



*Analysis on AuRico Metals Inc.'s Application
for an Amendment to Environmental
Assessment Certificate #M17-01
Kemess Underground Project*

August 2018

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1 Introduction

AuRico Metals Inc. (the proponent) proposed to construct and operate the Kemess Underground Project (the Project), an underground gold-copper mine located approximately 250 kilometres (km) north of Smithers and 430 km northwest of Prince George, British Columbia (B.C.). As proposed, the project is anticipated to have an ore production capacity of approximately 24,650 tonnes per day (105,000 ounces of gold and 44 million pounds of copper per year) using underground block caving methods, over a predicted 13-year mine life.

The Project was subject to an environmental assessment (EA) pursuant to the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and B.C.'s *Environmental Assessment Act*. The federal EA was conducted by means of substitution in accordance with the *Memorandum of Understanding between the Canadian Environmental Assessment Agency (the Agency) and the British Columbia Environmental Assessment Office (EAO) on Substitution of Environmental Assessments (2013)*.

As part of the substituted process, EAO submitted to the Agency an Assessment Report that informed the federal Minister's EA decision. EAO prepared the Assessment Report in consultation with an Advisory Working Group, made up of federal, provincial and local government representatives with mandates and skill sets relevant to the review of the Project, as well as representatives of Takla Lake First Nation, Tsay Keh Dene Nation and Kwadacha Nation, collectively known as Tsay Keh Nay (TKN) First Nations. The Agency also provided advice to EAO in relation to fulfilling the requirements related to CEAA 2012.

On March 15, 2017, following the substituted EA process, the Minister of Environment and Climate Change announced that the Project is not likely to cause significant adverse environmental effects and the Project may proceed. As part of the Decision Statement, the Minister established 87 legally-binding conditions, including mitigation measures and follow-up requirements that the proponent must meet throughout the life of the Project. The Decision Statement includes two conditions that pertain to change(s) to the Project:

2.13 The proponent shall consult with Aboriginal groups prior to initiating any material change(s) to the Designated Project that may result in adverse environmental effects, and shall notify the Agency in writing no later than 60 days prior to initiating the change(s).

2.14 In notifying the Agency pursuant to condition 2.13, the Proponent shall provide the Agency with a description of the potential adverse environmental effects of the change(s) to the Designated Project, the measures proposed to be implemented by the Proponent to mitigate adverse environmental effects, and the results of the consultation with Indigenous groups¹.

¹ Indigenous groups is defined in the Decision Statement for the Project as Takla Lake First Nation, Tsay Keh Dene First Nation, and Kwadacha First Nation (TKN).

Following the federal and provincial EA decisions, the proponent submitted a provincial *Mines Act/Environmental Management Act* Permit Application that provided a description of “engineering optimizations and refinements to the Project to improve water management and site communications, and provide construction, maintenance and operation efficiencies.”

On November 27, 2017, EAO commenced a process to amend the provincial EA certificate. On November 28, 2017, as required by conditions 2.13 and 2.14 noted above, the proponent submitted to the Agency a report entitled *Application for an Amendment to Environmental Assessment Certificate #M17-01* (the Report). The Report described proposed changes to the Project design and assessed potential adverse environmental effects in association with these changes, as well as a description of consultation with Indigenous groups prior to submission of the Report.

EAO’s formal amendment process included consultation and engagement with a Working Group, which included provincial and federal agencies, and TKN First Nations. Between December 2017 and February 2018, EAO submitted two rounds of comments from the Working Group to the proponent to further understand the potential adverse environmental effects associated with the proposed project changes. The proponent responded to Working Group comments between January and March 2018. Based on the limited scope of the proposed project changes, a formal provincial public consultation period was not held. On June 8, 2018, EAO concluded its amendment review process and granted an Amendment to the Kemess Underground Environmental Assessment Certificate.

