



June 17, 2015

Ms. Tyree Mullaney, Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor, 4922 48th Street
PO Box 2130
Yellowknife, NT
X1A 2P6

Dear Ms. Mullaney:

Re: Howard's Pass Access Road Upgrade Project – Application Package

We are pleased to submit our application package for upgrading the Howards Pass Access Road to a two-lane road that is suitable for commercial use, and to use the access road to support mine operations at Howard's Pass, including the bulk haul of mine concentrates. Three copies of our application package are enclosed. Digital copies will be made available via ftp.

Cheques totaling \$6,658.24 in payment of Water Licence and Land Use application fees and land use fees are also enclosed.

Sincerely,
SELWYN CHIHONG MINING LTD.

Doug Reeve
Manager, Permitting and Regulatory Affairs

encl: HPAR Upgrade Application (3 copies)
Cheques



**SELWYN CHIHONG
MINING LTD.**

**Howard's Pass Access Road Upgrade Project
2015 Land Use and Water Licence Application Package**

June 2015

Volume 1: Applications

Part 1 of 4



**Howard's Pass Access Road (HPAR) Upgrade Project
Application Package
June 2015**

NOTE TO READER

This application package is divided into 3 Volumes:

- Volume 1 contains the formal application forms for the Mackenzie Valley Land and Water Board and Parks Canada and a number of attachments:
 - Attachment 1: Camp Layout Schematic Diagram
 - Attachment 2: Road Design Criteria
 - Attachment 3: Preliminary Road Design
 - Attachment 4: Land Use Permit Security Worksheet
- Volume 2 contains the 2015 Project Description Report
- Volume 3 contains Appendices to the Project Description Report:
 - Appendix I. Applicable Standard Operating Procedures
 - Appendix II. Waste Management Plan for the Howard's Pass Access Road
 - Appendix III. Spill Contingency Plan for the Northwest Territories
 - Appendix IV. Erosion and Sediment Control Plan
 - Appendix V. Avalanche Mitigation Strategy
 - Appendix VI. Geochemical Test Results for HPAR Borrow Site Samples
 - Appendix VII. Sample Quarry Operations Plan (2014)
 - Appendix VIII. Wildlife Mitigation and Monitoring Plan
 - Appendix IX. Community Engagement Plan
 - Appendix X. Community Engagement Report Appendices

Selwyn Chihong Mining Ltd. has produced an integrated application package for the upgrading of the Howards Pass Access Road. You will note that there are references throughout the application package to the Attachments in Volume 1, the Project Description Report in Volume 2 and a variety of Management Plans in Volume 3. These are all linked throughout the application package with the Project Description Report providing the overall details that support this submission.

For additional information or for clarification, please contact Doug Reeve, Manager, Permitting and Regulatory Affairs at dreeve@chihongmining.com.

Land Use Application:

Mackenzie Valley Land and Water Board (MVLWB)



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

Application for:

New Land Use Permit

Amendment

to _____

<p>1. Applicant's name and mailing address:</p> <p>Selwyn Chihong Mining Ltd 2701 – 1055 West Georgia Street Vancouver, BC V6E 0B6 Canada</p>	<p>Fax number: 604-681-8344</p>
<p>2. Head office address: As above</p> <p>Field supervisor: To be determined. Radiotelephone: To be determined.</p>	<p>Telephone number: 604-620-6188</p> <p>Fax number: As above</p> <p>Telephone number: As above</p>
<p>3. Other personnel (subcontractor, contractors, company staff etc.) Selwyn Chihong Mining Ltd (SCML) personnel, contractors and subcontractors involved in the operation are to be determined at a later date.</p> <p>TOTAL: Approximately 120 people in two camps of up to 60 each. (Number of persons on site)</p>	
<p>4. Eligibility: (Refer to section 18 of the <i>Mackenzie Valley Land Use Regulations</i>)</p> <p>SCML is eligible for a Land Use Permit under section 18 (b) of the <i>Mackenzie Valley Land Use Regulations</i>, having the right to occupy the land for the stated purpose. Further, as outlined in section 8 of this application, this road upgrading project is grandfathered under section 157.1 of the Mackenzie Valley Resource Management Act. SCML or contractors working for SCML will carry out the HPAR road upgrading operation.</p>	
<p>5. a) Summary of operation (Describe purpose, nature and location of all activities.)</p> <p>The 79 km long Howard's Pass Access Road (HPAR) is existing infrastructure that was permitted and constructed in the 1970s to provide access to the Howard's Pass site. The HPAR is entirely in the NWT, commencing at km post 188 of the Nahanni Range Road (north of the Cantung Mine) and terminating at Howard's Pass at the Yukon-NWT border. The southern portion of the road starts near the divide between the Flat and Little Nahanni Rivers, and then parallels the Little Nahanni River northwest, following roughly along its west side to its confluence with Steel Creek. Near Steel Creek the corridor swings west and follows up along the south side of Steel Creek for about 8 km, at which point it crosses over Steel Creek and heads northwest again. From the Steel Creek crossing, the road climbs, following along the Placer Creek drainage, to reach the road's terminus at SCML's mineral tenures in the Howard's Pass area, which include mining claims and leases in both the Yukon and Northwest Territories.</p> <p>The HPAR fell into disuse between the early 1980s and recent times and had become deteriorated and overgrown. The road was recently reconstructed (2014) as a single-lane, gravel surfaced, all-season access road. The HPAR is approximately 4 metres wide, and crosses 32 streams. Permanent bridges are in place over eight of the largest streams; the remainder have culverts.</p> <p>Figure 2.5.2 in the Project Description Report (PDR), Volume 2 of this application, shows the road location.</p>	

The HPAR transects a number of jurisdictions, including Dehcho Traditional Territory (km 1 to km 36), Nahanni National Park Reserve (km 14 to km 36), Nááts'ihch'oh National Park Reserve (km 36 to km 60), and the Sahtu Settlement Area (km 36 to km 79). As a result, Land Use Permits are required from both the MVLWB and Parks Canada. The breakdown of the Land Use Permits required is as follows:

- Km 0 to km 14 and km 60 to km 79 requires a Land Use Permit from MVLWB (33 km), **for this application.**
- Km 14 to km 60 requires a Land Use Permit from Parks Canada (46 km).

The applications for Land Use Permits and Water Licences are needed to allow upgrading of the HPAR to a two lane, 8.5 m wide, year-round access road for commercial use and to support mine operations including the bulk hauling of concentrates and mine re-supply during operations, from km 0 to km 79 at Howard's Pass. The upgrading operation activities will be in addition to allowable road use under grandfathering provisions of the MVRMA, and existing Licences of Occupation. The road will also be used to transport material necessary for construction activities for the upgrading and widening project.

Work to upgrade the current access road will include:

- 1) clearing of vegetation within the road right-of-way to an average width of 25 m to accommodate the upgraded road;
- 2) grubbing adjacent to the roadway to accommodate road widening;
- 3) widening of the road surface to 8.5 m, plus widening at curves, pullouts and bridge approaches where required;
- 4) road subgrade improvements in localized soft areas, including placement of geogrid, geotextile and granular fill;
- 5) upgrading of drainage systems, including widening of existing ditches and installation/extension of culverts;
- 6) localized changes to the road alignment and profile for road safety, i.e., to improve driver sight lines and reduce steep grades, and to allow for improved travel speeds, including a potential bypass at the south end of the road;
- 7) application of gravel surfacing to the road as required; and
- 8) development and use of roadside borrow areas.

Additionally, culvert extensions will be installed in a number of smaller creeks (<5m wide at the HWM) to accommodate the widening of the road during upgrading. The names and locations of the creeks where culvert extensions will be placed are shown in the PDR in Section 5.1.4.2. Where such work involves fish-bearing streams, SCML will conduct a self-assessment to determine whether a review by Fisheries and Oceans Canada of such work is necessary.

During mine operations the road will be used for ore concentrate haul and mine resupply. To ensure safe operations, maintenance of the road will be necessary. This will include road grading and snow removal as necessary, including clearing of snow related to avalanches. Road maintenance will also include application of water or other environmentally benign dust control products. Close collaboration with Parks Canada will take place concerning dust suppression techniques. Discussions regarding potential restoration of the road are on-going with Parks Canada concerning the future of the road once it is no longer needed to support the mine.

