



KEMESS UNDERGROUND PROJECT

Application for an Amendment to Environmental Assessment Certificate #M17-01

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EXECUTIVE SUMMARY

AuRico Metals Inc.'s Kemess Underground Project is a planned 13-year gold-copper mine located at and adjacent to the (closed) Kemess South mine site, located approximately 250 km north of Smithers British Columbia. The Project uses existing Kemess South infrastructure to minimize new land disturbance and to reduce potential environmental, cultural and heritage effects. The Project received Environmental Assessment Certificate (EAC) #M17-01 (Certificate) and a federal Environmental Assessment Decision Statement on March 15, 2017.

Subsequent to the provincial and federal environmental assessment decisions, AuRico submitted a Joint *Mines Act/Environmental Management Act* Permit Application (MA/EMA Application) to the Major Mines Project Office on August 31, 2017 for screening evaluation. The MA/EMA Application contains engineering optimizations and refinements to the Project to improve water management and site communications, and provide construction, maintenance and operation efficiencies. The Environmental Assessment Office has requested AuRico seek an amendment to EAC #M17-01 to capture the changes to the Project that are not reflected in the Certificate.

This document represents AuRico's application to amend the Certificate pursuant to Section 19(1) of the BC *Environmental Assessment Act*. The requested amendment would address the following changes to Schedule A (Certified Project Description; CPD) of the Certificate:

- use of existing fuel storage infrastructure;
- realignment of the exhaust ventilation raise access road;
- additional overburden and soil stockpiles;
- construction of a road to connect the Kemess Underground Access Corridor to the highwall diversion ditch;
- modifications to the highwall diversion ditch;
- installation of a refuse incinerator; and
- installation of four microwave communication towers.

Potential adverse effects of the Project were assessed in AuRico's Application for an Environmental Assessment Certificate (the Application; AuRico 2016). This Amendment Application evaluates whether there are any changes to the effects assessment presented in the Application as a result of the proposed Project Changes.

AuRico provided the draft Amendment Application to the Tse Keh Nay (TKN) for review and comment; no comments were received.

No significant adverse effects were identified for the proposed Project Changes. Based on the assessment of potential effects on applicable valued components, the assessment has determined that the conclusions regarding potential adverse residual and cumulative effects in the Application have not changed as a result of the proposed Project Changes.

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ACRONYMS AND ABBREVIATIONS

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

AIA	Archaeological Impact Assessment
AQMP	Air Quality Management Plan
BC	British Columbia
CAC	criteria air contaminants
CEAA 2012	<i>Canadian Environmental Assessment Act, 2012</i>
CEMP	construction environmental management plan
CO	carbon monoxide
CPA	certified project area
CPD	Certified Project Description
CULRTP	current use of lands and resources for traditional purposes
EA	environmental assessment
EAC	Environmental Assessment Certificate
EMA	<i>Environmental Management Act</i>
EAO	Environmental Assessment Office
EMPR	Ministry of Energy, Mines, and Petroleum Resources
ENV	Ministry of Environment and Climate Change Strategy
ESEP	Environmental Spill Emergency Plan
FLNRORD	Ministry of Forest, Lands, Natural Resource Operations and Rural Development
FSRA	Fuel Storage Registration application
HWDD	high wall diversion ditch
IBA	Impact and Benefit Agreement
KLV	Kemess Lake Valley
KS	Kemess South

KUG	Kemess Underground Project
KwN	Kwadacha Nation
LSA	Local study area
MA/EMA Application	Joint <i>Mines Act/Environmental Management Act</i> Permit Application
MMPO	Major Mine Permitting Office
NAG	non-acid generating
NAG WRD	non-acid generating waste rock dump
NHA	Northern Health Authority
the Project	Kemess Underground Project
TKDN	Tsay Keh Dene Nation
TKN	Tse Key Nay
TLFN	Takla Lake First Nation
TSF	Tailings Storage Facility
TSP	total suspended particles
UWR	ungulate winter range
VC	valued component
VOC	volatile organic compound
WMMP	Wildlife Management and Monitoring Plan
WRD	waste rock dump
WSA	<i>Water Sustainability Act</i>

1. INTRODUCTION

On March 15, 2017, AuRico Metals Inc. (AuRico) received Environmental Assessment Certificate (EAC) #M17-01 (Certificate) to construct and operate the Kemess Underground Project (KUG; the Project). The Project is located approximately 250 km north of Smithers in a mountainous area of north-central British Columbia (BC).

AuRico submitted its Joint *Mines Act/Environmental Management Act* Permit Application (MA/EMA Application) to the Major Mine Permitting Office (MMPO) on August 31, 2017 for screening evaluation. The MA/EMA Application is proposing changes to the Project (the proposed Project Changes) as a result of detailed engineering that are not included in Schedule A (Certified Project Description; CPD) of the Certificate. These changes are intended to improve water management and site communications, and provide construction, maintenance and operation efficiencies. The Environmental Assessment Office (EAO) has requested that AuRico apply for an amendment to EAC M#17-01 to capture the changes to the Project that are not reflected in the Certificate. A description of the proposed Project Changes and the reasons for each change is provided in Table 1-1.

Table 1-1. Summary of Proposed Project Changes Addressed in the Amendment Application

Project Change Number	Description of Change	Reason for Change	Location
1	Use of existing fuel storage infrastructure	To include all fuel types required for mine construction and operations	Kemess South Mine Site Area (CPD Map 1)
2	Realignment of the exhaust ventilation raise access road	Improve construction and operating efficiency	Underground Mine area (CPD Map 1 and 2)
3	Additional overburden/soil stockpiles	Improve construction efficiency	Kemess Lake Valley Area and Kemess Underground Access Corridor (CPD Map 1, 2, and 4)
4	Construction of a new site road to connect the Kemess Underground Access Corridor to the high wall diversion ditch (HWDD)	Improve HWDD construction and maintenance efficiency	Kemess Underground Access Corridor (CPD Map 1, 2, and 4)
5	Modifications to the HWDD to create one continuous ditch that incorporates the upper East ditch	Improve the management of non-contact water around the KUG Tailings Storage Facility (TSF)	Kemess South Mine Site Area (CPD Map 1, 2, and 4)
6	Installation of a refuse incinerator to handle putrescible wastes	Reduce the amount of landfill material and minimize wildlife attractants	Kemess South Mine Site Area (CPD Map 1 and 4)
7	Installation of four microwave towers to provide communication links between the mine site and Mackenzie, BC	Improve site communications and safety	Located outside of CPA

AuRico is also seeking edits (or proposed Edits) to the CPD to include project components that were identified and assessed in AuRico's Application for an Environmental Assessment Certificate (the Application or EAC Application; AuRico 2016) and not captured in the CPD and to correct a mapping error on Map 1 in the CPD. The proposed Edits are described in Table 1-2. There is no assessment of potential effects in the Amendment Application as the proposed Edits were assessed in the EAC Application.

Table 1-2. Summary of Proposed Edits to Schedule A (Certified Project Description)

Edit Number	Description of Edit	Requested Edit
1	Incorporate the full lateral extent of the declines and underground workings including an operational buffer	Add the full lateral extent of the declines and underground workings and operational buffer to Underground Mine (CPD Maps 1 and 2)
2	Include a helipad in the Kemess Lake Valley	Add a helipad to Section 2.3 of the CPD; Kemess Lake Valley Area (CPD Map 1 and 2)
3	Identify water management infrastructure within the Kemess Underground Access Corridor, including ditches and culverts	Add water management infrastructure associated with the access corridor to Section 2.4 of the CPD; Kemess Underground Access Corridor (CPD Map 1 and 4)

This document represents AuRico's application to amend the Certificate pursuant to Section 19(1) of the *Environmental Assessment Act*. This Amendment Application evaluates whether there are any changes to the effects assessment presented in the EAC Application as a result of the proposed Project Changes and whether adverse effects have changed from those presented in the EAC Application. The Amendment Application is being provided to the EAO for consideration of whether the proposed Project Changes, as described in Table 1-1, would result in significant adverse effects.

2. PROPOSED CHANGES TO THE CERTIFIED PROJECT DESCRIPTION

2.1 PROPOSED PROJECT CHANGES

The proposed Project Changes are shown in Figures 2.1-1 and 2.1-2 and described below.

Project Change 1: Use of Existing Fuel Storage Infrastructure (Section 2.1 of CPD)

The KUG Project will use existing fuel storage infrastructure associated with the Kemess South Mine. Section 2.1 of the CPD refers to the use of existing diesel storage tanks, and does not reference the use of this infrastructure for other fuel types.

In order to provide efficient access to fuel and to reduce the need for regular fuel transport to the mine site, it is proposed that the existing infrastructure be used to store fuel types including diesel, gasoline, and propane. The primary storage facility includes the existing tank farm with a storage capacity of up to 2.45 million litres of fuel, which is located within an impoundment in the Kemess South Mine Site Area. This impoundment has a storage capacity of up to 8.2 million litres. There are smaller (2,000 litres, diesel) fuel storage vessels located at the existing air strip.

Measures to mitigate potential effects associated with fuel storage and handling are detailed in the Environmental Spill Emergency Plan (ESEP), appended to the MA/EMA Application. Specific measures to mitigate effects related to fuel storage and handling are identified in Section 4 of the ESEP and include spill prevention measures and environmental protection measures. Spill response measures are detailed in Section 5 of the ESEP and also in the Hazardous Materials Management Plan, which is included in the MA/EMA Application.

Project Change 2: Realignment of the Exhaust Ventilation Raise Access Road (Section 2.2 of CPD)

An access road will provide access to the exhaust ventilation raise above the underground workings (Section 5.8.2 of the EAC Application). The road is approximately 6,150 m in length, originating in the Kemess Lake Valley Area. Most of the road is an upgrade of an existing exploration road in order to accommodate single lane traffic. Approximately 1,250 m of the northern segment of the road is new construction.

Following further ground-truthing, the alignment of the northern segment of the road has been modified to locate the road in an area that is better suited to the local topography and outcrop conditions. This change will improve construction and operating efficiencies, and reduce maintenance requirements. Approximately 250 m of the road lies outside of the CPA, covering an area of approximately 0.25 ha (average 10 m in width).