The Agency considered the proposed project changes and assessed the potential adverse environmental effects of these changes, and is of the view that these changes do not constitute a new or different designated project that may require a new EA. Furthermore, the Agency is of the view that changes or additions to mitigation measures and follow-up requirements included as conditions in the federal EA Decision Statement issued in March 2017 would not be required.

This Analysis summarizes the information provided by the proponent, and evaluates whether existing mitigation measures and follow-up requirements are still applicable, or if modified requirements would be necessary.

1.1 Structure of the Document

This Analysis examines potential adverse environmental effects caused by the proposed project changes as described by the proponent in their submission to the Agency. Individual Valued Components (VCs) are discussed where there is potential for greater or different adverse effects as a result of project changes. VCs discussed in this Analysis are listed as follows:

- Current use of lands and resources for traditional purposes and species at risk (woodland caribou)
- Human health and socioeconomic conditions
- Physical and cultural heritage, and structures, sites, or things of historical, archaeological, paleontological, or architectural significance
- Impacts to Aboriginal rights

2 Proposed Project Design Changes

The Report discusses the following proposed changes to the Project:

- Additional use of existing fuel storage infrastructure;
- Realignment of the exhaust ventilation raise access road;
- Additional overburden/soil stockpiles;
- Construction of a new site road to connect the Kemess Underground Access Corridor with the high wall diversion ditch (HWDD);
- Modifications to the HWDD to create one continuous ditch that incorporates the upper East ditch;
- Installation of a refuse incinerator to handle putrescible wastes; and
- Installation of four microwave towers to provide communication links between the mine site and Mackenzie, B.C.

2.1 Additional use of Existing Fuel Storage Infrastructure

In the EA, the proponent proposed to use existing diesel storage infrastructure associated with Kemess South Mine. The primary storage facility includes an 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. There are also smaller fuel storage vessels located at the existing air strip. Diesel would be used to power vehicles and equipment, including back-up diesel generators and haul trucks.

As part of its proposed project changes, the proponent indicated that fuel types other than diesel, including gasoline and propane, may be stored in the existing fuel storage infrastructure in order to provide more efficient access to fuel, and to limit the need for regular fuel transport to the mine site. EAO's Certified Project Description only refers to the use of fuel storage infrastructure for diesel.

2.2 Realignment of the Exhaust Ventilation Raise Access Road

In the EA, the proponent proposed to upgrade an existing access road to the exhaust ventilation raise above the underground mine. The existing road is approximately 6.15 km in length, originating in the Kemess Lake Valley Area. According to EAO's Certified Project Description, the proponent proposed to upgrade parts of the southern portion of the existing road, and construct up to 2 km of the northern segment of the road. The Report indicates that 1.25 km of the northern segment would be new construction.

As part of the proposed project changes, the proponent has proposed to modify the alignment of the northern segment of the road to locate the road in an area that is better suited to the local topography and outcrop conditions. Approximately 250 m of the proposed road would be outside of the certified project area, covering an area of approximately 0.25 hectares (ha).

2.3 Additional Overburden/Soil Stockpiles

In the EA, the proponent identified overburden and soil stockpiles in the Kemess Lake Valley Area and Kemess Underground Access Corridor. The proponent identified one overburden/soil stockpile with a storage capacity of approximately 37,000 cubic metres (m³) in the Kemess Lake Valley Area and one overburden/soil stockpile with a storage capacity of approximately 67,000 m³ in the Kemess Underground Access Corridor, for a total of 104,000 m³.

As part of the proposed project changes, the proponent has proposed two additional stockpiles (i.e., total of three stockpiles) in the Kemess Lake Valley Area and one additional stockpile (i.e., total of two stockpiles) in the Kemess Underground Access Corridor in order to reduce haulage distances and improve construction efficiency. The proposed volume of overburden/soil stockpiles in the Kemess Lake Valley Area and the Kemess Underground Access Corridor would be approximately 27,000 m³ and approximately 140,000 m³, respectively, for a total of 167,000 m³.