This application is for the Land Use Permit that is required to upgrade the HPAR from km 0 to 14 and from km 60 to 79 in areas that cross Territorial Land outside of the Nahanni National Park Reserve and the Nááts'ihch'oh National Park Reserve.

Road upgrade designs are included in Volume 1 of the application package and a full description of the construction activities associated with HPAR upgrade project are found in Section 5 of the Project Description Report (PDR) in Volume 2.

There has been a long term and continuous consultation and engagement process with potentially affected First Nations in the Sahtu and Dehcho since 2006. A summary of this process can be found in Section 8, Community Engagement of the PDR.

b) Please indicate if a camp is to be set up. (Please provide details on a separate page, if necessary.)

For the purposes of road upgrade work, **two** temporary trailer camps will be established, each in the NWT and within the jurisdiction of the MVLWB, with capacity for approximately 60 people each, for a total of up to 120 people. The schedule for the HPAR upgrade work is estimated to start during the winter of 2016 for pre-construction work, followed by full construction during 2017 and 2018. One camp will initially be set up near Km 3, and the second camp will be set up near Km 63.5 at Steel Creek. As the road upgrade work advances, the Steel Creek camp and an additional camp will be moved in close proximity to each other around Km 37, just north of the Guthrie Creek bridge site (within Nááts'ihch'oh National Park Reserve), for the 2018 construction season. In summary, there would be one camp at Km 3 for 2016, 2017 and 2018 and one camp at Km 63.5 during 2016 and 2017. Once road upgrades are complete, the trailer camps will be removed and the area reclaimed. For further details regarding the camps, please refer to PDR Section 5.1.8 in Volume 2 of this application. A camp layout schematic is attached to this application (Attachment 1).

6. Summary of potential environmental and resource impacts (Describe the effects of the proposed land-use operation on land, water, flora & fauna and related socio-economic impacts. Use separate page if necessary.)

As noted earlier, the Howard’s Pass Access Road is existing infrastructure that was built in the 1970s. As a result there are existing environmental effects associated with this road.

The proposed road widening project for the HPAR will have a short term duration with limited environmental effects. However, there is potential for construction activities to have the following effects: 1. vegetation removal may affect wildlife and bird habitat on a short term basis; 2. culvert extensions may affect fish habitat temporarily; and, 3. noise of construction machinery may disturb wildlife, birds and recreational users of Flat Lakes area and National Parks visitors. Because the road upgrade activity is temporary, construction activities are not expected to have any long-term negative environmental or socio-economic effects. There will be NWT based employment and contract opportunities related to the road upgrade works.

Hauling of mine products on the upgraded HPAR on an ongoing, year-round basis may have the following effects: 1. vehicle/wildlife interaction and collisions; 2. disturbance of hunting, trapping and fishing activities; 3. disturbance of National Parks visitors in areas adjacent to the HPAR; and, 4. disturbance of seasonal residents of Flat Lakes area. The road may also allow additional access to the area. Prior to mine production, the HPAR will be used to haul equipment and supplies to the mine site.

The proposed Project Schedule is outlined in Section 2.4 of the PDR in Volume 2 of this application. For a more comprehensive discussion of the project’s potential effects and associated mitigation, please refer to Section 5.2 and Section 6.2 of the PDR in Volume 2.

7. Proposed restoration plan (please use a separate page if necessary).

Should temporary closure of the Howard’s Pass Access Road become necessary, the plan for this process is set out in Section 6.1.7.1 of the PDR in Volume 2. Discussion is currently underway with Parks Canada regarding the long term use of the road.

8. Other rights, licenses or permits related to this permit application (mineral rights, timber permits, water licences, etc.)

Based on grandfathering provisions under section 157.1 of the Mackenzie Valley Resource Management Act (MVRMA), it has been determined that the road can be used for its original purpose per Land Use Permits issued in 1977, namely “providing road access from the Cantung Road [now Nahanni Range Road] to the Howard’s Pass Project site”, and use of the road to support mine site exploration and development activities.

SCML currently holds a Licence of Occupation (LOC) #1051-14-2 for the HPAR, a land tenure instrument which secures the company’s access rights for a period of 30 years on those portions of the road outside the two National Park Reserves. This Licence of Occupation is valid until December 2041 and allows for construction, operation, maintenance, inspection, replacement, alteration, and repair works to be completed on the road. LOC # 1051/2-5-2 provides access rights for km 36-60, within Nááts’ihch’oh National Park Reserve.

SCML holds quarry permits for 8 quarries along HPAR that were used in 2014. Another 14 potential quarry sites have been identified for which future quarry permits may be applied subsequently. Please see section 5.1.5 in the PDR, Volume 2 for detailed information about Borrow Sources.

SCML has held authorizations from the MVLWB (Land Use Permit MV2005F0028 and Water Licence MV2006L8-0001) and Parks Canada (Land Use Permit 2009-L01 and Water Licence 2009-W01) that allowed for the reconstruction of the HPAR for its original purpose, as well as for the operation and maintenance of the road. Reconstruction of the HPAR was completed under those authorizations in 2014. All four of those permits/licences expired in June 2015. SCML holds an authorization (S07C-003) for exploration drilling on mineral claims and leases held in the NWT.

The HPAR provides access to recreational cabins located in the vicinity of Flat Lakes (near Km 10), some of which are on Crown Lease. There are also a number of companies and individuals holding mineral claims or leases along or near the HPAR. These include North American Tungsten Corporation Ltd.’s claims and leases in the vicinity of Tungsten, claims along the south end of the HPAR, held by Archer Cathro and Associates, and a block of claims to the west of the HPAR, held by War Eagle Mining Company Inc. and Warren LaFave, among others. The claims northeast of the HPAR include Playfair Mining Ltd.’s tungsten property, are accessed from the HPAR. The NWT claims and lease at the north end of the road are held by SCML. These claims are shown in Figure 4.3-5 of the attached PDR.

Roads: Is this to be a pioneered road? No. Has the route been laid out or ground truthed? N/A, existing road.

9. Proposed disposal methods.

To complete this section of the application form, a Waste Management Plan for the proposed activities is to be developed in accordance with the Board’s *Guidelines for Developing a Waste Management Plan* (accessible at www.mvlwb.com) and submitted as an attachment to the application form. A template for this Plan is provided in the *Guidelines*.

During road upgrade activities all solid and special waste will be temporarily stored in weather proof and leak proof containers at the Construction Camps. These waste products will ultimately be transported from the HPAR to approved waste disposal facilities. The final destination of solid and special waste will be a contract requirement that will be determined at the detailed planning and detailed engineering stage of the HPAR Upgrade project. Putrescible wastes will be incinerated and grey water waste will be disposed of in sump facilities at the Construction Camps. Black Water wastes will also be temporarily stored at the Construction Camps and transported from the HPAR to an approved disposal facility. Brush and wood waste will be cut, bucked, chipped and disbursed at the roadside. Organic soil will be salvaged and used for future reclamation activities.

During mine operations there will be minimal waste along the HPAR. Domestic and putrescible waste from gatehouse operations will be stored in weather proof and leak proof containers and will be collected for incineration or transport to a licensed off-site facility as required.

A Waste Management Plan is included in Volume 3, Appendix II of this application.

10. Equipment (includes drills, pumps, etc.) (Please use separate page if necessary.)

Type & number	Size	Proposed use
Heavy equipment – bulldozers, excavators, loaders, dump trucks, graders, compactors, etc. Approximately 48 pieces.	Various, some exceeding 10 tonnes.	Road upgrade construction.
Transport trucks and pickup trucks. Approximately 25 pieces.	Various.	Road upgrade construction.
Various small gas powered equipment. Approximately 25 pieces.	Various.	Road upgrade construction.

11. Fuels	(√)	Number of containers	Capacity of containers	Location
Diesel	√	Two (2)	50,000 litres double-wall diesel fuel tanks mounted on highway licensed trailer or skids.	At construction camps.
Gasoline	√	One (1)	10,000 litres double-wall gasoline tank mounted on highway licensed trailer or skids.	At construction camps.
Aviation fuel	-	-	-	-
Propane	√	Approximately five (5)	30 to 500 lbs capacity propane tanks with aggregate capacity up to 1000 lbs	At construction camps.

Please refer to section 5.1.7 of the HPAR PDR for more detailed information about numbers and types of pieces of equipment and volumes and types of fuel to be used for the HPAR upgrade.