Figure 2.1-1

Kemess Underground Certified Project Area with Proposed Project Changes

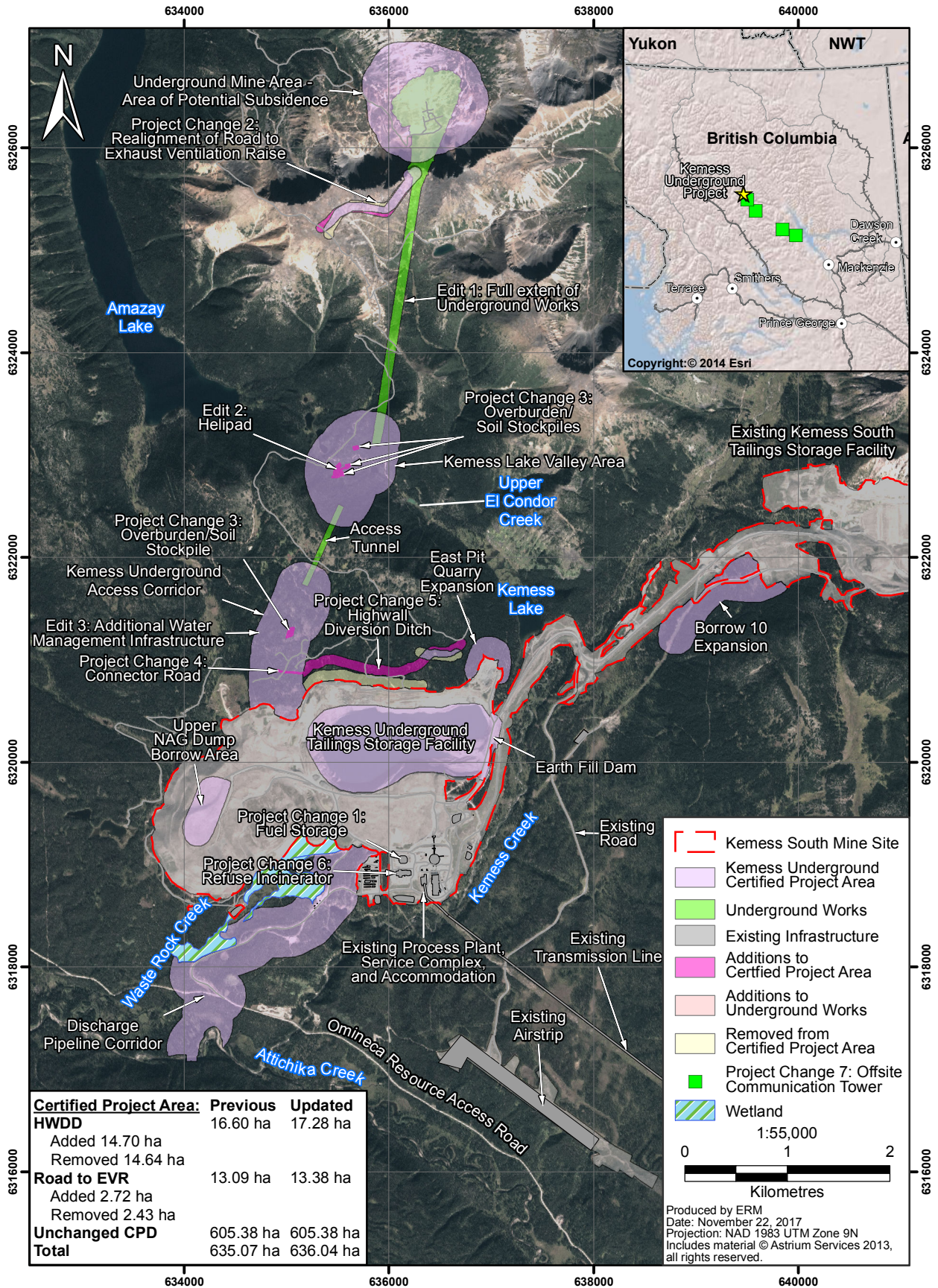
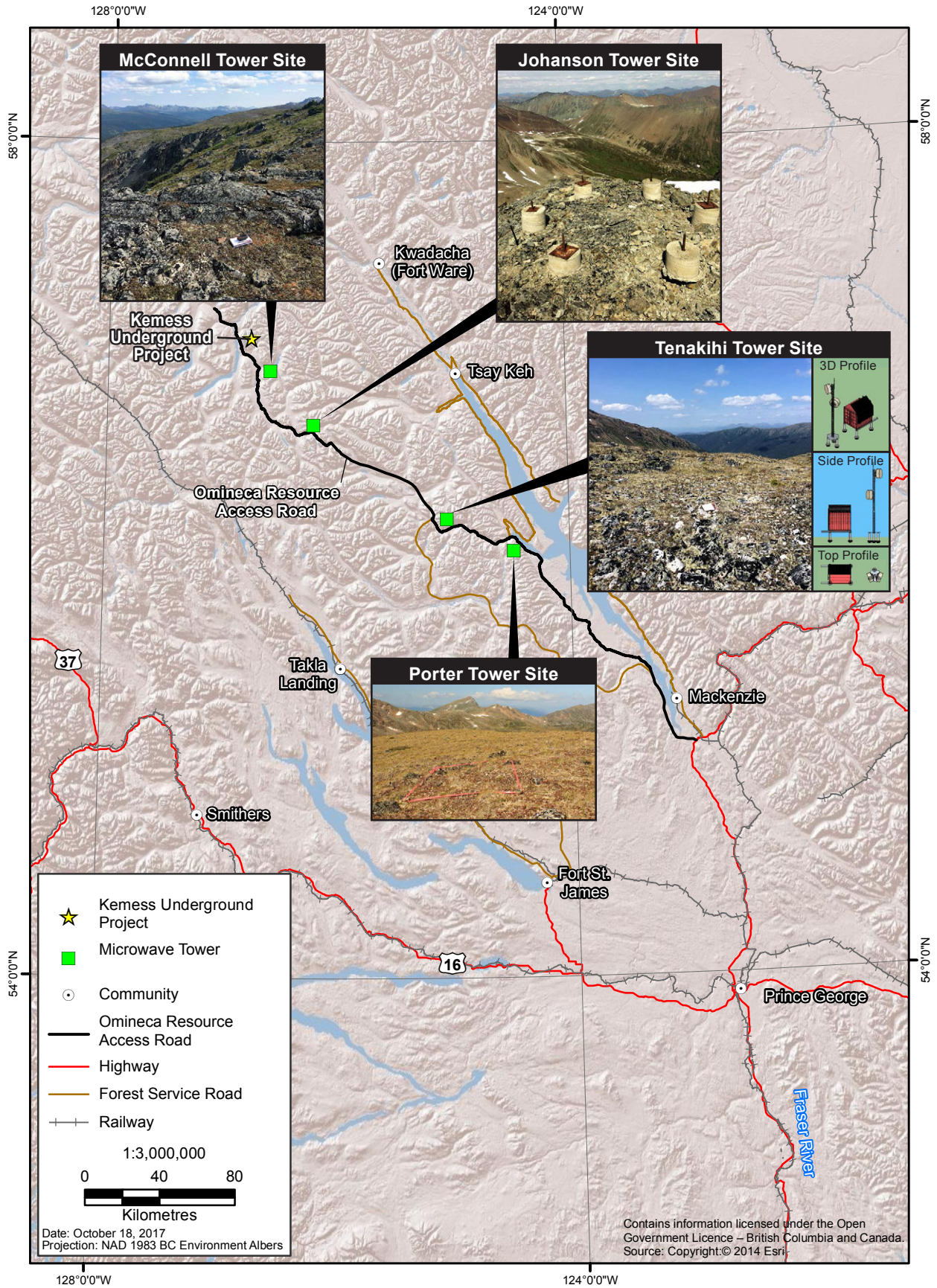


Figure 2.1-2
Proposed Location of Microwave Towers



Project Change 3: Additional Overburden/Soil Stockpiles (Section 2.3 and 2.4 of CPD)

Section 5.7.1 and 5.9.1 of the EAC Application identifies overburden and soil stockpiles in the Kemess Lake Valley Area and Kemess Underground Access Corridor. The EAC Application included one overburden/soil stockpile with a storage capacity of approximately 37,000 m³ in the Kemess Lake Valley Area (Figure 5.7-1) and one overburden/soil stockpile with a storage capacity of approximately 67,000 m³ in the Kemess Underground Access Corridor (Figure 5.9-1). Multiple stockpiles are now proposed in both of these areas.

To reduce haulage distances and improve construction efficiency, two additional overburden/soil stockpiles are proposed in the Kemess Lake Valley Area, and one additional overburden/soil stockpile is proposed in the Kemess Underground Access Corridor. These additional overburden/soil stockpiles are located in areas that were assessed in the EAC Application and fall within the CPA.

Measures identified in the EAC Application to mitigate effects associated with the overburden/soil stockpiles include erosion and sedimentation control measures. No changes are proposed in relation to the use of the stockpiled material as described in the Reclamation and Closure Plan in the EAC Application and MA/EMA Application. The overall volume of overburden/soil stockpiles in the Kemess Lake Valley Area and the Kemess Underground Access Corridor will be approximately 27,000 m³ and approximately 140,000 m³ respectively.

Project Change 4: New Site Road to Connect the Kemess Underground Access Corridor to the HWDD (Section 2.4 of CPD)

The EAC Application does not identify a road connecting the Kemess Underground Access Corridor to the HWDD. Previous mine planning assumed that a maintenance road would be located on the upslope berm of the HWDD. A new 250 m long road is now proposed to connect the Kemess Underground Access Corridor to the HWDD. The road will also extend along the length of the HWDD for maintenance purposes. This change will provide a more efficient route for the movement of construction and maintenance equipment, and personnel between the HWDD and the Kemess Underground Access Corridor. The proposed road is located in an area that was assessed in the EAC Application and falls within the CPA (Figure 2.1-1).

Project Change 5: Modifications to the HWDD (Section 2.5 of CPD)

Section 5.12.2 of the EAC Application indicates the management of non-contact water will include the use of an existing highwall runoff diversion ditch (or HWDD) above the KUG TSF. The EAC Application indicates that a segment of the existing ditch will be realigned. The HWDD diverts non-contact runoff around the northern and northwestern perimeter of the KUG TSF, with runoff entering the southern collection system associated with the Kemess South non-acid generating (NAG) waste rock dump (NAG WRD) and ultimately discharged to Waste Rock Creek. Another diversion ditch, the upper East ditch (unnamed in the EAC Application), located to the northeast of the HWDD, will divert non-contact runoff around the northeastern perimeter of the KUG TSF and discharge toward Kemess Creek.