2.4 New Road to Connect the Kemess Underground Access Corridor to the High Wall Diversion Ditch

In the EA, the proponent did not identify a road connecting the Kemess Underground Access Corridor to the HWDD. As part of the proposed project changes, the proponent has proposed a new 250-m long road to connect the Kemess Underground Access Corridor to the HWDD to create a more efficient route between the two areas. The road alignment will also extend along the length of the HWDD for maintenance purposes. The road is located in an area that was assessed in the EA.

2.5 Modifications to the High Wall Diversion Ditch

In the EA, the proponent proposed to use the existing HWDD, located above the tailings storage facility, to divert non-contact runoff around the northern and northwestern perimeter of the tailings storage facility, with runoff entering a collection system to the south and ultimately being discharged in to Waste Rock Creek. A second diversion ditch would be built to divert non-contact runoff around the northeastern perimeter of the tailings storage facility, and ultimately discharge towards Kemess Creek.

As part of the proposed project changes, the proponent has proposed to make modifications to the HWDD alignment in order to create one continuous ditch that combines both the existing HWDD and the second diversion ditch. The proponent has also proposed to place the HWDD further upslope to a more geotechnically stable area. Approximately 1.5 km of the length (1.5 ha in total area) of the modified HWDD would be outside of the Project area.

2.6 Installation of a Refuse Incinerator to Handle Putrescible Wastes

In the EA, the proponent proposed to use on-site landfilling and prompt burial of refuse for waste disposal. An electric fence surrounds the existing landfill, used for the Kemess South Mine, would deter wildlife. As part of the proposed project changes, the proponent has proposed a new refuse incinerator to handle putrescible wastes, in order to reduce landfilled material and manage wildlife attractants. The incinerator was not assessed during the EA.

2.7 Installation of Microwave Communication Towers

In the EA, the proponent did not include any new communications infrastructure, and expected to rely on the existing communications system in place for the Kemess South Mine. As part of the proposed project changes, the proponent proposes to install four microwave towers on mountain peaks between Mackenzie, B.C. and the mine site (Porter, Tenakhi, Johanson and McConnel Ridges). The footprint of each tower is expected to be less than 10 m², for a total of less than 40 m². The proponent estimated that during tower construction, disturbance could be up to 100 m² per location, or 400 m² in total. The areas surrounding the proposed tower sites are rock, so minimal habitat disturbance is expected. The towers would be installed and maintained by helicopter, with frequency of tower maintenance expected to be less than once per month. The towers are located outside of the area assessed during the EA.

3 Potential Adverse Environmental Effects from Proposed Project Changes

The proponent identified potential interactions with VCs that would occur due to the proposed project changes. If the interaction between project changes and a particular VC had a greater or different potential for adverse effects in comparison with what was expected during the EA, then it was carried forward into the assessment. The proponent determined that the following VCs considered under CEAA 2012 would be carried forward into the assessment:

- Current use of lands and resources for traditional purposes (woodland caribou)
- Human health and socio-economic conditions
- Physical and cultural heritage
- Any structure, site or thing of historical, archaeological, paleontological, or architectural significance
- Impacts to Aboriginal Rights

Table 6-2 of the Report provided a rationale for the VCs that were excluded from the assessment on the basis that an interaction with project changes was not expected, or an interaction was expected, but adverse effects would be that same or less than the effects expected during the EA. The Agency agrees with the proponent's rationale for excluding certain valued components from the analysis of effects from proposed project changes.

3.1 Current Use of Lands and Resources for Traditional Purposes & Species at Risk (Woodland Caribou)

Woodland caribou (caribou) were assessed under section 5(1)(c) of CEAA 2012, as caribou was harvested by TKN First Nations near the Project area in the past, though it is not currently harvested by Indigenous groups due to low population numbers. Caribou were also assessed as part of the requirements under section 79(2) of the *Species at Risk Act*. The Decision Statement issued for the Project included conditions in relation to caribou.