12. Containment fuel spill contingency plans.

A spill contingency plan for the proposed activities is to be developed in accordance with INAC's *Guidelines for Spill Contingency Planning, April 2007* (accessible at <http://www.ainc-inac.gc.ca/ai/scr/nt/pdf/SCP-EUD-eng.pdf>).

A Spill Contingency Plan is included in Volume 3, Appendix III in this application.

13. Methods of fuel transfer (to other tanks, vehicles, etc.)

Hand powered or electric pumps.

14. Period of operation (includes time to cover all phases of project work applied for, including restoration)

Road upgrade activities are anticipated to take one pre-construction season (2016) and two construction seasons (2017, 2018). Some clearing work can take place during the winter season while the road construction work will take place June through October. Please refer to Volume 2, Section 5.1.6 in the PDR for a more detailed construction schedule. Please note the construction schedule is an estimate at this time.

Haul of mine products may occur up to 12 months per year for the life of the Selwyn Project mine. The operation of the road is addressed in more detail in Volume 2, Section 6.0 in the PDR.

15. Period of permit (up to five years, with maximum of two years of extension).

To allow for flexibility in implementation of the proposed operation, a Land Use Permit for road upgrade activities is requested for a term of five (5) years.

16. Location of activities by map co-ordinates (attach maps and sketches) - NAD83.

Minimum latitude (degree, minute) 61⁰ 58' N

Maximum latitude (degree, minute) 62⁰ 27' N

Minimum longitude (degree, minute) 128⁰ 15' W

Maximum longitude (degree, minute) 129⁰ 13' W

Map Sheet no. NTS map sheets 105I01, 105I02, 105I06 and 105I07 (inclusive of the entire 79 km length of road)

17. Applicant

Douglas L. Reeve



Signature

June 22, 2015

Date

18. Fees Type A - \$150.00 ** Type B - \$150.00 ** (**Application Fees are Non-Refundable**)

Land use fee: Road:	82.5 hectares (33 kms x 25 m). 2 ha @ \$ 150 + 80.5 ha @ \$50.00/ha	\$ 4,175.00
Camps:	6 hectares (3 ha x 2 camps)	\$ 300.00
Borrow Areas:	43 hectares	\$ 2,150.00
	Total application and land use fees	\$ 6,625.00

Please make all cheques payable to "Receiver General of Canada"

Volume 1: Attachment 1: Camp Layout Schematic Diagram

Volume 1: Attachment 2: Road Design Criteria

Volume 1: Attachment 3: Preliminary Road Design

Volume 1: Attachment 4: Land Use Permit Security Worksheet

Volume 2: 2015 Project Description Report

Land Use Application:

Parks Canada



APPLICATION FOR MINING ROAD ACCESS IN NAHANNI NATIONAL PARK RESERVE & NAATS'IHCH'OH NATIONAL PARK RESERVE: LANDS

Application for:

New Authorization **Amendment**

as per the *Canada National Parks Act and Regulations*

<p>1. Applicant's name, mail and email address:</p> <p>Selwyn Chihong Mining Ltd 2701 – 1055 West Georgia Street Vancouver, BC V6E 0B6 Canada</p>	<p>Fax number: 604-681-8344</p> <hr/> <p>Telephone number: 604-620-6188</p>
<p>2. Head office address:</p> <p>As above</p> <p>Field supervisor: To be determined Radiotelephone: To be determined</p>	<p>Fax number: As above</p> <hr/> <p>Telephone number: As above</p>
<p>3. Other personnel (subcontractor, contractors, company staff, etc.)</p> <p>Selwyn Chihong Mining Ltd (SCML) personnel, contractors and subcontractors involved in the operation are to be determined at a later date.</p> <p>TOTAL (Number of persons on site): Up to 120 personnel in two separate construction camps of up to 60 personnel each. Locations are summarized in Section 5.1.6 of the Project Description Report (PDR) in Volume 2 of this application.</p>	
<p>4. a) Summary of operation (Describe purpose, nature and location of all activities.)</p> <p>The 79 km long Howard's Pass Access Road (HPAR) is existing infrastructure that was permitted and constructed in the 1970s to provide access to the Howard's Pass site. The HPAR is entirely in the NWT, commencing at km post 188 of the Nahanni Range Road (north of the Cantung Mine) and terminating at Howard's Pass at the Yukon-NWT border. The southern portion of the road starts near the divide between the Flat and Little Nahanni Rivers, and then parallels the Little Nahanni River northwest, following roughly along its west side to its confluence with Steel Creek. Near Steel Creek the corridor swings west and follows up along the south side of Steel Creek for about 8 km, at which point it crosses over Steel Creek and heads northwest again. From the Steel Creek crossing, the road climbs, following along the Placer Creek drainage, to reach the road's terminus at SCML's mineral tenures in the Howard's Pass area, which include mining claims and leases in both the Yukon and Northwest Territories.</p> <p>The HPAR fell into disuse between the early 1980s and recent times and had become deteriorated and overgrown. The road was recently reconstructed (2014) as a single-lane, gravel surfaced, all-season access road. The HPAR is approximately 4 metres wide, and crosses 32 streams. Permanent bridges are in place over eight of the largest streams; the remainder have culverts.</p> <p>Figure 2.5-2 showing the road location, is included in the Project Description Report (PDR) in Volume 2 of this application.</p> <p>The HPAR transects a number of jurisdictions, including Dehcho Traditional Territory (km 1 to km 36), Nahanni National Park Reserve (km 14 to km 36), Naáts'ihch'oh National Park Reserve (km 36 to km 60), and the Sahtu Settlement Area (km 36 to km 79). As a result, Land Use Permits are required from both the MVLWB and Parks Canada. The breakdown of the Land Use Permits required is as follows:</p> <ul style="list-style-type: none"> ○ Km 0 to km 14 and km 60 to km 79 requires a Land Use Permit from MVLWB (33 km), ○ Km 14 to km 60 requires a Land Use Permit from Parks Canada (46 km), for this application. 	



The applications for Land Use Permits and Water Licences are needed to allow upgrading of the HPAR to a two lane, 8.5 m wide, year-round access road for commercial use and to support mine operations including the bulk hauling of concentrates and mine re-supply during operations, from km 0 to km 79 at Howard's Pass. The upgrading activities will be in addition to allowable road use under grandfathering provisions of the MVRMA, and existing Licences of Occupation. The road will also be used to transport material necessary for construction activities for the upgrading and widening project.

Work to upgrade the current access road will include:

- 1) clearing of vegetation within the road right-of-way to an average width of 25 m to accommodate the upgraded road;
- 2) grubbing adjacent to the roadway to accommodate road widening;
- 3) widening of the road surface to 8.5 m, plus widening at curves, pullouts and bridge approaches where required;
- 4) road subgrade improvements in localized soft areas, including placement of geogrid, geotextile and granular fill;
- 5) upgrading of drainage systems, including widening of existing ditches and installation/extension of culverts;
- 6) localized changes to the road alignment and profile for road safety, i.e., to improve driver sight lines and reduce steep grades, and to allow for improved travel speeds, including a potential bypass at the south end of the road;
- 7) application of gravel surfacing to the road as required; and
- 8) development and use of roadside borrow areas.

During mine operations the road will be used for ore concentrate haul and mine resupply. To ensure safe operations, maintenance of the road will be necessary. This will include road grading and snow removal as necessary, including clearing of snow related to avalanches. Road maintenance will also include application of water or other environmentally benign dust control products. Close collaboration with Parks Canada will take place concerning dust suppression techniques. Discussions regarding potential restoration of the road are on-going with Parks Canada concerning the future of the road once it is no longer needed to support the mine.

This application is for the necessary Land Use Permit to enable upgrading of that portion of the road from km 14 to km 60 which lies within Nahanni National Park Reserve and Nááts'ihch'oh National Park Reserve, and for those construction camp(s) within the latter, as well as operation and maintenance of the road.

Road upgrade designs are included in Volume 1 of the application package and a full description of the construction activities associated with the HPAR upgrade project are found in Section 5 of the PDR.

There has been a long term and continuous consultation and engagement process with potentially affected First Nations in the Sahtu and Dehcho since 2006. A summary of this process can be found in Section 8, Community Engagement of the PDR.

b) Please indicate if a camp is to be set up. (Please provide details on a separate page, if necessary.)