To improve the management of non-contact water around the KUG TSF and to enhance non-contact water discharge to Waste Rock Creek, modifications to the HWDD alignment indicated in the CPD are proposed to create one continuous ditch that incorporates the upper East ditch. Additional field

surveys determined that the HWDD should be placed further upslope to an area that is more geotechnically stable. Approximately 1.5 km of the length of the modified HWDD lies outside of the CPA (Figure 2.1-1), and covers an area of approximately 1.5 ha (average 10 m in width).

Project Change 6: Installation of a Refuse Incinerator to Handle Putrescible Wastes (Section 2.5 of CPD)

The EAC Application indicates the Project will continue to use the procedures for waste disposal that were used during the operation of the Kemess South Mine, which consisted of on-site landfilling and prompt burial of refuse. An electric fence surrounds the existing landfill to deter wildlife.

In order to reduce the amount of landfilled material and to manage wildlife attractants, a new refuse incinerator is proposed to handle allowable wastes including putrescible wastes. The proposed refuse incinerator would be an Eco Waste Solutions ECO 1TN1P Incinerator, or similar incinerator, to be located at the Kemess South Mine Site Area. The proposed incinerator is located in an area that was assessed in the EAC Application and falls within the CPA.

Project Change 7: Microwave Communication Towers

The EAC Application did not include new or different communication infrastructure from the existing communications system used for the Kemess South Mine. Four microwave towers are proposed to improve site communications and for safety reasons. The towers would be located on mountain peaks between Mackenzie and the mine site (Figure 2.1-2). The footprint of each tower is anticipated to be less than 10 m² (less than 0.001 ha). The towers would be installed and maintained by helicopter. The frequency of tower maintenance would be less than once per month. The towers are located outside of the CPA and areas assessed in the EAC Application.

2.2 PROPOSED EDITS

The proposed Edits are shown in Figure 2.1-1 and described below.

Edit 1: Incorporate Full Lateral Extent of Declines and Underground Workings including Operational Buffer

Section 5.6 of the EAC Application describes the extent of the underground workings and triple declines to access the underground from the Kemess Lake Valley Area. The triple declines and underground works are included on Map 1 of the CPD but do not encompass all of the underground workings as described in the EAC Application. These components are required to provide safe and efficient mining operations. It is proposed that Map 1 and Map 2 of the CPD be revised and replaced to include the full extent of the underground workings as described in the EAC Application.

Edit 2: Include a Helipad in the Kemess Lake Valley Area

The EAC Application indicates a helipad will be located within the Kemess Lake Valley Area (Figures 5.7-1 and 5.9-1). However, a helipad is not listed in Section 2.3 of the CPD. Therefore an edit is proposed to Section 2.3 of the CPD to include a helipad in the Kemess Lake Valley Area. Primary

use of the helipad will be as an emergency helicopter landing location in the event that medical evacuation of an injured person(s) is required.

Edit 3: Identify Water Management Infrastructure within the Kemess Underground Access Corridor

Section 5.9.1 of the EAC Application identifies drainage swales and ditches on the uphill side of the Kemess Underground Access Corridor, which will be used to collect and convey hillside drainage along the corridor. The drainage ditches will connect to seasonal drainages and culverts will be provided to convey the runoff across the corridor. Silt fencing and rock check berms will be provided along the ditches in order to reduce sediment transport to the culvert crossings.

An edit is proposed to Section 2.4 of the CPD to identify water management infrastructure associated with the Kemess Underground Access Corridor. This infrastructure is separate from the infrastructure associated with the access tunnel.

3. CONSIDERATION OF PROPOSED PROJECT CHANGES IN POST CERTIFICATE REGULATORY AND APPROVAL PROCESSES

The following permit applications were submitted to the MMPO on August 31, 2017 for screening evaluation and include the proposed Project Changes:

- Joint MA/EMA Application to amend MA Permit M-206, and EMA Permits 15335 and 14928;
- Fuel Storage Registration application (EMA);
- Approval application for “Changes in or About a Stream” (*Water Sustainability Act; WSA*);
- Water License Applications (WSA) for:
 - Beneficial Reuse for Process Water Makeup; and
 - Potable Groundwater Wells.
- Occupant License to Cut (*Land Act*); and
- License of Occupation (*Land Act*) for the four microwave towers.

4. CONSULTATION

Prior to the submission of the Amendment Application, AuRico has consulted with Aboriginal groups and government agencies as described below.

4.1 ABORIGINAL CONSULTATION

The Project is located within the traditional territories of the Takla Lake First Nation (TLFN) and Tsay Keh Dene Nation (TKDN). The traditional territory of the Kwadacha Nation (KwN) is adjacent to and downstream from the Project. These three First Nations have formed an alliance and are participating in the Project as the Tse Keh Nay (TKN). AuRico signed an Impact and Benefit Agreement (IBA) with TKN on May 18, 2017, which provides a framework to formalize a long-term cooperative relationship between AuRico and the TKN First Nations over the life of the Project. AuRico has ongoing communications with TKN leadership regarding their participation in project permitting and site monitoring during, construction, operations and closure.

Since August 2017, AuRico has engaged with the TKN as members of the Mine Review Committee (MRC) regarding the proposed Project Changes. These engagements have included face-to-face meetings, teleconferences and emails. TKN representatives participated in a MRC meeting in Prince George on October 3, 2017 to discuss the MA/EMA Application. AuRico distributed a copy of the MA/EMA Application to the TKN on August 31, 2017, which included a comparison of the proposed Project Changes and the Project layout with the CPD (refer to Appendix 1-C of the MA/EMA Application).

AuRico provided the draft Amendment Application to the TKN on November 3 for a 14-day review and comment period; no comments were received.

AuRico will continue to engage TKN throughout the review of the Amendment Application, including as MRC members and/or working group members if one is established by EAO to discuss the Amendment Application. AuRico will track and respond to TKN comments on the Amendment Application in a comment/response table as directed by EAO.

4.2 GOVERNMENT AGENCY CONSULTATION

AuRico has consulted with provincial government agencies on the proposed Project Changes through the MRC. Agencies represented on the MRC include:

- EAO;
- Ministry of Energy, Mines, and Petroleum Resources (EMPR);
- Ministry of Environment and Climate Change Strategy (ENV);
- Ministry of Forests, Lands, Natural Resources Operations and Rural Development (FLNRORD); and

- Northern Health Authority (NHA).

Specific engagement on the Amendment Application occurred on the following dates:

- July 4, 2017: Email exchange with Danielle Smyth (EMPR): “KS Pit highwall diversion ditch”
- July 14, 18 and 19, 2017: Email exchange with Fern Stockman (EAO): “KUG CPD Query”
- July 31, 2017: Email exchange with Fern Stockman (EAO): “KUG: amendment requirements”
- August 5 and 22, 2017: Email exchange with Fern Stockman (EAO): “KUG EA to permit application changes”
- October 10, 11, and 13, 2017: Email exchange with Jessica Harris (EAO): “KUG: amendment consideration”.

The MRC met in Prince George on October 3, 2017 to discuss the MA/EMA Application. AuRico distributed a copy of the MA/EMA Application to the TKN on August 31, 2017, which included a comparison of the proposed Project Changes and the Project layout with the CPD (refer to Appendix 1-C of the MA/EMA Application).

AuRico will continue to engage with government agencies on the Amendment Application as MRC members and/or through a working group if one is established by EAO to discuss the Amendment Application. AuRico will also track and respond to government agency comments on the Amendment Application in a comment/response table, as directed by EAO.

5. ASSESSMENT METHODOLOGY

The Amendment Application assesses the potential adverse effects of the proposed Project Changes on applicable valued components (VCs) considered in the EAC Application. The objective of this assessment is to determine whether the effects considered in the Amendment Application have the potential to change the conclusions in the EAC Application and/or require new mitigation measures.

The VCs assessed in the EAC Application were reviewed to identify potential interactions with the proposed Project Changes. Where the potential for an interaction is expected between the proposed Project Changes and the interaction has a greater or different potential for adverse effects in comparison with the EAC Application, these VCs were carried forward for assessment. Where interactions were not expected to have the same, less or negligible effects, these VCs were not assessed.

Interactions are classified according to the following criteria:

- = an interaction is not expected; no further assessment is warranted.
- ◐ = an interaction is expected, but the potential for adverse effects resulting from the proposed Project Change is the same as (or less than) the effects assessed in the EAC Application, OR a previously unconsidered Project component or activity has the potential to result in negligible adverse effects; no further assessment is warranted.
- = an interaction is expected, and has a greater or different potential for adverse effects in comparison with the EAC Application; further assessment is warranted.

Where potential adverse effects resulting from proposed Project Changes are identified, mitigation measures identified in the EAC Application and commitments identified in the EAC are considered and additional mitigation measures are proposed, where required.

Residual effects resulting from proposed Project Changes were evaluated for their potential to change the characterization of overall project residual effects on applicable VCs (as described in the EAC Application). Where necessary, criteria used to characterize residual effects remain unchanged from the EAC Application and include: magnitude; geographic extent; duration; frequency; reversibility; and context. The characterization criteria thresholds and ratings are considered when evaluating the significance of overall Project residual effects. If the proposed Project Changes result in changes to the conclusions of the EAC Application, the Project's potential contribution to cumulative effects are re-evaluated.

6. SCREENING PROPOSED PROJECT CHANGES WITH VALUED COMPONENTS FOR INTERACTIONS

Table 6-1 reviews the VCs assessed in the EAC Application to identify their potential to interact with the proposed Project Changes. As noted above, the proposed Edits are not assessed as they involve project components that have already been assessed in the EAC Application. Table 6-2 identifies the VCs that are not considered in the Amendment Application and the rationale for not including them.