3.1.1 Proponent's Assessment

The proponent anticipated that the use of helicopters to install and maintain the four proposed microwave towers has the potential to adversely affect caribou due to sensory disturbance. Three of the four microwave towers would be located within ungulate winter range for northern caribou.

The proponent did not anticipate a change to the effects assessment conclusions described in the EA for other pathways of effects to caribou, including habitat loss and alteration, disruption of movement, direct or indirect mortality, attractants, or chemical hazards. Potential effects on habitat loss and disruption of movement are considered negligible, as the proponent expected the footprint of each microwave tower to be less than 10 m². Direct and indirect mortality were not anticipated as tower construction and maintenance would be done via helicopter so there would be no potential for vehicle-wildlife interactions. Further, there would be no new road access so these areas would not be opened

up to hunters or predators. Attractants and chemical hazards were not anticipated as there would be no waste left at these sites. No spills of chemicals were anticipated as there would be no transport of chemicals and there would be no fueling at the tower sites.

The proponent proposed a number of new mitigation measures for the potential effects on caribou from aircraft:

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

According to the proponent, these mitigation measures are in line with the guidance provided in the *Recovery Strategy for the Woodland Caribou, Southern Mountain population (Rangifer tarandus caribou) in Canada* to manage sensory disturbance and reduce effects during sensitive periods.

The proponent considered the potential for the proposed project changes to affect caribou to be negligible. With the implementation of the proposed mitigation measures related to the use of helicopters, no residual effects of sensory disturbance on woodland caribou related to the microwave towers were anticipated. Furthermore, the proposed project changes were not expected to interact with fish, abundance and distribution of other wildlife species, or harvestable plants. Therefore, the proposed project changes were not anticipated to change the effects assessment conclusions for current use of lands and resources for traditional purposes, including the traditional use of woodland caribou.

3.1.2 Comments Received

Environment and Climate Change Canada

Environment and Climate Change Canada (ECCC) indicated that the proponent had not differentiated between effects to northern and southern mountain woodland caribou in the Report. The proponent responded that interaction between the proposed project changes and the southern mountain caribou herds would be limited to the construction and maintenance of the microwave communication towers. The Porter Ridge tower would fall within the Wolverine herd boundary and the Tenakhi and Johanson Ridge towers would fall within the Chase herd boundary. The McConnel tower and the Local Study Area are within northern mountain caribou habitat.

ECCC further requested that the proponent provide additional information regarding whether the microwave towers located in Ungulate Winter Range would overlap with high or low elevation critical habitat for southern mountain caribou in the Chase local population unit. ECCC requested an estimation of the amount of habitat potentially impacted, including a map that showed how the microwave towers would overlap with critical habitat. In response, the proponent mapped the candidate critical habitat for the Chase herd local population unit, which would overlap with the Johanson Ridge and Tenakhi towers.

The proponent indicated that the total amount of disturbance to the high elevation range critical habitat would be 0.02 ha, which would include temporary disturbance during tower construction. Both of the towers would be situated within high elevation alpine habitat that could potentially be classified as high elevation summer range or high elevation early winter range. The proponent maintained that the potential effects of habitat loss and sensory disturbance to caribou would be negligible. ECCC indicated that this response was satisfactory.

ECCC also expressed concern that effects to Western Toad, a species listed as “special concern” on Schedule 1 of the *Species at Risk Act* was not considered in the Report. The proponent responded that impacts to non-breeding Western Toad habitat would be considered negligible, as the proposed project changes would only increase the Project footprint by approximately 1.75 ha. Two of the components were expected to increase the Project footprint: the road to the exhaust ventilation raise, and the microwave towers. These two components would occur within dry alpine areas where they are considered unsuitable for Western Toad. ECCC indicated that this response was satisfactory.