For the purposes of road upgrade work, two temporary trailer camps will be established with capacity for approximately 60 people each at Km 3 for 2016 to 2018 and at Km 63.5 for 2016 and 2017. These two camps fall under MVLWB jurisdiction. For the 2018 construction season the Km 63.5 camp as well as a second construction camp will be located at ~ km 37, just north of the Guthrie Creek bridge site within Nááts'ihch'oh National Park Reserve. These camps will be in close proximity to each other and located such that they are a reasonable distance from active work sites. Each camp will be supporting up to 60 workers carrying out upgrading work on separate road segments (for details, see PDR- Section 5). Although these are two separate camps, the combined workforce in the vicinity of Guthrie Creek will be up to 120 persons. Once road upgrades are complete, the trailer camps will be removed. For further details regarding the camps, please refer to Section 5.1.8 of the PDR. A camp layout schematic is attached to this application (Attachment 1).



5. Summary of potential environmental and resource impacts (describe the effects of the proposed land-use operation on land, water, flora & fauna and related socio-economic impacts). Use separate page if necessary.

As noted earlier, the Howard's Pass Access Road is existing infrastructure that was built in the 1970s. As a result, there are existing environmental effects associated with this road.

Road upgrade activities may have the following effects: 1) vegetation removal may affect wildlife and bird habitat on a short term basis; 2) culvert extensions may affect fish habitat temporarily; and, 3) noise of construction machinery may disturb wildlife, birds, seasonal residents of Flat Lakes area and National Parks visitors. Because the road upgrade activity is temporary and of short duration, construction activities are not expected to have any long-term negative effects on land use such as hunting, trapping and fishing. There will be employment and contract opportunities related to the road upgrade works.

Hauling of mine products and mine re-supply traffic on the upgraded HPAR during mine operations will occur on an ongoing, year-round basis and may have the following effects: 1) vehicle/wildlife interaction and collisions; 2) disturbance of hunting, trapping and fishing activities; 3) disturbance of National Parks visitors in areas adjacent to HPAR; and, 4) disturbance of seasonal residents of Flat Lakes area. The road may allow additional access to the area.

Please refer to the Project Schedule in Section 2.4 of the PDR. For a more comprehensive discussion of the project's potential effects and their mitigation, please refer to Section 5.2 (Construction) and Section 6.2 (Mine Operations) of the PDR in Volume 2.

7. Proposed restoration plan (please use a separate page if necessary).

Should temporary closure of the Howard's Pass Access Road become necessary, the plan for this process is set out in Section 6.1.7 of the PDR in Volume 2. Discussion is currently underway with Parks Canada regarding the long term use of the road.

8. Other rights, licences or permits related to this permit application (mineral rights, timber permits, water licences, etc.)

Based on grandfathering provisions under section 157.1 of the Mackenzie Valley Resource Management Act (MVRMA), it has been determined that the road can be used for its original purpose per Land Use Permits issued in 1977, namely "providing road access from the Cantung Road [now Nahanni Range Road] to the Howard's Pass Project site", and use of the road to support mine site exploration and development activities.

SCML currently holds a Licence of Occupation #1051-14-2 for the HPAR, a land tenure instrument which secures the company's access rights for a period of 30 years on those portions of the road outside the two National Park Reserves. This Licence of Occupation is valid until December 2041 and allows for construction, operation, maintenance, inspection, replacement, alteration, and repair works to be completed on the road. LOC # 1051/2-5-2 provides access rights for km 36-60 within Nááts'ihch'oh National Park Reserve.

SCML holds quarry permits for 8 quarries along the HPAR that were used in 2014. Another 14 potential quarry sites have been identified for which permits may be applied subsequently. Please see section 5.1.5 of the PDR for detailed information about Borrow Sources.

SCML has held authorizations from the MVLWB (Land Use Permit MV2005F0028 and Water Licence MV2006L8-0001) and Parks Canada (Land Use Permit 2009-L01 and Water Licence 2009-W01) that allowed for the reconstruction of the HPAR for its original purpose, as well as for the operation and maintenance of the road. Reconstruction of the HPAR was completed under those authorizations in 2014. All four of those permits/licences expired in June 2015. SCML holds an authorization (S07C-003) for exploration drilling on mineral claims and leases held in the NWT.

HPAR provides access to recreational cabins located in the vicinity of Flat Lakes (~ Km 10), some of which are on Crown Lease. There are also a number of companies and individuals holding mineral claims or leases along or near the HPAR. These include North American Tungsten Corporation Ltd.'s claims and leases in the vicinity of Tungsten, claims along the south end of the HPAR, held by Archer Cathro and Associates, and a block of claims to the west of the HPAR, held by War Eagle Mining Company Inc. and Warren LaFave, among others. The claims northeast of the HPAR include Playfair Mining Ltd.'s tungsten property, accessed from the HPAR. The NWT claims and lease at the north end of the road are held by SCML. These claims are shown in Figure 4.3-5 of the PDR in Volume 2.

Roads: Is this to be a pioneered road? No

Has the route been laid out or ground truthed? : N/A, existing road



9. Proposed disposal methods.

During road upgrade activities:

- a) Garbage: hauled off site to an approved disposal facility.
- b) Sewage (sanitary & grey water): grey water will be discharged to sumps; black water will be hauled off site to an approved disposal facility.
- c) Brush & trees: cut, bucked and disbursed or chipped at roadside.
- d) Overburden (organic soils, waste material, etc.): disbursed at roadside.

During mine product haul:

- a) Garbage: N/A
- b) Sewage (sanitary & grey water): N/A
- c) Brush & trees: N/A
- d) Overburden (organic soils, waste material, etc.): N/A

A Waste Management Plan is included as Appendix II in Volume 3 of this application.

10. Equipment (includes all ground transport, drills, pumps, etc.) (Please use separate page if necessary.)

Type & number	Size	Proposed use
Heavy equipment – bulldozers, excavators, loaders, dump trucks, graders, compactors, etc. Approximately 48 pieces.	Various, some exceeding 10 tonnes.	Road upgrade construction.
Transport trucks and pick-up trucks. Approximately 25 pieces.	Various.	Road upgrade construction.
Various small gas powered equipment. Approximately 25 pieces.	Various.	Road upgrade construction.



11. Fuels not in transport	Yes/No	Number of containers	Capacity of containers	Location
Diesel	Yes	Two (2)	50,000 litres double-wall diesel fuel tanks mounted on highway licensed trailer or skids.	At construction camps.
Gasoline	Yes	One (1)	10,000 litres double-wall gasoline tank mounted on highway licensed trailer or skids.	At construction camps.
Aviation fuel	No			
Propane	Yes	Approximately five (5)	30 to 500 lbs capacity propane tanks with aggregate capacity up to 1000 lbs	At construction camps.

Other (please indicate) N/A

Please refer to Section 5.1.7 of the PDR in Volume 2 for more detailed information about numbers and types of pieces of equipment and volumes and types of fuel to be used for the HPAR upgrade.

12. Containment fuel spill contingency plans. (Please attach separate contingency plan if necessary).

A Spill Contingency Plan is included as Appendix III in Volume 3 of this application.

13. Methods of fuel transfer (to other tanks, vehicles, etc.)

Hand powered or electric pumps.

14. If fuel or flammable liquids are to be transported through the park, indicate how they will be transported.

Highway licensed fuel tanker trucks.

15. Do you intend to use, remove, damage, or destroy natural objects (e.g., soil, sand, gravel, rock, mineral, fossil, snow) from their natural location? If so, please indicate the intended use and how the activity will not: have significant adverse impacts on the park and its natural resources; jeopardize cultural, historical and archaeological resources; and pose a danger to public health or public safety.

Upgrading and widening of the HPAR will of necessity involve moving natural objects (vegetation and granular material). A detailed description of this construction activity is provided in Section 5 in the PDR.

16. Please specify the kind, amount, and location of natural objects and/or flora to be used, removed, defaced, damaged or destroyed.

Upgrading and widening of the HPAR will of necessity involve moving natural objects (vegetation and granular material). A detailed description of this construction activity is provided in Section 5 in the PDR.

17. Will your activities include the willful removal, relocation, or destruction of wildlife?

No.