Table 6-1. Screening of Interactions of Proposed Project Changes with Valued Components

Assessment Pillar	Subject Area	Valued Components	Interaction with Proposed Project Changes							Assessed in Amendment Application	
			Project Change 1: Use of Existing Fuel Storage Infrastructure	Project Change 2: Realignment of the Exhaust Ventilation Raise Access Road	Project Change 3: Additional Overburden/Soil Stockpiles	Project Change 4: Construction of a New Site Road to Connect the KUG Access Corridor to the HWDD	Project Change 5: Modifications to the HWDD	Project Change 6: New Refuse Incinerator	Project Change 7: Installation of Microwave Towers		
Environment	Hydrogeology	Groundwater quantity	○	○	○	○	○	○	○	○	No
		Groundwater quality	○	○	○	○	○	○	○	○	No
	Surface hydrology	Surface hydrology	○	○	○	○	●	○	○	No	
	Surface water quality	Surface water quality	○	○	○	○	●	○	○	No	
	Terrain and soils	Terrain stability	○	●	●	●	●	○	○	No	
		Soil quantity	○	●	●	●	●	○	○	No	
		Soil quality	○	●	●	●	●	○	○	No	
	Terrestrial ecology	Alpine and parkland ecosystems	○	●	○	○	○	○	○	●	No
		Forested ecosystems	○	○	●	●	○	○	○	○	No
		Wetland ecosystems	○	○	○	○	○	○	○	○	No
		Blue- and red-listed ecosystems	○	○	○	○	○	○	○	○	No
		Harvestable plants	○	○	●	●	○	○	○	○	No
		Rare plants and lichens and associated habitat	○	○	○	○	○	○	○	○	No
	Fish and aquatic habitat	Adfluvial bull trout	○	○	○	○	○	○	○	○	No
		Dolly varden	○	○	○	○	○	○	○	○	No
		Rainbow trout	○	○	○	○	○	○	○	○	No
		Periphyton	○	○	○	○	○	○	○	○	No
		Benthic invertebrates	○	○	○	○	○	○	○	○	No
		Sediment quality	○	○	○	○	○	○	○	○	No
	Wildlife	Woodland caribou	○	●	●	●	●	○	○	●	Yes
		Mountain goat	○	●	○	○	○	○	○	●	No
		Moose	○	○	●	●	●	○	○	○	No
		Grizzly bear	○	●	●	●	●	○	○	●	No
Hoary marmot		○	●	○	○	○	○	○	●	No	

(continued)

Table 6-1. Screening of Interactions of Proposed Project Changes with Valued Components (completed)

Assessment Pillar	Subject Area	Valued Components	Interaction with Proposed Project Changes							Assessed in Amendment Application	
			Project Change 1: Use of Existing Fuel Storage Infrastructure	Project Change 2: Realignment of the Exhaust Ventilation Raise Access Road	Project Change 3: Additional Overburden/Soil Stockpiles	Project Change 4: Construction of a New Site Road to Connect the KUG Access Corridor to the HWDD	Project Change 5: Modifications to the HWDD	Project Change 6: New Refuse Incinerator	Project Change 7: Installation of Microwave Towers		
Environment <i>(cont'd)</i>	Wildlife <i>(cont'd)</i>	Furbearers (using American marten and wolverine)	○	●	●	●	●	○	●	No	
		Migratory landbirds	○	●	●	●	●	○	●	No	
		Migratory waterbirds	○	○	●	●	●	○	●	No	
		Raptors	○	●	●	●	●	○	●	No	
		Bats	○	○	●	●	●	○	○	No	
		Western toad	○	○	○	○	○	○	○	No	
Economic	Economic	Aboriginal labour market conditions	○	●	●	●	●	●	●	No	
		Non-Aboriginal labour market conditions	○	●	●	●	●	●	●	No	
Social	Social	Community well-being	○	●	●	●	●	●	●	No	
		Aboriginal community well-being	○	●	●	●	●	●	●	No	
Health	Human health	Human health	○	●	●	●	○	●	○	Yes	
Heritage	Heritage resources	Physical and cultural heritage resources; Paleontological resources	○	○	○	○	○	○	●	Yes	
CEAA 2012 section 5(1)(c)	Effects of changes to the environment on Aboriginal peoples	Health and socio-economic conditions	○	●	●	●	●	●	●	●	Yes
		Physical and cultural heritage	○	○	○	○	○	○	●	Yes	
		Current use of lands and resources for traditional purposes	○	●	●	●	●	○	●	Yes	
		Any structure, site or thing of historical, archaeological, paleontological or architectural significance	○	○	○	○	○	○	●	Yes	

Notes:

○ = an interaction is not expected; no further assessment is warranted.

● = an interaction is expected, but the potential for adverse effects resulting from the proposed Project Change is the same as (or less than) the effects assessed in the EAC Application, OR a previously unconsidered Project component or activity has the potential to result in negligible adverse effects; no further assessment is warranted.

● = an interaction is expected, and has a greater or different potential for adverse effects in comparison with the EAC Application; further assessment is warranted.

Table 6-2. Valued Components Excluded from Amendment Application and Rationale

Subject Area	Valued Component	Rationale for Exclusion
Hydrogeology	Groundwater quantity; Groundwater quality	The proposed Project Changes are not expected to interact with groundwater in the Project study areas identified in the EAC Application or in the vicinity of the microwave towers.
Surface Hydrology	Surface hydrology	<p>Modifications to the HWDD would reroute a drainage area of 0.1 km² from Kemess Creek to Waste Rock Creek. This is equivalent to less than a 0.1% reduction in drainage area of Kemess Creek (Assessment Node: WQ01; drainage area = 111 km²), and a 2% increase in the drainage area of Waste Rock Creek (Assessment Node: Waste Rock Creek to Attichika Creek; drainage area including the HWDD = 6 km²). These changes are within a 5% margin of error that was incorporated into the streamflow and water balance modelling in Section 10.6.1.2 of the EAC Application.</p> <p>No other proposed Project Change is expected to interact with surface hydrology.</p>
Surface Water Quality	Surface water quality	<p>Modifications to the HWDD are expected to result in a negligible change to predicted streamflows in Kemess Creek and Waste Rock Creek (see above). As a result, changes to the potential for adverse effects to surface water quality in Kemess Creek and Waste Rock Creek are expected to be negligible. Modifications to the HWDD will increase the proportion of non-contact water going to Waste Rock Creek. Thus, any change will improve water quality relative to the existing conditions in Waste Rock Creek, which has elevated concentrations of some contaminants of potential concern.</p> <p>No other Project Change is expected to interact with surface water quality.</p>
Terrain and Soils	Terrain stability	<p>Realignment of the exhaust ventilation raise access road, additional overburden/soil stockpiles, new road to connect the Kemess Underground Access Corridor with the HWDD, and modifications to the HWDD have the potential to interact with the terrain stability VC but the potential for adverse effects is the same as (or less than) the EAC Application. The realignment of the exhaust ventilation raise access road and additional overburden/soil stockpiles are expected to have the same magnitude of effects as identified in Chapter 12 of the EAC Application. The new road to connect the Kemess Underground Access Corridor with the HWDD is not located in an area with unstable or potentially unstable terrain. The realignment of the exhaust ventilation raise access road and modifications to the HWDD will reduce the potential for adverse effects associated with terrain stability.</p>
	Soil quantity and quality	<p>The realignment of the exhaust ventilation raise access road, additional overburden/soil stockpiles, new road to connect the Kemess Underground Access Corridor with the HWDD, and modifications of the HWDD have the potential to interact with the soil quantity and quality VCs but the potential for adverse effects is the same as (or less than) the EAC Application. For example, the Proposed Changes will result in a negligible increase in new disturbance in the Local Study Area (less than 0.5 ha of new disturbance) compared to the EAC Application (482 ha lost or degraded).</p>

(continued)

Table 6-2. Valued Components Excluded from Amendment Application and Rationale (continued)

Subject Area	Valued Component	Rationale for Exclusion
Terrestrial Ecology	Alpine and parkland ecosystems	<p>The realignment of the exhaust ventilation raise access road is expected to impact an additional 0.3 ha area during construction. This change is expected to have the same potential for adverse effects as identified in the EAC Application.</p> <p>The four microwave communication towers will be located in areas with exposed or fractured bedrock areas which are common to alpine habitats. The footprint associated with each tower will be less than 0.001 ha. Therefore the potential for adverse effects resulting from the proposed Project Change is the same as the effects in the EAC Application.</p> <p>No other Project Change is expected to interact with alpine or parkland ecosystems.</p>
	Forested ecosystems	<p>The additional overburden/soil stockpiles, new road from the Kemess Underground Access Corridor to the HWDD and modifications to the HWDD are expected to result in an additional 0.7 ha of altered or lost forested ecosystems. This increase is negligible and measures identified in the CEMP and Ecosystems Management Plan are expected to mitigate effects (e.g., minimize the spatial extent of the Project's disturbance where practical and implement field procedures to mark out limits of planned disturbance). Therefore the potential for adverse effects resulting from the proposed Project Change is the same as the effects in the EAC Application.</p>
	Wetland ecosystems	<p>No interactions are expected with the proposed Project Changes as there is no spatial overlap with wetland ecosystems.</p>
	Blue- and red-listed ecosystems	<p>No interactions are expected with the proposed Project Changes as there is no spatial overlap with blue- and red-listed ecosystems.</p>
	Harvestable plants	<p>The additional overburden/soil stockpiles, new road from the Kemess Underground Access Corridor to the HWDD and modifications to the HWDD are expected to result in an increase of 0.7 ha in altered or lost harvestable plants associated forested ecosystems. This increase is negligible and measures identified in the CEMP and Ecosystems Management Plan are expected to mitigate effects (e.g., minimize the spatial extent of the Project's disturbance where practical and implement field procedures to mark out limits of planned disturbance). Therefore the potential for adverse effects resulting from the proposed Project Change is the same as the effects in the EAC Application.</p>
	Rare plants and lichens and associated habitat	<p>No interactions are expected with the proposed Project Changes as there is no spatial overlap with known rare plants, lichens, or associated habitat.</p>

(continued)

Table 6-2. Valued Components Excluded from Amendment Application and Rationale (completed)