3.1.3 Agency’s Analysis and Conclusions

The Agency concurs with the proponent and ECCC that habitat loss to caribou from the microwave towers would be negligible, given the small area of total habitat disturbance (0.02 ha), and the fact that access roads are not necessary for tower installation or maintenance. Federal conditions require the proponent to undertake progressive reclamation of the habitats disturbed by the Project, which would include the microwave tower sites (Condition 6.9).

The Agency is of the view that given the infrequency of helicopter trips to and from the microwave towers (less than once per month), sensory effects to caribou would be minor to negligible, and could be minimized by adhering to the proposed mitigation measures for helicopter usage around caribou.

The proponent is required to implement a follow-up program, in consultation with Indigenous groups and relevant authorities, to verify the accuracy of the EA as it pertains to the effects of changes caused by the Project to the Chase herd of southern mountain caribou and the Thudade herd of northern mountain caribou (Condition 6.11). In the event that the follow-up program demonstrates sensory or habitat effects due to installation or maintenance of the microwave towers beyond those predicted in the EA, the proponent is required to implement modified or additional mitigation measures and to monitor these measures (Condition 2.6).

The Agency agrees with the proponent that effects to caribou due to loss of habitat, disruption of movement, direct or indirect mortality, attractants, or chemical hazards due to the proposed project changes would be negligible, and therefore no additional mitigation measures to address these types of effects would be required. As such, the Agency concludes that potential adverse environmental effects due to the proposed project changes on the current use of lands and resources for traditional purposes in relation to caribou would be negligible.

3.2 Human Health and Socio-economic Conditions

Effects to the health and socio-economic conditions of Aboriginal peoples from changes to the environment were assessed under section 5(1)(c) of CEAA 2012. The proponent considered effects to human health from proposed Project changes generally, which were carried forward in the assessment of effects to health socio-economic conditions from changes to the environment on TKN First Nations.

3.2.1 Proponent's Assessment

The proponent anticipated that effects to human health could be affected by three of the proposed project changes: additional overburden/soil stockpiles, the new road between the Kemess Underground Access Corridor and the HWDD, and the proposed refuse incinerator. These project changes could affect air quality beyond what was predicted during the EA.

The proposed project changes are not anticipated to change potential project interactions with other human health effects pathways, including noise levels, drinking water quality, soil quality, and country foods quality.

The addition of new proposed stockpiles is not anticipated to have a material effect on air quality in the Project area. Emission estimates from the EA 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. The proponent stated that this value is not expected to increase appreciably with the new stockpiles and therefore 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, the proponent stated that following the mitigation outlined in their air quality management plan would limit particulate matter emissions from the new stockpiles. Mitigation measures proposed include the use of dust suppressants, stockpile covers, and contouring to reduce wind erosion.

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 also not anticipated to have a material effect on air quality in the Project area. Estimates from the EA predicted 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.

The addition of a refuse incinerator would increase emissions of criteria air contaminants in relation to what was predicted during the EA. The proponent provided average hourly and daily emissions levels for a particular type of incinerator (ECO 1TN1P Incinerator), though it is stated that a similar type of incinerator may also be used.

According to the proponent, the addition of the refuse incinerator would increase Project emissions by less than 0.01%, which would have a negligible effect on concentrations of criteria air contaminants compared to those predicted in the EA. . Therefore, potential adverse effect on human health from the incinerator is anticipated to be negligible.

The proponent proposed new mitigation measures to mitigate potential effects on health from the addition of an incinerator to the proposed Project, including:

- 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:
 - implementing a waste reduction program to reduce overall waste incinerated;
 - segregating waste to divert materials containing heavy metals that are unsuitable for incineration (e.g., batteries) because of mercury emissions; and
 - segregating waste 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.

The potential for the proposed project changes to result in decreased air quality which could alter the human health effects predicted in the EA is considered to be negligible by the proponent.

With respect to effects to socio-economic conditions, Indigenous 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 would be unaffected. The proponent indicated that the proposed project changes are not anticipated to change their conclusions regarding socio-economic conditions.

