 - **“Phase V/VI Main Pit Dump: Physical Stability Assessment”** (SRK Consulting (Canada) Inc., November, 2013);
 - **“Mill Valley Fill Extension Stage 2 Preliminary Design Report – Final”** (SRK Consulting (Canada) Inc., June, 2014);
 - **“Phase V/VI Ridgetop Waste Dump Physical Stability Assessment”** (SRK Consulting (Canada) Inc., November 2013); and
 - **“Phase V/VI Ridgetop South & Area 118 Backfill Dumps Physical Stability Assessment”** (SRK Consulting (Canada) Inc., November 2013).

Subject to the following conditions:

- (a) fine grained materials must be stored separately to ensure there is adequate material for cover design;
- (b) a safety berm must be constructed that provides for adequate traffic and human protection when dumping waste into the pit;
- (c) organic material, overburden and bedrock must be stored separately and in a manner as described in the approved plans;
- (d) all waste rock must be characterized and managed in accordance with the methods identified in the approved plans;

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- (e) all waste rock with NP:AP<3 must be stored below the final spill elevation of the Main Pit or the Area 2 Pit;
- (f) overburden from the Minto North open pit may only be placed in the Main Waste Dump Expansion;
- (g) *in situ* monitoring devices shall be installed to aid in determination of the cause of fissures in the surface of the South Wall Buttress, and to monitor the changes in geometry or pore pressures in the buttress area;
- (h) results from the *in situ* monitoring devices must be incorporated into the final design report for the Main Pit Dump and be submitted to the Director for review and approval;
- (i) the Mill Valley Fill Extension Stage 2 shall be inspected as required in paragraph 13.3 of the Licence;
- (j) prior to construction, final designs for waste rock facilities must be submitted for review and approval as required in paragraph 9.2 of the License.