<p>18. Period of operation (includes time to cover all phases of project work applied for, including restoration)</p> <p>Road upgrade activities are anticipated to take one pre-construction season (2016) and two construction seasons (2017, 2018). Some clearing work can take place during the winter season while the road construction work will take place June through October. Please refer to Section 5.1.6 in the PDR for a more detailed construction schedule.</p> <p>Haul of mine products may occur up to 12 months per year for the life of the Selwyn Project mine. The operation of the road is addressed in more detail in Section 6 in the PDR.</p>	
<p>19. Period of permit (up to five years, with maximum of two years of extension).</p> <p>A permit for road upgrade activities is requested for a term of five (5) years.</p>	
<p>20. Location of activities by map co-ordinates (attach maps and sketches) - NAD83</p>	
<p>Minimum latitude (degrees, minutes, seconds) 61⁰ 58' N</p>	<p>Maximum latitude (degrees, minutes, seconds) 62⁰ 27' N</p>
<p>Minimum longitude (degrees, minutes, seconds) 128⁰ 15' W</p>	<p>Maximum longitude (degrees, minutes, seconds) 129⁰ 13' W</p>
<p>Map Sheet no. _____ NTS map sheets 105I01, 105I02, 105I06 and 105I07 (inclusive of the entire 79 km length of road)</p>	
<p>17. Applicant Douglas L. Reeve</p>	<div style="text-align: center;">  Signature </div> <div style="text-align: right;"> <p>June 22, 2015 Date</p> </div>

FOR OFFICE USE ONLY

Application Fee (\$150) Receipt No: _____

Land Use Fee (\$50/hectare) Receipt No: _____

Assignment Fee (\$50) Receipt No: _____

Please make all cheques payable to the "Receiver General of Canada"

Date Application Received: _____

Version: June 2015

Volume 1: Attachment 1: Camp Layout Schematic

Volume 1: Attachment 2: Road Design Criteria

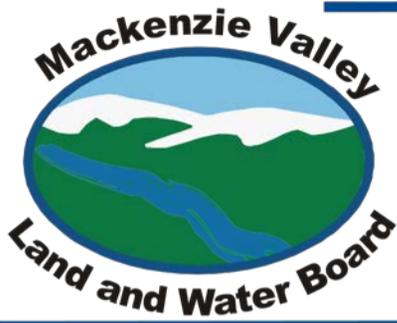
Volume 1: Attachment 3: Preliminary Road Design

Volume 1: Attachment 4: Land Use Permit Security Worksheet

Volume 2: 2015 Project Description Report

Water Licence Application:

Mackenzie Valley Land and Water Board (MVLWB)



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

APPLICATION FOR A NEW WATER LICENCE, AMENDMENT OF LICENCE, OR RENEWAL OF LICENCE.

Application/Licence No:
 (amendment or renewal only)

<p>1. Name and Mailing Address of Applicant Doug Reeve Selwyn Chihong Mining Ltd 2701 – 1055 West Georgia Street Vancouver, BC V6E 0B6 Canada</p> <p>Telephone: 604-620-6188</p> <p>Fax: 604-681-8344</p>	<p>2. Address of Head Office in Canada if Incorporated As in Box 1. Telephone: As in Box 1. Fax: As in Box 1.</p>
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3. Location of Undertaking (describe and attach a map, indicating watercourses and location of any proposed waste deposits).

Two 60-person capacity construction camps will be established to support the upgrading of the Howard's Pass Access Road (HPAR). One camp will be set up near road km 3 of HPAR; the second camp will be set up at km 63.5 near Steel Creek. Coordinates for the camp locations are as follows:

Km 3 Road Construction Camp

- Decimal Degrees - Latitude: 62.05; Longitude: 128.36
- Degrees, Mins, Secs – Latitude: 62° 02' 43.39" N; Longitude: 128° 21' 49.82" W

Km 63.5 Road Construction Camp

- Decimal Degrees - Latitude: 62.38; Longitude: 129.02
- Degrees, Mins, Secs – Latitude: 62° 23' 00.55" N; Longitude 129° 01' 13.14" W

4. Description of Undertaking (describe and attach plans)

A Water Licence is required for greywater discharge associated with operation of the two camps. Blackwater (sewage) will not need to be licensed, as it will be hauled to an approved offsite disposal facility. Water withdrawals will also be required to support camp operations and road construction, but will be below thresholds that require a Water Licence. Once HPAR upgrades are complete the trailer camps will be removed and the greywater sumps will be backfilled.

A complete description of the undertaking together with maps is provided in the Project Description Report (PDR) prepared for the HPAR Upgrade Project, Volume 2 of this application. Please refer to Figure 5.1-4 and Section 5 of the PDR. Also attached to this application is a schematic diagram showing the camp layout (Volume 1, Attachment 1).

5. Type of Undertaking.

- | | |
|-----------------------------|-------------------------|
| 1. Industrial _____ | 5. Agriculture _____ |
| 2. Mining and Milling _____ | 6. Conservation _____ |
| 3. Municipal <u>X</u> _____ | 7. Recreation _____ |
| 4. Power _____ | 8. Miscellaneous: _____ |

Establish two construction camps to support the upgrading of the HPAR as indicated in Section 4, above. Pursuant to NWT Water Regulations Schedule VI, a water licence is required for any deposit of waste by a camp or lodge with capacity of more than 50 occupants per day.

6. Water Use

To obtain water _____	Flood control _____
To cross a watercourse _____	To divert water _____
To modify the bed or bank of a watercourse _____	To alter the flow of, or store water _____

Other (describe):

- Water withdrawals without a license for camp use.
- Water withdrawals without a license for road dust suppression.
- Discharge of waste (camp greywater) from two 60-person capacity camps into soakage pits or sumps more than 30 m from any water body.

7. Quantity of water involved (litres per second, litres per day or cubic meters per year), including both quantity to be used and quantity to be returned to source.

Water use at each of the 60-person capacity camps will be approximately 200 L/person/day, or 12 m³/day, which is below the threshold that requires a Water Licence for water withdrawal. Additionally, water will be required for dust suppression at an average rate of 36 m³/day for the length of the construction season (approximately 180 days).

It is expected that approximately half of the water withdrawn for camp use will be discharged as greywater, thus approximately 6 m³/day of greywater will be disposed in sumps. The sumps will be backfilled when no longer required.

A summary of water use and waste discharge:

- Water withdrawals without a license for camp use, based on two camps @ 12 m³/day, total will be up to 24 m³/day.
- Water withdrawals without a license for road dust suppression, on average up to 36 m³/day.
- Discharge of waste (greywater) to sumps, based on two camps @ 6 m³/day, will be up to 12 m³/day.

8. Waste deposited (quantity, quality, treatment and disposal)

A Waste Management Plan for the proposed activities is to be developed in accordance with the Board's Guidelines for Developing a Waste Management Plan (accessible at www.mvlwb.com) and submitted as an attachment to the application form. A template for this Plan is provided in the Guidelines. Applications for a municipal licence do not need to include a Waste Management Plan as this information is required under the Operation and Maintenance Plan.

In addition, applicants are referred to the Board's Water and Effluent Quality Management Policy (accessible at www.mvlwb.com) to understand the Board's approach to managing the deposit of waste into the receiving environment through enforceable terms and conditions set in water licences.

- Up to 24 m³/day of untreated greywater from camp operations (laundry, sinks and showers) will be deposited to a sump no closer than 30 m to any watercourse.

A Waste Management Plan is included in Volume 3, Appendix II of this application.

9. Other persons or properties affected by this Undertaking (give name, mailing address and location). Attach a list if necessary.

Other affected persons may include staff of the two National Parks through which the HPAR runs, visitors to those parks, and other users of the land outside of the parks in the vicinity of the construction camps. The topic of effects and mitigation is addressed in some detail in Section 5.2 of the HPAR PDR.

10. Predicted environmental impacts of Undertaking and proposed mitigation.

As part of the response to this section, a spill contingency plan for the proposed activities is to be developed in accordance with INAC's Guidelines for Spill Contingency Planning, April 2007. (accessible at <http://www.ainc-inac.gc.ca/ai/scr/nt/pdf/SCP-EUD-eng.pdf>). This plan is to be submitted as an attachment to the application form.

SCML has provided a Spill Contingency Plan in Volume 2, Appendix III of this application. Potential effects and their mitigation are addressed in some detail in Section 5.2 of the PDR.

11. Contractors and sub-contractors (names, addresses and functions). Attach a list if necessary.

Contractors and sub-contractors have yet to be determined.

12. Studies undertaken to date. Attach a list if necessary.

Studies undertaken to support the larger HPAR project are described in the appended PDR.