3.2.2 Comments Received

Health Canada indicated that there was insufficient data provided in the Report to determine whether or not there would be a human health effect from the incinerator. For example, Health Canada indicates that potential dioxins and furans generated during incineration were not assessed. Health Canada further indicated that NO₂, which would be emitted from the incinerator, is considered a non-threshold substance, and therefore health risks exist below current guidelines.

In response, the proponent stated that the predicted concentrations of criteria air contaminants during the EA were well below the air quality objectives for all averaging periods, and that the incinerator would increase emissions by less than 0.01%. The proponent stated that to reduce emissions of dioxins and furans, the incinerator waste would be segregated to remove polyvinyl chloride plastic such as saran

or food wrap, drinking straws, and rigid food containers such as buckets and pails. Emissions of mercury would be avoided by preventing incineration of materials that contain heavy metals, such as batteries.

No dispersion modelling was conducted with respect to dioxin and furan concentrations. However, the proponent indicated that the incinerator would be operated according to manufacturer specifications and ECCC's Technical Document for Batch Waste Incineration to reduce the amount of dioxins and furans generated. No other contaminants of potential concern are known to be emitted from the incinerator other than those previously discussed and all CACs (NO₂, SO₂, CO, PM₁₀, PM_{2.5}, TSP) are predicted to increase by less than 1% due to incinerator emissions.

The proponent further acknowledged that health risks from exposure to NO₂ exist below the Canadian Ambient Air Quality Standard levels and efforts would be made to keep concentrations as low as possible. However, the proponent indicated that the small increase in NO₂ concentrations is likely not measurable and would not change the conclusions of the human health risk assessment conducted in the EA. While health effects from exposure to NO₂ are possible at any level of exposure, this small increase is negligible and there are no permanent human receptors (other than mine staff) that could be exposed to the emissions.

Health Canada indicated that the proponent should be required to assess air emissions from the incinerator, and any risks to human health, in their ambient air quality monitoring, including contaminants such as dioxins and furans.

Health Canada also expressed concern regarding the increase in volume of overburden/soil stockpiles in the Kemess Underground Access Corridor from 67,000 m³ to 140,000 m³, and requested additional information of how the mining process had changed to result in this volume increase, and how this increased volume would impact mitigation measures proposed. Health Canada further indicated that PM_{2.5} is a non-threshold substance, and that health risks exist below the guidelines. Therefore, mitigation should be targeted towards reducing exposure at any concentration.

The proponent indicated that no major changes to the mining process had been proposed, but instead the change in volume resulted from conducting more detailed engineering design. The proponent acknowledged that health risks from exposure to PM_{2.5} exist below the ambient air quality standard levels, and that mitigation measures outlined in the proponent's existing air quality management plan would be implemented to keep concentrations as low as possible. However, it was stated that there are no permanent human receptors other than workers that could be exposed to the emissions. It was also indicated that changes to the volume of overburden/soil stockpiles would not necessitate any changes to the management plans and mitigation measures proposed.

Health Canada also expressed concerns regarding the potential for microwave towers to affect human health due to electromagnetic fields (EMFs). In response, the proponent stated that EMF effects from power lines and microwave towers can cause weak electric currents to flow through the human body. However, public exposure to EMFs from microwave towers is typically negligible due to the relatively low power levels. All of the tower sites associated with the Project would be built with highly directional antennas with a very tight focused radio frequency pattern. As such, the radios can run at very low

wattage while achieving great range. The proponent further stated that, for the most part, the radios and towers are well out of the areas in which humans would normally travel and far beyond the mine site. Furthermore, the radios used are regulated by the federal government to ensure that they are transmitting within safe limits. The proponent indicated that given the distance and free air loss experienced by the signal, the amount of EMF experienced at the mine site would be orders of magnitude smaller than that generated by a cellular telephone. Health Canada indicated that this response was adequate.