Subject Area	Valued Component	Rationale for Exclusion
Fish and Aquatic Habitat	Adfluvial bull trout; Dolly varden; Rainbow trout; Periphyton; Benthic invertebrates; Sediment quality	No interactions are expected with the proposed Project Changes as there will be no instream works. Additionally, no changes are expected to surface water quantity or quality that would impact fish and aquatic habitat.
Wildlife	Mountain goat, moose, grizzly bear, hoary marmot, furbearers, migratory landbirds, migratory waterbirds, raptors, bats, and western toad	<p>The realignment of the exhaust ventilation raise access road has the potential to interact with woodland caribou, mountain goat, moose, grizzly bear, hoary marmot, furbearers, migratory landbirds and raptors as the road is located in alpine habitat. This interaction is considered to be a negligible change from the effects assessed in the EAC Application as approximately 250 m of the road (or 0.25 h) lies outside of the CPA. Further, measures identified in the Wildlife Management and Monitoring Plan (WMMP), such as pre-construction and pre-clearing surveys for alpine species, are expected to mitigate potential effects.</p> <p>The additional overburden/soil stockpiles, new road from the Kemess Underground Access Corridor to the HWDD, and modifications to the HWDD have the potential to interact with woodland caribou, moose, grizzly bear, furbearers, migratory landbirds and waterbirds, raptors and bats due to the location of these changes in forested habitat. This interaction is considered to be a negligible as the changes will impact an additional 0.7 ha. Further, measures identified in the WMMP, such as clearing outside of sensitive timing windows and/or conducting pre-clearing surveys during sensitive timing windows are expected to mitigate potential effects.</p> <p>The installation and maintenance of the four microwave towers has the potential to interact with mountain goat, grizzly bear, hoary marmot, furbearers (wolverine), migratory landbirds and waterbirds, and raptors as these species occur in alpine areas. The tower footprint will be less than 10m² and helicopter-supported maintenance of these sites will be infrequent. Measures in the WMMP with respect to the use of aircraft are expected to mitigate impacts on these species.</p> <p>The proposed Project Changes do not interact with western toad as there is no spatial overlap with wetland ecosystems which provide breeding habitat for this species.</p>
Economic	Aboriginal labour market conditions, Non-Aboriginal labour market conditions	The proposed Project Changes are anticipated to have a negligible interaction with project hiring and procurement. Therefore the proposed Project Changes are not anticipated to change effects assessment conclusions in relation to Aboriginal labour market conditions and non-Aboriginal labour market conditions.
Social	Community well-being, Aboriginal community well-being	Community well-being effects are path-dependent on employment-related changes. As the proposed Project Changes are anticipated to have a negligible interaction with project hiring and procurement, the proposed Project Changes are not anticipated to change effects assessment conclusions for community well-being and Aboriginal community well-being.

7. ANALYSIS OF APPLICABLE VALUED COMPONENTS THAT INTERACT WITH THE PROPOSED CHANGES

7.1 WILDLIFE

7.1.1 Changes to Potential Effects

The use of helicopters to install and maintain the four microwave towers has the potential to adversely affect woodland caribou due to sensory disturbance, as three of the four towers are located within ungulate winter range (UWR) U-7-025 for northern caribou (Figure 7.1-1).

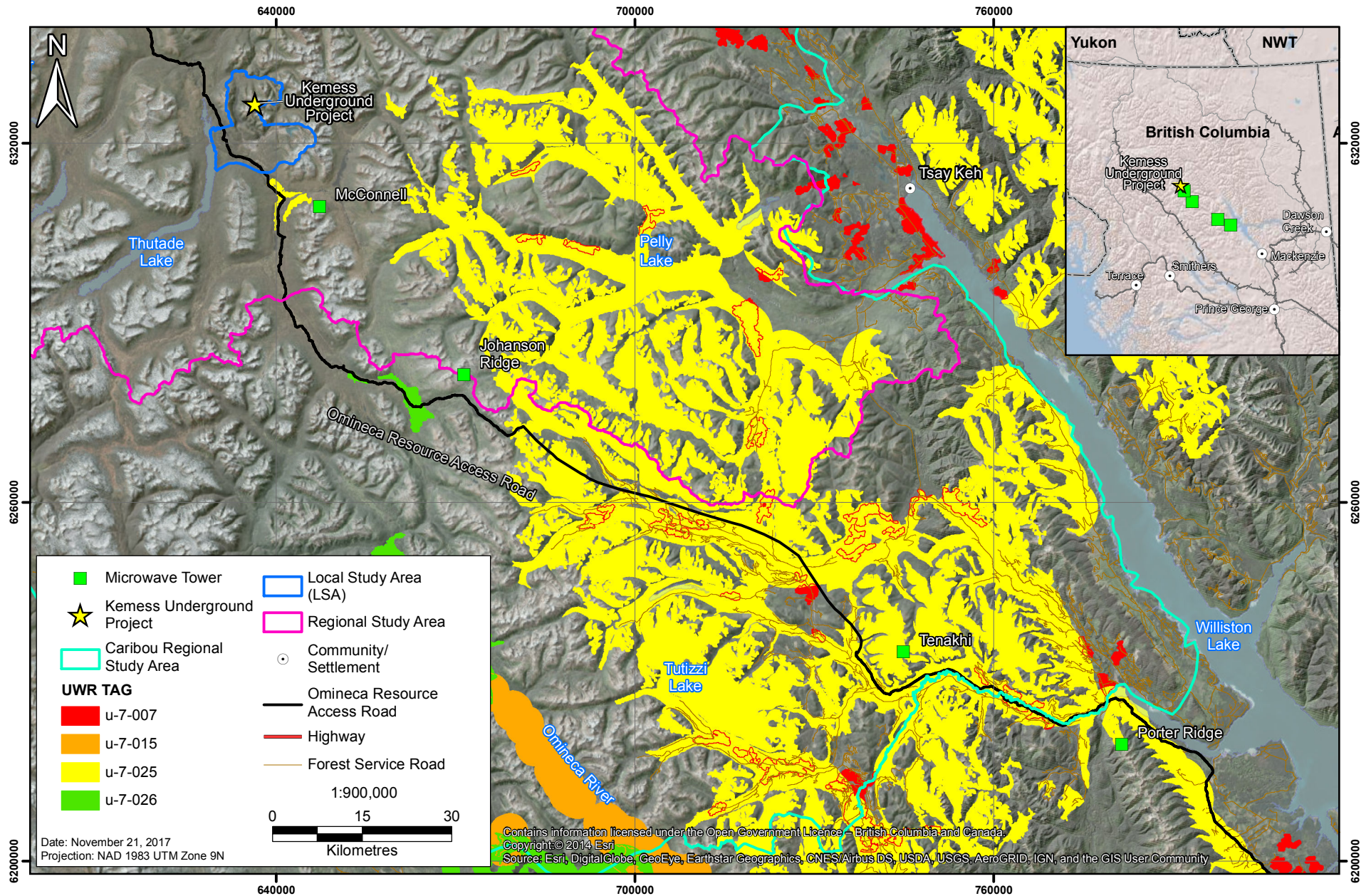
Interactions between the proposed microwave communication towers and woodland caribou are not anticipated to change the effects assessment conclusions in the EAC Application for the following potential effects: habitat loss and alteration; disruption of movement; direct mortality; indirect mortality; attractants; and chemical hazards. Potential effects on habitat loss and disruption of movement is considered negligible as the microwave tower footprint will be less than 10 m². Direct and indirect mortality are not anticipated as tower construction and maintenance will be via helicopter so there is no potential for vehicle-wildlife interactions. Further there will be no new road access so these areas will not be opened up to hunters or predators. Attractants and chemical hazards are not anticipated as there will be no waste left at these sites. No spills of chemicals are anticipated as there is no transport of chemicals and there will be no fueling at the tower sites.

7.1.2 Changes to Mitigation

The WMMP provided with the MA/EMA Application includes measures to mitigate effects from aircraft on mountain goats. These measures can be applied to mitigate effects associated with aircraft on woodland caribou. The following measures are proposed to mitigate potential effects on woodland caribou:

- use topographic barriers to separate helicopters from caribou;
- remain below caribou if possible;
- avoid flying directly towards, hovering near, or landing near caribou;
- maintain a 400 m vertical separation between helicopters and caribou winter range, weather permitting (FLNRO 2014);
- prioritize helicopter access to tower sites during low risk caribou windows (FLNRO 2014):
 - low risk: July 16 to September 14; and
 - caution: September 15 to January 14;
- avoid tower sites between January 15 and July 15 to minimize disturbance to caribou and wolverine, if possible.

Figure 7.1-1
Location of Microwave Towers in relation to Ungulate Winter Range



These mitigation measures align with the guidance provided in the southern mountain caribou recovery strategy (Environment Canada 2014) to manage sensory disturbance and reduce effects during sensitive periods.

7.1.3 Changes to Characterization and Significance of Residual Effects

The potential for the Project Changes to affect woodland caribou is considered to be negligible. With the implementation of new mitigation measures related to the use helicopters, no residual effects of sensory disturbance on woodland caribou related to the microwave towers are anticipated. Consistent with Section 15.6.2.2 of the EAC Application, Project-related sensory disturbance is not predicted to result in a residual effect on caribou.

7.1.4 Conclusions

No new residual effects on wildlife related to the communication towers are anticipated. Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects assessment presented in Sections 15.7 and 15.8 of the EAC Application.

7.2 HUMAN HEALTH

7.2.1 Changes to Potential Effects

The following proposed Project Changes are being carried through for additional analysis with respect to human health (Table 6-1):

- Project Change 3: additional overburden/soil stockpiles;
- Project Change 4: new road to connect the Kemess Underground Access Corridor to the HWDD road; and
- Project Change 6: refuse incinerator.

Construction and use of the realigned exhaust ventilation raise access road will interact with human health through potential changes in air quality. However, as the length of road or activity along the road will be the same as the alignment considered in the EAC Application potential effects will be the same as those considered in the EAC Application and further analysis is not warranted.

The proposed Project Changes listed above have the potential to interact with human health through effects on air quality that are evaluated in Chapter 18 of the EAC Application. Potential effects to air quality from these Project Changes include increased concentrations of particulate matter, criteria air contaminants (CACs), and metals bound to particulate matter, beyond what was predicted by the air quality model included in the EAC Application. The proposed Project Changes are not anticipated to change potential project interactions with other human health effects pathways considered in the EAC Application that include noise levels, drinking water quality, soil quality, and country foods quality. Potential effects of the proposed Project Changes on human health resulting from changes in air quality are assessed below.

The EAC Application included the evaluation of potential human health effects of CACs including particulate matter (i.e., PM_{2.5}, PM₁₀, SO₂, NO₂, CO). Project Changes relevant to particulate matter CACs include the additional overburden/soils stockpiles and new road connecting the Kemess Underground Access Corridor and HWDD. All CACs are relevant to the refuse incinerator.

The presence of new stockpiles is not anticipated to have a material effect on air quality in the Project area. Emission estimates from the EAC Application (Section 7.1 of the EAC Application) show that fugitive dust emissions from stockpiles are a result of material handling. Total project emissions due to material handling are approximately 1% of predicted total particulate matter emissions. This value is not expected to increase appreciably with the new stockpiles and hence no new effects are expected. Emissions due to stockpile erosion were not considered as wind speeds onsite are too low to cause measurable emissions. In addition to the low emissions from stockpiles, following the commitments of the CEMP and Air Quality Management Plan (AQMP) (both plans provided with MA/EMA Application) will limit the amount of particulate matter emissions from stockpiles.