13. Proposed time schedule.

Start date: October 2016 (Estimate)

Completion date: October 2018 (Estimate)

Name (print): Doug Reeve

Signature:  _____

Title (print): Manager, Permitting and Regulatory Affairs

Date: June 22, 2015

Please make all cheques payable to "Receiver General of Canada"

FOR OFFICE USE ONLY

Application Fee Amount: \$ 30.00

Receipt No: _____

Water Use Deposit Amount: \$ 3.24

Receipt No: _____

Volume 1: Attachment 1: Camp Layout Schematic Diagram
Volume 2: 2015 Project Description Report

Water Licence Application:

Parks Canada



APPLICATION FOR MINING ROAD ACCESS IN NAHANNI NATIONAL PARK RESERVE & NAATS'IHCH'OH NATIONAL PARK RESERVE: WATER

Application for:

New Authorization X Amendment []

as per the Canada National Parks Act and Regulations

Table with 2 columns: 1. Name and Mailing Address of Applicant (Doug Reeve, Selwyn Chihong Mining Ltd, 2701 - 1055 West Georgia Street, Vancouver, BC V6E 0B6 Canada); 2. Address of Head Office in Canada if Incorporated (As in Box 1).

3. Identify the type of undertaking.

Industrial _____ Mining and milling _____
Municipal _____ Construction X _____
Recreation _____ Miscellaneous: _____

Two 60 person capacity temporary construction camps will be established to support the upgrading of the Howard's Pass Access Road (HPAR). Both camps will be located near Km 37 along a partially cleared area north of Guthrie Creek.

Km 37 Road Construction Camp

- Decimal Degrees - Latitude: 62.23 Longitude: -128.81
Degrees, Mins, Secs - Latitude: 62° 14' 04.57" N Longitude: 128° 48' 30.57" W

4. Indicate which of the following activities are proposed.

To obtain water x _____ Flood control _____
To cross a watercourse _____ To divert water _____
To modify the bed or bank of a watercourse _____ To alter the flow of, or store water _____



HPAR Project Information

A Water License is required for greywater discharge associated with operation of the two camps. Blackwater (sewage) will not need to be licensed, as it will be transported to an approved offsite disposal facility. Water withdrawals will also be required to support camp operations and road construction. Once HPAR upgrades are complete the trailer camps will be removed and the greywater sumps will be backfilled and the general area reclaimed.

A complete description of the undertaking together with maps is provided in the Project Description Report (PDR) prepared for the HPAR Upgrade Project in Volume II of this application. Also attached to this application is a schematic showing the camp layout (Attachment 1).

Methods and Timing for Water Withdrawals

- Water withdrawals will be made using water pumps with rigid suction lines.
- The pumps will transfer the water into truck-mounted fresh water tanks.
- The water will be used for either 1) camp use, and/or 2) watering the roads as required for dust abatement.
- HPAR construction work will be underway for about 6 months per year, approximately June to October subject to seasonal climatic conditions. The timing for the water withdrawals will coincide with this.

Locations of Proposal Water Sources

- Water sources within the Nahanni and Naats'ihch'oh Park Reserves will be major creeks that are readily accessible from the HPAR, including the unnamed creek at Km 26.5, Mac Creek, Guthrie Creek, Fork Creek, Logan Creek and March Creek.
- No permanent equipment will be installed for the water withdrawals (no impoundments or water well installations are required).

Volumes of Water and Rationale

- There will be two active construction camps along the HPAR at approximately Km 37 north of Guthrie Creek which will each accommodate up to 60 people.
- Camp water use is estimated to be about 200 litres/man-day. Therefore, total daily camp water use is estimated at 24,000 litres or 24m³/day.
- Water use for dust abatement will vary with climatic conditions. It is estimated that water use for this purpose will not exceed 36m³/day, on average.
- It is expected that approximately half of the water withdrawn for camp use will be discharged as greywater, thus approximately 6 m³/day greywater will be disposed in sumps at each of the two camps, for a total of up to 12 m³/day. The sumps will be located at least 30 m from surface waters, and will be backfilled when no longer required.
- The water for human consumption will be transported in water trucks, stored in the camp buildings and treated before use. Water withdrawals will be required daily to meet the demand at each camp.

Water Quality Testing

- Water quality testing will not be done at the source. Water that is transferred for camp use will be put through a purification system prior to being used for human consumption or sanitation.
- Potable water testing will be done from purified water at camp (tap-source testing) in compliance with health regulations.



Measures to Minimize Effects of Water Withdrawals

- To ensure there is no negative effects to aquatic resources, intake hoses will be screened as per DFO's Freshwater Intake end-of-pipe Fish Screen guidelines.
- Water withdrawal rates will be limited so as not to exceed 5% of total measured flow at each Creek.
- Weekly flow measurements and volume estimates will be taken at approved water sources with daily records of all withdrawals.
- Water withdrawals will be closely monitored throughout the construction season especially during more sensitive time periods (e.g. declining stream levels in fall months) and when needed, withdrawal rates from discrete sources will be reduced to accommodate reduced flows.
- The construction season for the HPAR is approximately 6 months per year with no winter water withdrawal anticipated. This will ensure there are no negative effects during low flow time periods.

Culverts.

Culvert extensions and/or relocations will be required at a number of creeks to accommodate the widening of the road during upgrading. The locations of the creeks where these extensions/relocations will occur are given in Section 5.1.4.2 of the PDR. This will require some instream work. Where such work involves fish-bearing streams SCML will conduct a self-assessment to determine whether a review by Fisheries and Oceans Canada of such work is necessary.

Road Alignment

The Road Alignment is summarized in Section 5.1.2 and Road Design is summarized in Section 5.1.3 of the PDR. In addition, the Preliminary Road Design alignment sheets are appended to this application (Volume 1: Attachment 3).

5. For each activity you have identified above, please attach a document describing the below criteria where applicable:

The information requested below is provided in greater detail in the Project Description Report (PDR) prepared for the Howard's Pass Access Road (HPAR) project, Volume 2 of this application. As outlined above, the construction camps are anticipated to be located at approximately Km 37 of the HPAR within the N    ts'ihch'oh National Park Reserve near the border with Nahanni National Park.

- a. Specify the purpose of the above activities and/or why the water is required. Describe all activities and attach plans.
 - Please refer to section 4 above. A schematic showing the camp layout is attached to this application (Volume 1: Attachment 1). The PDR contains details in regards to the HPAR road widening project.
- b. Describe all equipment to be used, methods to be employed, and indicate all watercourses that may be affected along with the location of any proposed waste deposits. Provide a statement specifying the location of any equipment to be installed in taking water. In addition, please include a map that plots the above with recognizable landmarks and latitude/longitude indicated.
 - The PDR lists equipment (Section 5.1.7), construction methods (Section 5), affected watercourses (Section 5.2), and waste management (Section 5.1.8 and Volume 3: Appendix II)
 - Attached to this application is a schematic showing the camp layout (Volume 1: Attachment 1).



- c. If this water is to be potable, is a water quality test attached? Provide documentation that the water quality is suitable for the purpose for which it is required.
 - Please refer to Section 4- HPAR Project Summary for this information.
- d. Quantity of water involved (litres per second, litres per day or cubic meter per year), including both quantity to be used and quality to be returned to source.
 - Please refer to Section 4- HPAR Project Summary for this information.
- e. Waste deposited (quantity, quality, treatment and disposal).
 - Please refer to Section 4- HPAR Project Summary for this information.
 - A Waste Management Plan is included as Appendix II in Volume 3 of this application.
- f. Other persons or properties affected by this Undertaking (give name, mailing address and location). Include a list if necessary.
 - Other affected persons may include staff of the two National Park Reserves through which the HPAR runs, visitors to those parks, and other users of the land outside of the parks in the vicinity of the construction camps.
- g. Predicted environmental impacts of Undertaking and proposed mitigation.
 - A Potential Effects Assessment and Mitigation Measures are summarized in Section 5.2 and Section 6.2 in the PDR.
- h. Studies undertaken to date.
 - A summary of the Physical Environment, Ecosystems and Biota and the Human Environment along the HPAR is found in Section 4 of the PDR.

6. Contractors and sub-contractors (names, addresses and functions). Attach a list if necessary and identify the activity or activities they will be responsible for.

Contractors and sub-contractors have yet to be determined for this project.