3.2.3 Agency's Analysis and Conclusions

The Agency concurs with Health Canada that certain air contaminants, including NO₂ and PM_{2.5}, should be considered non-threshold in nature, and therefore any increase in the emissions of the substance could result in increased health risk. However, given the very marginal increase in emissions, the Agency is of the view that this increased health risk due to the proposed project changes would be negligible.

The Agency concurs with Health Canada that the proponent should monitor effects to air quality from the incinerator, including contaminants such as dioxins and furans, and verify the accuracy of the EA with respect to effects to the health of Indigenous peoples from changes to air quality. The proponent should also monitor effects to air quality resulting from handling of overburden and soil stockpiles, as the proponent did not quantify the increase in emissions that would result from the proposed increase in stockpile volume.

Conditions in the Decision Statement for the Project require the proponent to implement a follow-up program to verify the accuracy of the EA as it pertains to adverse effects on the health of Indigenous peoples caused by changes in concentrations of contaminants of potential concern identified during the EA in air, soil, water, and sediment (Condition 5.1). The proponent is required to identify levels of environmental change relative to established baseline that would require the proponent to implement modified or additional mitigation measure(s) to mitigate increased risks to human health.

Given that this condition requires the proponent to conduct ambient air quality monitoring to verify the predicted effects to air quality, and implement modified or additional mitigation measures in the event that there is an increased risk to human health due to changes to air quality, the Agency is of the view that no additional mitigation measures would be required.

3.3 Physical and Cultural Heritage, and Structures, Sites, or Things of Historical, Archaeological, Paleontological, or Architectural Significance

Effects to Indigenous physical and cultural heritage, as well as structures of historical, archaeological, paleontological, or architectural significance (heritage resources) to Aboriginal peoples were assessed under section 5(1)(c) of CEEA 2012. The proponent considered potential effects to TKN First Nations and Gitksan Wilp Nii Kyap's heritage resources from the construction of the microwave towers.

3.3.1 Proponent's Assessment

The proponent indicated that the proposed offsite microwave communication towers are the only proposed project change carried forward for additional analysis, since the towers would be placed in areas not previously subjected to an archaeological impact assessment. Therefore, the microwave towers have the potential to adversely affect heritage resources, if present, due to the movement, excavation, or disturbance of soil during the construction and operations phases.

No known archaeological sites are present within a 50-m buffer around each microwave tower site. The proponent indicated that there would be no change to mitigation measures, as the measures proposed during the EA would be sufficient. These include conducting additional archaeological assessments prior to construction, avoiding archaeological sites where possible, educating personnel, and implementing a chance find procedure.

The proponent indicated that no change to the characterization of residual effects on known and as-yet undiscovered heritage resources are anticipated.

3.3.2 Comments Received

No federal or Indigenous comments were provided on effects to Physical and Cultural Heritage, and Structures of Historical, Archaeological, Paleontological, or Architectural Significance.

3.3.3 Agency's Analysis and Conclusions

The Agency is of the view that while an archaeological impact assessment has not been conducted at the sites of the microwave towers, existing mitigation measures are adequate to prevent significant adverse effects to physical and cultural heritage, and structures, sites, or things of historical, archaeological, paleontological or architectural significance.

Condition 7.1 requires the proponent to immediately halt work, inform Indigenous groups, and have a qualified individual conduct an assessment monitored by Indigenous groups in the event that any previously unidentified archeological structures, sites, or things of historical, archaeological, paleontological, or architectural significance discovered by the proponent or brought to the attention of the proponent. The proponent must also comply with all applicable legislative or legal requirements and associated regulations and protocols respecting the discovery, recording, transferring, and safekeeping of previously unidentified archeological structures, sites, or things of historical, archaeological, paleontological, or architectural significance.