The realignment of the exhaust ventilation access road and presence of 250 m of new road connecting the Kemess Underground Access Corridor and HWDD is not anticipated to have a material effect on air quality in the Project area. Estimates from the EAC Application predict that fugitive dust emissions from all site roads were a maximum of 10% of total particulate matter emissions during construction and less than 1% of total particulate matter emissions during operations. These values are not expected to increase appreciably with the new road and therefore no new effects are expected. In addition, commitments included in the AQMP will limit particulate matter emissions from roads.

Adding a new refuse incinerator to handle putrescible waste will cause emissions of CACs that were not considered as part of the EAC Application. The Project will employ an Eco Waste Solutions ECO 1TN1P Incinerator or similar type of incinerator. The emissions associated with this incinerator are shown in Table 7.2-1.

Table 7.2-1. Refuse Incinerator Estimated Discharge Contaminants

Contaminant	Annual Discharge (kg/year)		Daily Discharge (kg/day)	
	Average	Maximum	Average	Maximum
NO ₂	462.8	578.5	1.27	1.59
SO ₂	129.1	161.3	0.35	0.44
CO	37.7	47.1	0.10	0.13
TSP	98.4	123.0	0.27	0.34
PM ₁₀	40.9	51.1	0.11	0.14
PM _{2.5}	82.1	102.6	0.22	0.28

These emissions are comparable to emissions from the Project due to all sources during the Construction and Operations phases (Table 7.2-2) of the Project. The addition of the refuse incinerator will increase the emissions of any CAC by less than 0.01%. This is expected to have a negligible effect on ground level concentrations predicted in the EAC Application

Table 7.2-2. Summary of Construction and Operations Emissions

Phase	Annual Emissions (tonnes/year)						
	NO _x	SO ₂	CO	VOC	TSP	PM ₁₀	PM _{2.5}
Construction	199	3	89	18	22	13	11
Operations	125	74	429	4	153	75	24

7.2.2 Changes to Mitigation

In addition to air quality mitigation measures incorporated in the AQMP, additional best practices related to operation of the refuse incinerator will be employed. These practices include:

- operating the refuse incinerator according to manufacturer specifications and the Environment Canada *Technical Document for Batch Waste Incineration* (Environment Canada 2010) to reduce the amount of dioxins and furans generated;
- properly training incinerator operators;
- stack testing to determine compliance with standards when required;
- complying with all conditions associated with incinerator operation under discharge permit #14928; and
- managing waste according to the Waste Management Plan by:
 - implementation of a waste reduction program to reduce overall waste incinerated;
 - waste segregation to divert materials that are unsuitable for incineration (e.g., batteries); and
 - waste segregation to reduce the amount of dioxins and furans generated during incineration such as copper (acts as a catalyst) and chloride containing materials such as polyvinyl chloride plastic.

These measures have been incorporated in the AQMP submitted as part of AuRico's MA/EMA Application.

7.2.3 Changes to Characterization and Significance of Residual Effects

The potential for the Project Changes to result in decreased air quality which could alter the human health effects predicted in the EAC Application is considered to be negligible. Thus the conclusion of no residual effects on human health associated with changes in air quality as presented in Chapter 18 of the EAC Application are unchanged.

7.2.4 Conclusions

Consistent with Section 18.6 of the EAC Application, the Project is not anticipated to result in residual effects on the human health VC. There are no new residual effects to the human health VC due to the Project Changes described in Chapter 2. Thus the original conclusion of the human health effects assessment (Chapter 18) in the EAC Application remains the same. Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects

assessment presented in the EAC Application. Additional mitigation measures related to operation of the refuse incinerator will be employed.

7.3 HERITAGE

7.3.1 Changes to Potential Effects

Potential project effects on heritage resources are assessed in Chapter 19 of the EAC Application. No residual effects were identified. The proposed offsite microwave communication towers are the only Project Change being carried through for additional analysis. The communication towers lie wholly outside of areas previously subjected to an archaeological overview or impact assessment. Therefore, this proposed Project Change has the potential to adversely affect heritage resources, if present, due to the movement, excavation, or disturbance of soil during the Construction and Operations phases. All other Project Changes have been subject to archaeological assessment (Crossroads 2013, 2015; Millennia 2017); no associated heritage sites were recorded.

Mitigation and management measures detailed in Section 19.5 and 24.9 of the EAC Application will be implemented prior to and during Project development. Relevant mitigation measures and management strategies include conducting additional archaeological assessments prior to construction, avoiding sites where possible, educating Project personnel, and implementing the Heritage Management Plan and Chance Find Procedure. These measures have been incorporated in the Heritage Management Plan submitted as part of AuRico's MA/EMA Application.

7.3.2 Changes to Mitigation

No additional mitigation and management measures are deemed necessary beyond those described in the EAC Application. Consistent with the mitigation and management measures described in the License of Occupation applications, all four tower sites were submitted for archaeological screening to the BC Archaeology Branch. Although an AIA has not been conducted at the sites, no known archaeological sites are present within a 50 m buffer for each microwave communication tower site.

7.3.3 Changes to Characterization and Significance of Residual Effects

With the implementation of planned mitigation measures and management strategies, no changes to the characterization of residual effects on known and as-yet undiscovered heritage resources are anticipated.

7.3.4 Conclusion

Consistent with Section 19.6 of the EAC Application, the Project is not anticipated to result in residual effects on known and as-yet undiscovered heritage resources. Following mitigation and management measures there are no new residual effects to the heritage VC due to the Project Changes described in Chapter 2. Thus the original conclusion of the heritage effects assessment (Chapter 19) in the EAC Application remains the same. Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects assessment presented in the EAC Application.

7.4 EFFECTS OF CHANGES TO THE ENVIRONMENT ON ABORIGINAL PEOPLES

7.4.1 Changes to Potential Effects

The following Project Changes are being carried through for additional analysis with respect to effects of changes to the environment on Aboriginal peoples (Table 6-1):

- Project Change 3: Additional overburden soil stockpiles in the KLV area;
- Project Change 4: Approximately 250 m of new road to connect the KUG Access Corridor to the KUG TSF HWDD road;
- Project Change 6: refuse incinerator; and
- Project Change 7: four microwave communication tower locations.

The proposed Project Changes have the potential to change effects assessment conclusions relating to Aboriginal Health and Socio-Economic Conditions if they result in changes to human health, country foods consumption, or changes in land-based Aboriginal businesses.

As described in Section 7.2, the proposed Project Changes are not anticipated to change effects assessment conclusions for human health. The proposed Project Changes are not anticipated to interact with fish (Chapter 6), or change the abundance or distribution of wildlife (Section 7.1), or the availability of harvestable plants (Chapter 6). Aboriginal peoples' perceptions of risk related to the consumption of country foods is not anticipated to change as a result of the proposed Project Changes, as perceived risk is related to the Project as a whole and the proposed changes constitute a relatively minor portion of the overall Project. Aboriginal land-based businesses, including guide outfitting, trapping and the sale of traditional herbal teas, are not anticipated to be affected by the proposed Project Changes as the resources used by the businesses will be unaffected.

The proposed Project Changes are not anticipated to change effects assessment conclusions for Aboriginal health and socio-economic conditions. Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects assessment presented in the EAC Application.

The proposed Project Changes have the potential to change effects assessment conclusions for Aboriginal Physical and Cultural heritage if they result in new or additional effects on sacred sites and objects, habitations and trails, and/or intangible cultural heritage.

No sacred sites and objects or habitations and trails are known to be located in the proposed Project Changes. The proposed Project Changes are not anticipated to change effects assessment conclusions regarding Aboriginal people's harvesting activities or use of culturally and spiritually important places. Consequently, the proposed Project Changes are not anticipated to change effects assessment conclusions for intangible cultural heritage.

Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects assessment presented in the EAC Application.

The proposed Project Changes have the potential to change effects assessment conclusions for current use of lands and resources for traditional purposes (CULRTP) if they result in changes in Aboriginal peoples' current fishing, hunting, trapping, gathering or use of culturally important areas.

The proposed Project Changes are not anticipated to interact with fish (Chapter 6), or change the abundance or distribution of wildlife (Section 7.1) or harvestable plants (Chapter 6). As described in Section 7.4, no known sacred sites or objects, habitations or trails, or culturally and spiritually important places are located in the proposed Project Changes.

The proposed Project Changes are not anticipated to change effects assessment conclusions for CULRTP. Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects assessment presented in the EAC Application.

Potential effects of the proposed Project Changes on any structure, site or thing of historical, archaeological, paleontological or architectural significance are considered in relation to the heritage VC (Section 7.3) and the physical and cultural heritage VC (Section 7.4). The proposed Project Changes are not anticipated to change effects assessment conclusions for any structure, site or thing of historical, archaeological, paleontological or architectural significance.

The proposed Project Changes are not anticipated to change effects assessment conclusions for any structure, site or thing of historical, archaeological, paleontological or architectural significance. Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects assessment presented in the EAC Application.

7.4.2 Changes to Mitigation

No additional mitigation and management measures are deemed necessary beyond those described in the EAC Application and Sections 7.1.2, 7.2.2 and 7.3.2 of this Amendment Application.

7.4.3 Changes to Characterization and Significance of Residual Effects

Following the implementation of mitigation measures described in Sections 7.1.2, 7.2.2 and 7.3.2 of this Amendment Application, no changes to the characterization or significance of residual effects are anticipated for Aboriginal Health and Socio-Economic Conditions, Physical and Cultural Heritage, Current Use of Lands and Resources for Traditional Purposes, or Any Structure, Site or thing of Historical, Archaeological, Paleontological or Architectural Significance.

7.4.4 Conclusions

The proposed Project Changes are not anticipated to change effects assessment conclusions for VCs related to effects of changes to the environment on Aboriginal peoples. Consistent with Section 20.9 of the EAC Application, the Project is not anticipated to result in residual effects on Aboriginal groups' Health and Socio-Economic Conditions, Physical and Cultural Heritage, or Any Structure, Site or thing of Historical, Archaeological, Paleontological or Architectural Significance. The Project is anticipated to result in a residual effect on Tsay Keh Nay First Nations' current use of lands and resources for traditional purposes due to decreases in the availability of wildlife resources in the LSA. The proposed Project Changes are not anticipated to change this residual effect, which is rated not significant. Given that there are no changes to the residual effects characterizations, there are no changes to the cumulative effects assessment presented in the EAC Application.