7. Proposed time schedule.

Start date: October, 2016 Completion date: October 2018

Name (print): Doug Reeve

Signature:  _____

Title (print): Manager, Permitting and Regulatory Affairs

Date: June 22, 2015



For Office Use Only

Application fee (\$30) Receipt No: _____

Water use deposit Receipt No: _____

Please make all cheques payable to the "Receiver General of Canada"

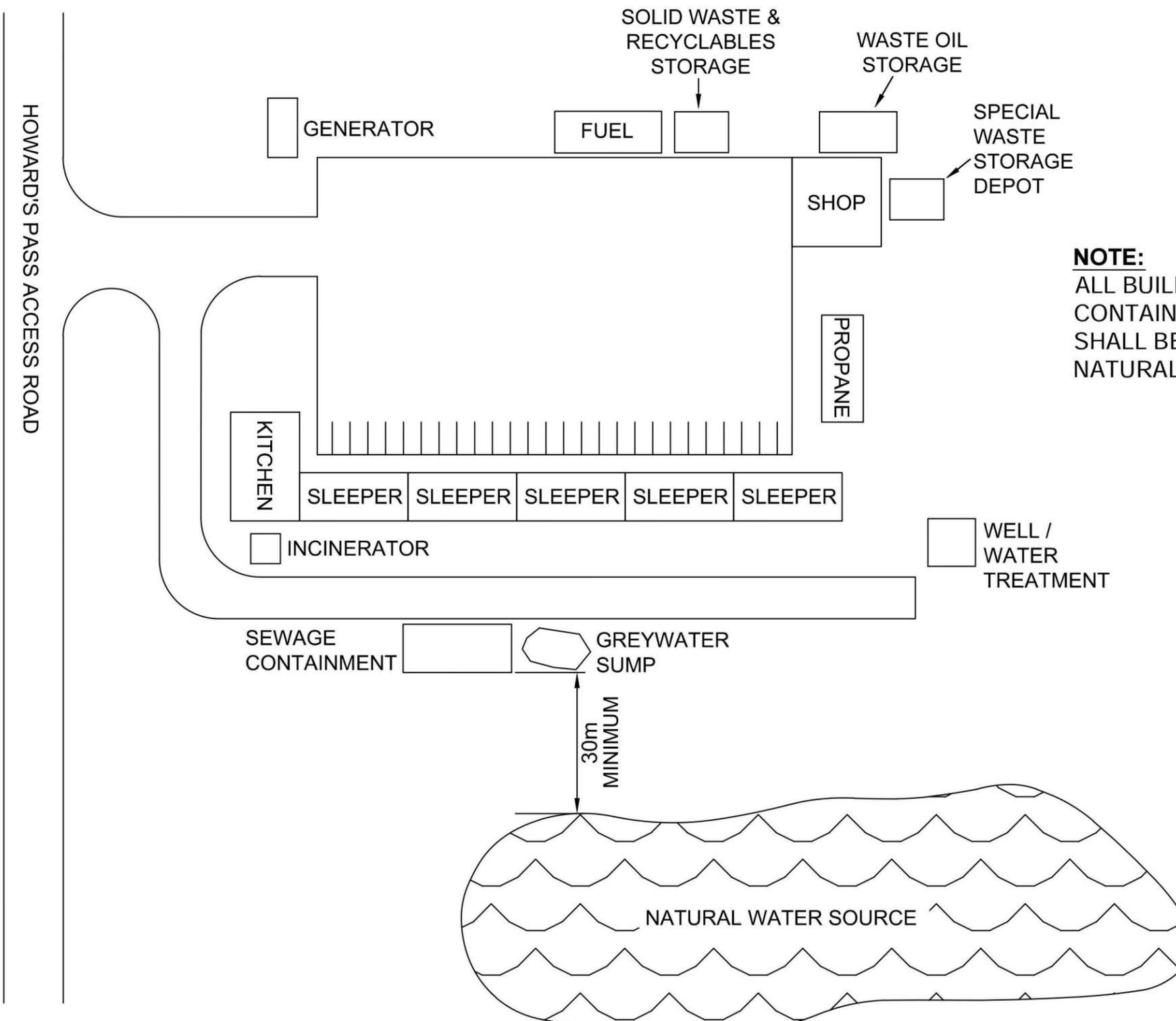
Date Application Received: _____

Version: June 2015

Volume 1: Attachment 1: Camp Layout Schematic

Volume 2: 2015 Project Description Report

ATTACHMENT 1. Camp Layout Schematic Diagram



NOTE:
 ALL BUILDINGS AND SERVICES CONTAINING SEWAGE/WASTE WATER SHALL BE A MIN. 30M AWAY FROM NATURAL WATER SOURCES

HOWARD'S PASS ACCESS ROAD
 Dwg. No: 20132520-00-SK001
 60-man Temporary Road Construction Camp

Date: March 18, 2015
 Scale: N.T.S.



SELWYN CHIHONG
 MINING LTD.

ATTACHMENT 2. Road Design Criteria

Project Design Criteria – Revision 0 (2014-11-03)

Project: Howards Pass Access Road – Two Lane
 Project No.: 20112946.01.E.03.00
 Type of work: Resource road reconstruction
 Location: 220km North of Watson Lake, YT (62° 01' 29" N and 128° 20' 01" W)
 Length: 80 km

Road Design Geometrics:

Item		Present Conditions	Proposed Project Criteria	Achieved Criteria	Comments / Notes
Classification					Two lane mine access road.
Posted Speed, km/h			50 (70)		To match design speed.
Design Speed, km/h			50 (70)		Based on meeting minutes of 2012-03-23, minimum design speed of 50 km/h, preferred design speed of 70 km/h where possible.
Basic Lanes			2		
Surfacing Type			Gravel		
Minimum Radius, m			100 (200)		Based on emax of 4% (4%) superelevation, design speed of 50 km/h (70 km/h), and lateral friction of f=0.16 (0.15) equal to wet pavement (TAC T.2.1.2.1) and using TAC Formula 2.1.2 and TAC Table 2.1.2.3. BCTAC 330.01 – minimum radius should be increased by 10% for each 1% increase in grade over 3%; $R_g = R_{min} \times [1+(G-3)/10]$
Equiv. Min K Factor	Sag		12 (24)		BCTAC Table 510.1 – for design speed of 50 (70) km/h and minimum SSD of 65 (110) m. Minimum length of vertical curves should be equal to design speed.
	Crest		11 (30)		BCTAC Table 510.1 – for design speed of 50 (70) km/h and minimum SSD of 65 (110) m. Minimum length of vertical curves should be equal to design speed.
Max. Grade			6 % 8 % if < 100 m		FEM Table 3-2 for adverse grades with design speed of 50 and 70 km/h.
Normal Crossfall			4%		BCTAC Table 510.J – recommended cross slope for low volume gravel roads
Max. Superelevation			4% (4%)		
Minimum S.S.D., m			65 (110)		TAC Table 1.2.5.3 – minimum SSD of 65 (110) m for design speed of 50 (70) km/h. BCTAC Table 510.C – SSD corrections for grades greater than 3%. At 6%, the SSD increases by 5 m.
Minimum P.S.D., m			340 (480)		RTAC H.3.2.3 – Passing sight distance is not considered to be a significant design element however it is recommended to provide PSD as often as economically feasible.
Lane Width, m			8.5		FEM Page 3-16 – roads less than 8 m in subgrade width are considered single lane roads. From meeting minutes of 2012-03-23, single lane width to be 7.5 m, minimum 6.5 m.