The Agency is of the view that effects to physical and cultural heritage and structures, sites, or things of historical, archaeological, paleontological, or architectural significance as a result of the installation and maintenance of the microwave towers would be unlikely given the towers' small size and remote locations. However, in the event that an archaeological chance find does occur, Condition 7.1 would ensure that any effect would be negligible to low in magnitude.

3.4 Impacts to Aboriginal Rights

The impacts to the rights of TKN First Nations, as affirmed in Section 35 of the *Constitution Act, 1982*, were assessed using the information gathered through the environmental assessment. The Project is located within the traditional territories of the Takla Lake First Nation and Tsay Keh Dene Nation. The traditional territory of the Kwadacha Nation is adjacent to and downstream from the Project.

3.4.1 Proponent's Assessment

The proponent indicated that the proposed project changes have the potential to change the 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 TKN First Nations, and therefore would not result in additional interference with the transmission of cultural knowledge while engaging in traditional activities. No sacred sites and objects or habitations and trails are known to be located in the areas of the proposed project changes, and the potential for sensory disturbance of social and ceremonial practices is not anticipated. Therefore, the proposed project changes are not anticipated to change the effects assessment conclusions for social and ceremonial practices. The proposed project changes are not anticipated to interact with fish, or change the abundance or distribution of wildlife or harvestable plants, and therefore the proposed project changes are not anticipated to result in additional interference with Aboriginal peoples' right to harvest resources.

3.4.2 Comments Received

No federal or Indigenous comments were provided on impacts to Aboriginal rights.

3.4.3 Agency's Analysis and Conclusions

No issues were raised by TKN First Nations in the review of the proposed project changes, including issues related to impacts to their Aboriginal rights.

The Agency concurs with the proponent that given the minor and spatially-limited nature of proposed project changes, and the fact that almost all of the changes are within the existing project site, it would be unlikely that they would result in further access restrictions or interference with engaging in traditional activities.

While there are potential effects to caribou as a result of the installation and maintenance of microwave towers, given the small area of caribou habitat affected by the towers and the infrequent sensory disturbance, effects to any caribou harvesting rights as a result of project changes would be negligible. Effects to fish, other wildlife species, and harvestable plants are not anticipated.

4 Consultation with Indigenous Groups

The federal government has a common law duty to consult and, where appropriate, accommodate Aboriginal peoples when the Crown contemplates conduct that might adversely affect section 35 rights. Consultation is also undertaken more broadly as part of good governance, sound policy development

and appropriate decision making. Since August 2017, the proponent has engaged with the TKN First Nations as members of the provincial Mine Review Committee regarding the proposed project changes, for its provincial *Mines Act/Environmental Management Act* permit applications. According to the proponent, these engagements have included face-to-face meetings, teleconferences and emails. The proponent distributed a copy of the *Mines Act/Environmental Management Act* permit application to the TKN First Nations on August 31, 2017, which included a comparison of the proposed project changes with EAO's Certified Project Description.

AuRico provided a draft of the Report to the TKN First Nations on November 3, 2017 for a 14-day review and comment period. The proponent did not receive any comments from TKN First Nations during this period.

Au Rico and EAO also notified Gitxsan Wilp Nii Kyap, Doig River First Nation, Halfway River First Nation, Sauteau First Nations, West Moberly First Nations, Fort Nelson First Nation, Blueberry River First Nation, Prophet River First Nation, and McLeod Lake Indian Band regarding the proposed amendment.

5 Conclusion

Given the minor to negligible environmental effects anticipated from the proposed project changes, existing mitigation measures, and in light of expert advice and views received from ECCC and Health Canada, the Agency has determined that changes or additions to mitigation measures and follow-up requirements would not be required.

In the event that any additional material changes to the Project that could result in adverse environmental effects are proposed by the proponent, the proponent would be required to comply with Conditions 2.13 and 2.14 of the Decision Statement for the Project, including consulting Indigenous groups and providing the Agency with a description of the environmental effects of the changes and proposed mitigation.