8. ABORIGINAL INTERESTS

The proposed Project Changes have the potential to change effects assessment conclusions for Aboriginal rights and interests if they adversely affect cultural transmission, social and ceremonial practice or resource harvesting.

The proposed Project Changes are not anticipated to result in further access restrictions for Aboriginal peoples. Consequently, the proposed Project Changes will not result in additional interference with Aboriginal peoples' transmission of cultural knowledge while engaging in traditional activities.

As described in Section 7.4, no sacred sites and objects or habitations and trails are known to be located in the proposed Project Changes. The potential for sensory disturbance of social and ceremonial practices is not anticipated to increase as a result of the proposed Project Changes. Consequently, the proposed Project Changes are not anticipated to change effects assessment conclusions for social and ceremonial practices.

As described in Section 7.6, the proposed Project Changes are not anticipated to interact with fish (Chapter 6), or change the abundance or distribution of wildlife (Section 7.1) or harvestable plants (Chapter 6). Consequently, the proposed Project Changes are not anticipated to result in additional interference with Aboriginal peoples' right to harvest resources.

9. PROPOSED AMENDMENTS

In consideration of the above information and evaluation, AuRico requests amendments to Schedule A of EAC #M17-01, as follows:

1. Replace the following text in Section 2.1, Use of Existing Infrastructure:

*“Other existing infrastructure that will be used by the KUG Project includes ore stockpile areas, administration building, workshop, warehouse, laydown areas, electrical substation, camp, airstrip, **diesel storage tanks**, explosives magazines, site roads, water management infrastructure and related facilities.”*

with:

*“Other existing infrastructure that will be used by the KUG Project includes ore stockpile areas, administration building, workshop, warehouse, laydown areas, electrical substation, camp, airstrip, **fuel storage tanks**, explosives magazines, site roads, water management infrastructure and related facilities.”*

2. Replace the following text in Section 2.3, Kemess Lake Valley Area:

*“Temporary waste rock and ore stockpile areas, **overburden stockpile**, propane tank farm, electrical substation and section of 25 kilovolt (kV) electrical transmission line, ventilation fans and air heaters, equipment and supply laydowns, workshop and stores facilities, access and service roads, and office trailers.”*

with:

*“Temporary waste rock and ore stockpile areas, **overburden stockpiles**, propane tank farm, electrical substation and section of 25 kilovolt (kV) electrical transmission line, ventilation fans and air heaters, equipment and supply laydowns, workshop and stores facilities, access and service roads, helipad, and office trailers.”*

3. Replace the following text in Section 2.4, Kemess Underground Access Corridor,:

“Access road, surface conveyor system, 25 kV electrical transmission line, and underground dewatering pipeline within the corridor allowance.”

with:

*“Access road, surface conveyor system, 25 kV electrical transmission line, **overburden stockpiles, water management infrastructure**, and underground dewatering pipeline within the corridor allowance.”*

4. Add “Site road from access road to and along the highwall diversion ditch” to Section 2.4, Kemess Underground Access Corridor
5. Add “Refuse Incinerator” to Section 2.5, Kemess South Mine Site Area
6. Add “Communications link to Mackenzie, including four microwave towers erected between Mackenzie and the KS Mine Site” to Section 2.5, Kemess South Mine Site Area.

7. Replace Map 1, Overall Layout of the Kemess Underground Project, with Map 1 attached in Appendix A of this Amendment Application.
8. Replace Map 2, Kemess Underground Project North Detail, with Map 2 attached in Appendix A of this Amendment Application.
9. Replace Map 3, Kemess Underground Project East Detail, with Map 3 attached in Appendix A of this Amendment Application.
10. Replace Map 4, Kemess Underground Project South Detail, with Map 4 attached in Appendix A of this Amendment Application.

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- AuRico Metals Inc. (AuRico) 2016. *Kemess Underground Project: Application for an Environmental Assessment Certificate*. Assembled for AuRico Metals Inc. by ERM Consultants Canada Ltd.: Vancouver, British Columbia.
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Appendix A

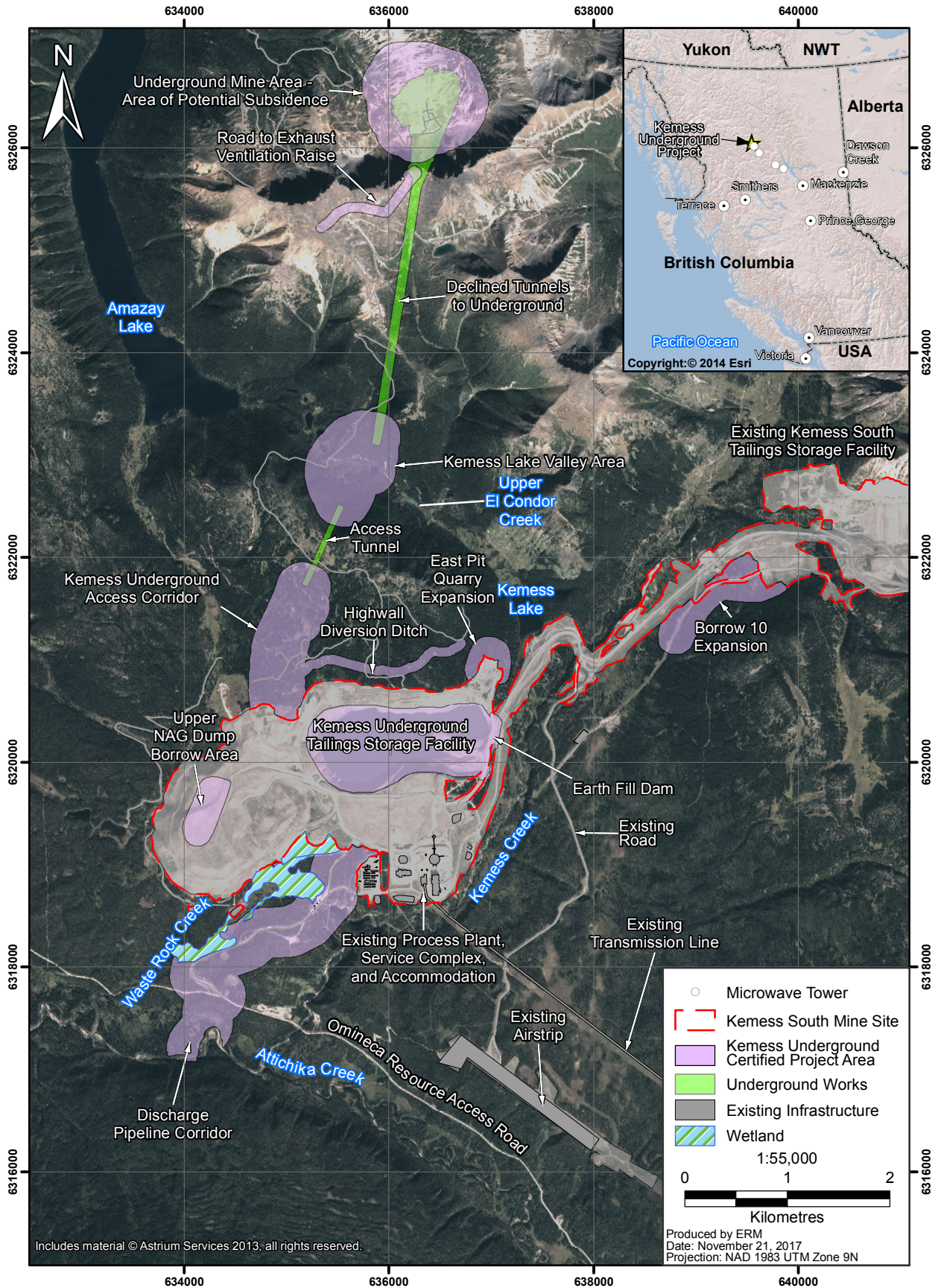
Maps

KEMESS UNDERGROUND PROJECT

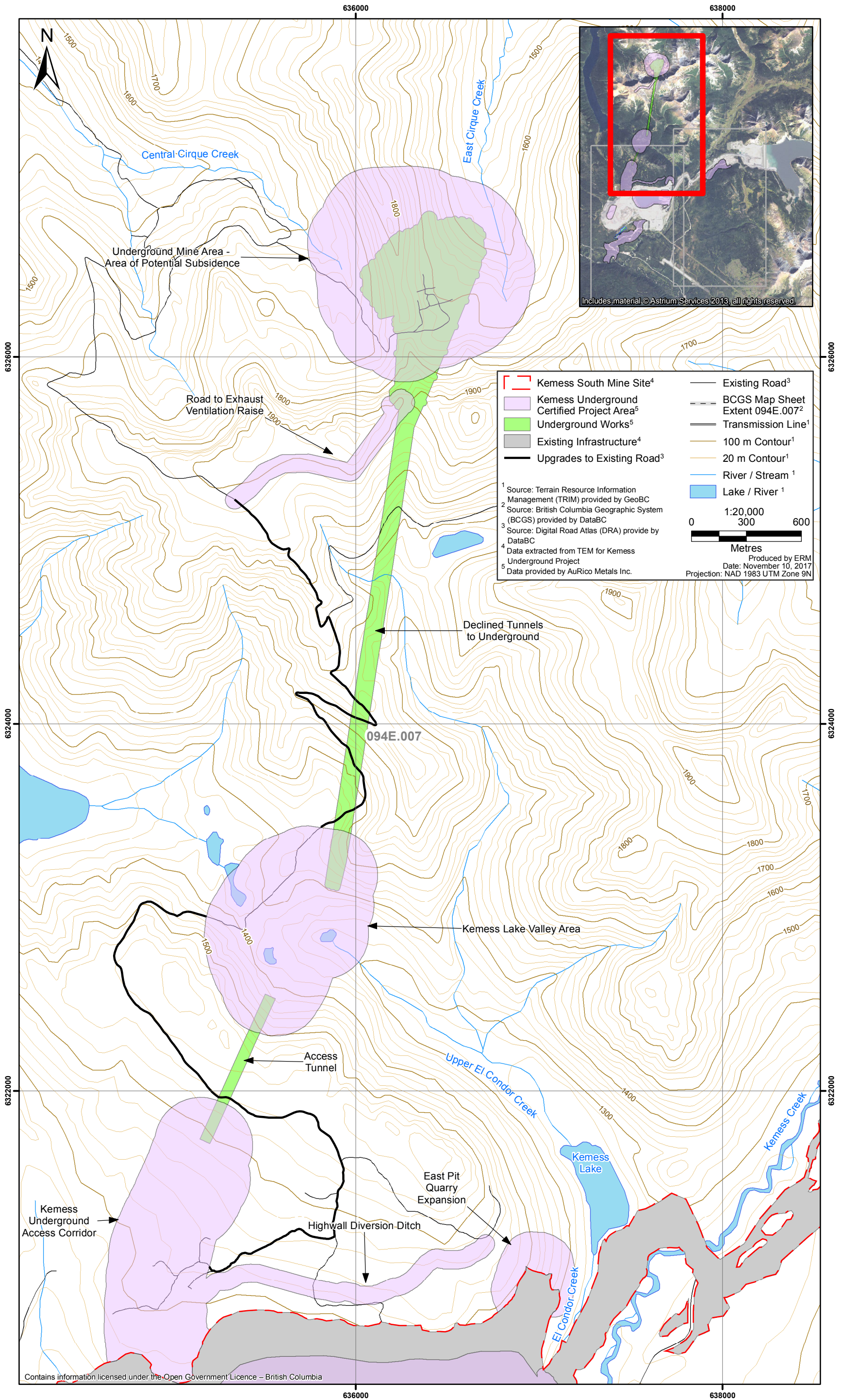
Application for an Amendment to Environmental Assessment Certificate #M17-01