Project Design Criteria – Revision 0 (2014-11-03)

Project:	Howards Pass Access Road – <u>Two Lane</u>
Project No.:	20112946.01.E.03.00
Type of work:	Resource road reconstruction
Location:	220km North of Watson Lake, YT (62° 01' 29" N and 128° 20' 01" W)
Length:	80 km

Shoulder Width, m		0.0		Additional width may be required to accommodate roadside barrier in select locations.
Curve Widening, m		Varies		TAC Figure 2.1.2.10 – when truck volumes exceed 15/h curve widening is warranted.
Cut/Fill Slopes		Varies		See Note 7.
Turnout Length, m		N/A		FRE Table 4 –turnouts are not required on 8+ m wide roads.
Turnout Width, m		N/A		FRE Table 4 –turnouts are not required on 8+ m wide roads.
Turnout Spacing		N/A		FRE Table 4 –turnouts are not required on 8+ m wide roads.
Clearing Width, m		3.0 m beyond limit of cut/fill		FRE Figure 7.
R/W Width, m		60		From meeting notes of 2014-10-22.
Traffic Planning Design Horizon				
Design Vehicle		Concentrate Haul Truck		95' (28.9 m), 200,000 lb (90,700 kg) Concentrate Haul Truck shown on Conceptual Layout drawing dated February 1, 2012

RECOMMENDED BY: _____ Date: _____

APPROVED BY _____ Date: _____

A) Notes / Discussion:

Road Design Geometrics

1. FEM – Forest Service of British Columbia Engineering Manual (November 2011)
2. FRE – British Columbia Forest Road Engineering Guidebook (June 2002)
3. TAC – Geometric Design Guide for Canadian Roads (September 1999)
4. BCTAC – British Columbia Supplement to TAC Geometric Design Guide (2007)
5. RTAC – Manual of Geometric Design Standards for Canadian Roads (1986)
6. Numbers in brackets represent values for 70 km/h design speed
7. Cut/Fill Slopes

A conservative approach was taken with respect to cut and fill slopes. The document “General Sloping Requirements for Road Design” prepared by Madrone Environmental Services Ltd. January 12, 2012 was referenced as a guideline for maximum slope angle in the various soil types.

The cut slopes vary between 1.5H:1V to 1H:1V depending on the soil types, location, and design constraints.

Project Design Criteria – Revision 0 (2014-11-03)

Project:	Howards Pass Access Road – <u>Two Lane</u>
Project No.:	20112946.01.E.03.00
Type of work:	Resource road reconstruction
Location:	220km North of Watson Lake, YT (62° 01' 29" N and 128° 20' 01" W)
Length:	80 km

The fill slopes are at 1.5H:1V with the exception of retaining walls. Retaining walls were minimized at the request of the client in favour of steep 1H:1V slopes. The attached spreadsheet "Retaining Walls" lists the various retaining walls present in the previous design iteration and whether they were replaced with steep fill slopes.

8. Areas of Possible Permafrost – cuts in permafrost to be avoided where possible. The attached spreadsheet titled "Permafrost Areas" summarizes the locations of possible permafrost and comments on the road design within these areas.

ATTACHMENT 3. Preliminary Road Design

Design Sheets 1 to 11:

See File Named

Volume 1 - Applications June 2015 (Part 2 of 4) Road Design Sheets 1 to 11.PDF

Design Sheets 12 to 21:

See File Named

Volume 1 - Applications June 2015 (Part 3 of 4) Road Design Sheets 12 to 21.PDF

Design Sheets 22 to 25:

See File Named

Volume 1 - Applications June 2015 (Part 4 of 4) Road Design Sheets 22 to 25.PDF

ATTACHMENT 4. Land Use Permit Security Worksheet

Land Use Permit Security Worksheet

Application Number:	Input Amount	Multiplier		Details
Camp (C1)				
Temporary Structures				
Input number of tent frames or weatherhaven (3.5m x 4.2m)	0	\$200.00	\$0.00	Based on AE's estimate as presented in PDR. Each of the 3 camps will have a water treatment system, incinerator and generator.
Input number of trailers (3.5m x 15.2m)	42	\$300.00	\$12,600.00	
Input total square metres of other temporary structures (i.e. core shacks)	90	\$2.50	\$225.00	
Fixed Structures				
Input total square metres of fixed structures	0	\$25.00	\$0.00	
Solid Waste				
For non-burnable material, input # of person days per season	32400	\$1.00	\$32,400.00	3 camps, 60 persons per camp, each season is ~6 months.
For burnable material, input # of person days per season	32400	\$0.50	\$16,200.00	
Total C1			\$61,425.00	
Regulated / Hazardous Materials (R1)				
Based upon on site volume				
Explosives; up to 500 kg (~pallet) dry explosives input 1, if none, input 0	0	\$500.00	\$0.00	Based on AE's estimate as presented in PDR.
Additional Explosives; input total kg >500	0	\$0.50	\$0.00	
Drilling Muds (oil based); enter number of 63 m ³ (or equivalent) containers	0	\$1,000.00	\$0.00	
Used Oil, Lubes and Antifreeze: enter number of pieces of heavy equipment	80	\$500.00	\$40,000.00	
Other;				
Total R1			\$40,000.00	
Hydrocarbon Storage and Transfer (H1)				
Based upon on site volume				
Gasoline and Diesel				
Enter total volume of gasoline&diesel <25,000 L	30000	\$0.50	\$15,000.00	At each of the 3 camps, there will be one 10,000l envirotank (or similar) for gasoline. Each of the 3 camps will have up to 100,000l of diesel storage capacity in envirotank (or similar). All tanks will be double-walled.
Enter total volume of gasoline&fuel > 25,000 L	300000	\$0.25	\$75,000.00	
Total Gasoline and Diesel			\$90,000.00	
When fuel is within bermed site or has other safety feature, enter 1, otherwise enter 0	1	25%	-\$22,500.00	
Aviation Fuel				
Enter total volume of aviation fuel < 25,000 L	0	\$0.50	\$0.00	
Enter total volume of aviation fuel > 25,000 L	0	\$0.25	\$0.00	
Total Aviation Fuel			\$0.00	
When fuel is within bermed site or has other safety feature, enter 1, otherwise enter 0	0	25%	\$0.00	
Total H1			\$67,500.00	
Land Disturbance (L1)				
Disturbed Surface Area				
<i>(Developed surface area that may require restoration through the use of scarification, reseedling, fertilizing or other similar techniques)</i>				
Enter number of hectares disturbed	109	\$1,000.00	\$109,000.00	3 camp locations, ~3 hectares for each. Estimating that we will have ~10 borrow sites at ~10 hectares each.
Other Land Disturbances				
Creek Crossings; enter number of creek crossings	24	\$500.00	\$12,000.00	There are 32 creek crossings of significance along the HPAR. Eight already have bridges.
Off-Road Activities; if any activities are likely, enter 1	0	\$500.00	\$0.00	
Sump Factor; enter total area occupied by sumps in m ²	75	\$10.00	\$750.00	Each camp will have a sump for grey water discharge. Estimating the sumps will be ~ 5m2 each.
Well Factor; enter number of wells.	0	\$25,000.00	\$0.00	
Total L1			\$121,750.00	

Land Use Permit Security Worksheet (continued)

Application Number:	Input Amount	Multiplier	Details
Equipment (E1) Based upon type of equipment			
Enter number of pieces of heavy equipment (i.e. dozer, forklift, large gensets)	80	\$1,000.00	\$80,000.00
Enter number of drills	1	\$1,000.00	\$1,000.00
Enter number of light vehicles (trucks, atvs, snowmobiles, boats)	40	\$250.00	\$10,000.00
Enter number of small generators or pumps	15	\$100.00	\$1,500.00
Enter number of empty fuel storage tanks	0	\$500.00	\$0.00
Total E1			\$92,500.00

Security Calculation			
Preliminary Calculation			
Enter amount from C1			\$61,425.00
Enter amount from R1			\$40,000.00
Enter amount from H1			\$67,500.00
Enter amount from L1			\$121,750.00
Enter amount from E1			\$92,500.00
Preliminary Calculation, total of above	A		\$383,175.00
Multipliers			
Site Access Multiplier. If the project has all weather road access enter 1, if ice road access enter 1.5, if air access enter 2	B	1	Year-round access on the HPAR was re-established during 2014.
Performance Multiplier. If applicant has successfully completed the terms of a LUP enter 0.85, otherwise enter 1	C	0.85	
Environmental Risk Factor. If location has high environmental value or unusual environmental risk enter 2. If location is previously disturbed enter 0.75. Otherwise enter 1.	D	0.75	HPAR is an existing disturbance, originally constructed in the late 1970's, then reconstructed during 2014.
Calculated Security			
Multiply preliminary calculation (A) by performance multipliers (B, C and D)	E		\$244,274.06
Existing Securities			
List existing associated permits and amount of overlapping security			
Permit: _____			
Overlapping Securities, total of above	F		\$0.00
Final Security Determination			
Subtract overlapping securities (F) from calculated security (E)			\$244,274.06

Comment: There will be 3 construction camps along the HPAR for 2 construction seasons. Each camp will have capacity for ~60 people. Camp locations will change each year; some locations are on GNWT lands, others on Park lands. Notes are included in cells where values have been entered; these provide some background on how the numbers were derived.