Map 1

Overall Layout of the Kemess Underground Project



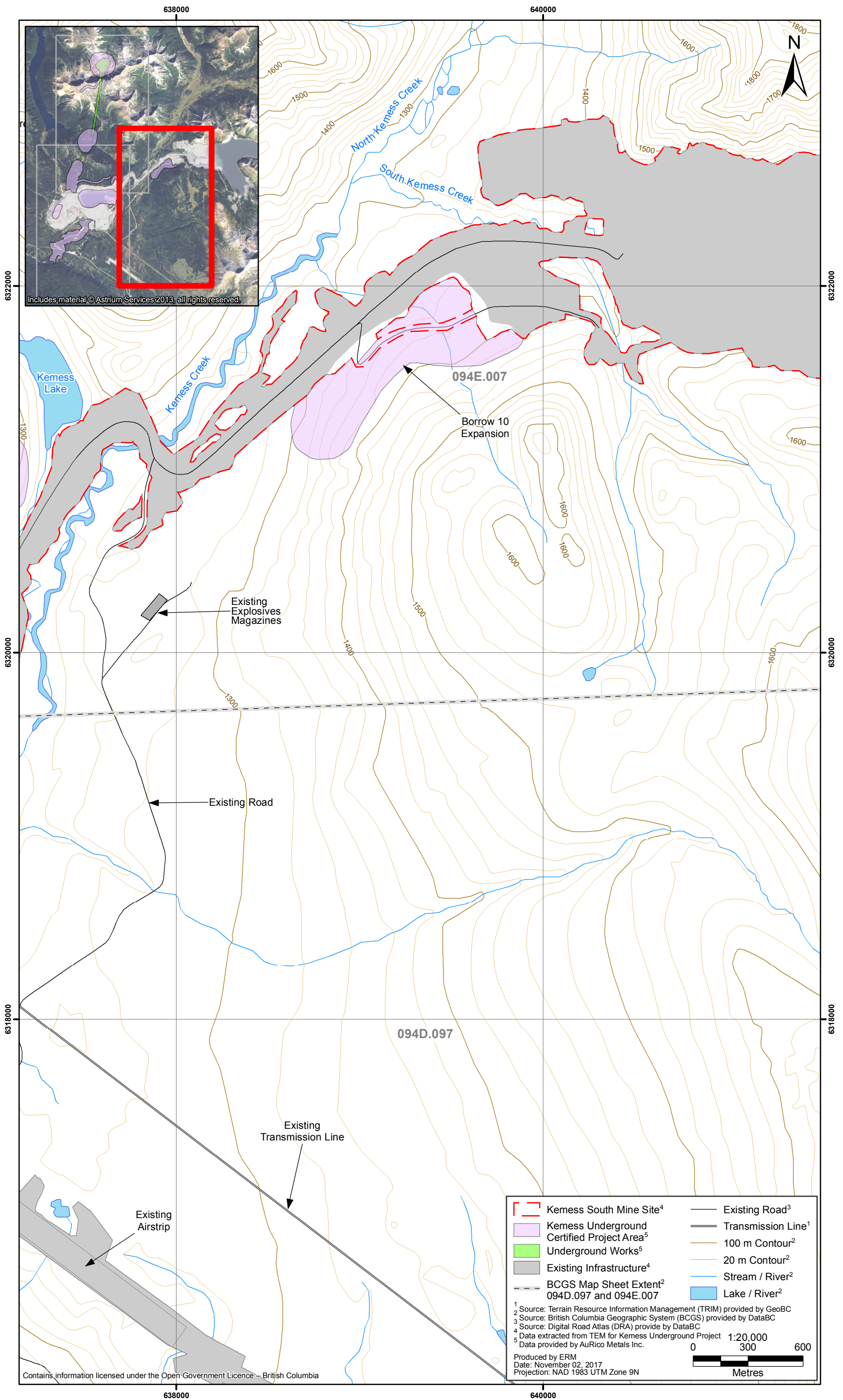
Map 2
Kemess Underground Project North Detail



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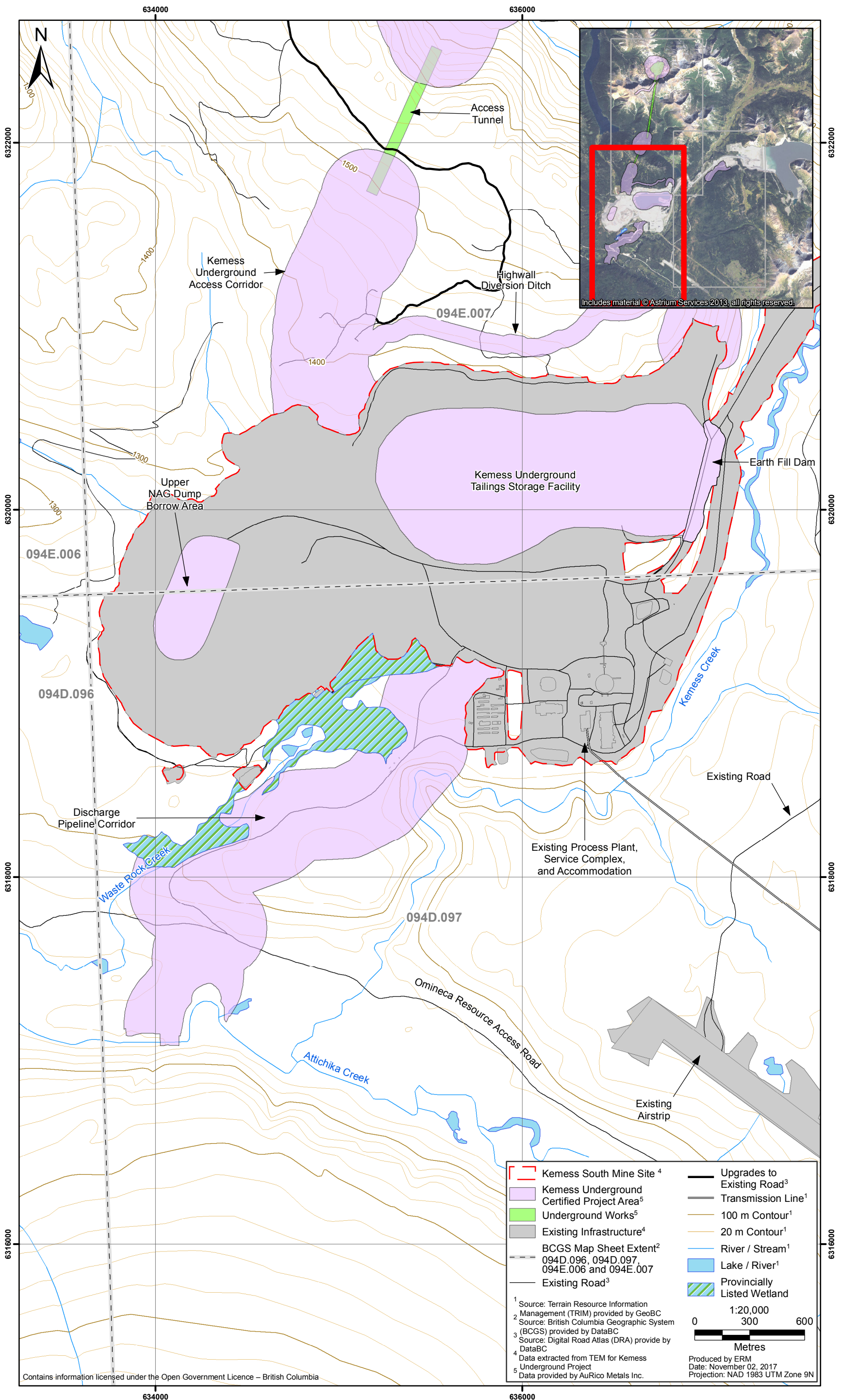
Map 3

Kemess Underground Project East Detail



Map 4

Kemess Underground Project South Detail



Kemess South Mine Site ⁴	Upgrades to Existing Road ³
Kemess Underground Certified Project Area ⁵	Transmission Line ¹
Underground Works ⁵	100 m Contour ¹
Existing Infrastructure ⁴	20 m Contour ¹
BCGS Map Sheet Extent ² 094D.096, 094D.097, 094E.006 and 094E.007	River / Stream ¹
Existing Road ³	Lake / River ¹
	Provincially Listed Wetland

¹ Source: Terrain Resource Information Management (TRIM) provided by GeoBC
² Source: British Columbia Geographic System (BCGS) provided by DataBC
³ Source: Digital Road Atlas (DRA) provide by DataBC
⁴ Data extracted from TEM for Kemess Underground Project
⁵ Data provided by AuRico Metals Inc.

1:20,000
 0 300 600
 Metres
 Produced by ERM
 Date: November 02, 2017
 Projection: NAD 1983 UTM Zone 9N

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