Analysis Report

WHETHER TO DESIGNATE THE **TOUQUOY GOLD MINE EXPANSION PROJECT** IN NOVA SCOTIA PURSUANT TO THE *IMPACT ASSESSMENT ACT*

November 2021

Contents

Purpose

The Impact Assessment Agency of Canada (the Agency) prepared this report for consideration by the Minister of Environment and Climate Change Canada (the Minister) in deciding whether to designate the Touquoy Gold Mine Expansion Project (the Project) pursuant to section 9 of the *Impact Assessment Act* (IAA).

Project

The Project, proposed by Atlantic Mining Nova Scotia Inc. (the Proponent), is the modification and expansion of the existing gold mining operations of the Touquoy Gold Mine, located in Moose River, Nova Scotia. As proposed, the Project would allow the current open pit to be used for tailings disposal once mining activities have ended. The Project would also include the expansion of the waste rock storage and clay borrow areas, as well as the relocation of the plant access road; increasing the current mine size of 271 hectares by 18 hectares (7%).

Context of Request

On July 23, 2021, the Minister received a request to designate the Project from the Eastern Shore Forest Watch Association, which was co-signed by Atlantic Salmon Federation, East Coast Environmental Law, Ecology Action Centre, Nature Nova Scotia, Nova Scotia Salmon Association, Sierra Club Canada Foundation (Atlantic Chapter), St. Mary's River Association, Save Caribou, Save Our Seas and Shores Coalition, and four individuals. A second request was received on August 16, 2021, from the Native Council of Nova Scotia.

Requester concerns are included in Appendix I. The requests generally expressed concerns about:

- the interconnectedness with the proposed Touquoy expansion and three proposed satellite gold mines (Beaver Dam Mine Project, Fifteen Mile Stream Gold Project, and Cochrane Hill Gold Project) currently undergoing a coordinated federal-provincial environmental assessment under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012);
- the potential for direct or incidental effects as a result of a federal authority's exercise of a power or performance of a duty or function;
- the cumulative effects of the placing tailings from three additional mines in the open pit;
- effects to fish and fish habitat;
- effects to migratory birds;
- effects to species at risk;
- effects on sensitive habitats, including wetlands; and
- impacts on the Mi'kmaq of Nova Scotia and their established Aboriginal and Treaty rights.

On July 27, 2021, the Agency sent a letter to the Proponent notifying them of the designation request and requesting information. In addition, the Agency requested advice and/or input from federal authorities and provincial departments, as well as potentially affected Mi'kmaq of Nova Scotia.

The Proponent responded on August 18, 2021, with technical information about the Project, its positive economic benefits and its view that the Project should not be designated.

Advice on applicable legislative mechanisms and potential effects due to the Project was received from Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO), Health Canada, Natural Resources Canada (NRCan), Indigenous Services Canada, and Transport Canada. The Nova Scotia Department of Environment and Climate Change provided similar advice.

The Agency received a response from the Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO), which raised concerns regarding adverse effects to groundwater, fish and fish habitat, and the cumulative effects of the Project. KMKNO also expressed support for a federal impact assessment in correspondence addressed to the Province on August 17, 2021, and again in correspondence to the Agency on August 27, 2021.

Project Context

Project overview

The Project would involve modifications to the Touquoy Gold Mine, which are required for the following reasons:

- minerals have been more widely spread than expected across the strata, which has increased the amount of waste rock produced;
- materials originally classified as waste rock are now being considered as medium grade ore that will be processed for mineral extraction; and
- the storage capacity of the waste rock storage area was reduced due to the requirement for environmental controls and to avoid a wetland area.

The Touquoy Gold Mine was subject to a provincial environmental assessment and received approval in 2008. The Project was not subject to a federal environmental assessment at that time. Mining operation began in October 2017, with commercial production attained in March 2018. Production is estimated at 8,400 tonnes of ore per day with an anticipated total ore production of 9.35 million tonnes with a recovery of 0.4 million ounces of gold.

The proposed modifications were recently subject to a provincial environmental assessment. Federal departments participated in the review and provided advice to the Province. In addition, the Agency facilitated meetings between provincial and federal reviewers to support the review of the provincial environmental assessment and this federal designation request. On September 8, 2021, the provincial Minister of Environment and Climate Change determined that the registration document provided is insufficient to make a decision, and that additional information is required.

Pending regulatory approval to proceed, work will begin immediately on the waste rock storage area, plant access road and clay borrow area. The in-pit tailings disposal is planned to begin in 2022.

Related to the Project are three proposed gold mines (Beaver Dam Mine Project, Fifteen Mile Stream Gold Project, and Cochrane Hill Gold Project) currently undergoing a coordinated federal-provincial

environmental assessment under CEAA 2012. Although the provincial registration document describes the proposed modifications as being necessary solely for ongoing operations at the Touquoy Gold Mine and does not refer to these satellite mines, the Beaver Dam Mine Environmental Impact Statement (EIS) and Fifteen Mile Stream Gold (EIS), as well as the Cochrane Hill Gold Project Description, all presume the Touquoy pit is fully approved as a tailings management facility (TMF) and provide no other alternative for tailings disposal. The EIS Guidelines for all three projects require an assessment of any changes to processes and infrastructure at the Touquoy Gold Mine, including the storage of project-related tailings in the open pit.

Project components and activities

The proposed Project consists of four components:

- in-pit tailings disposal;
- waste rock storage area expansion;
- clay borrow area expansion; and
- relocation of the plant access road (Figure 1).

In-pit tailings disposal: In-pit tailings disposal would involve subaqueous deposition of a conventional tailings slurry through a barge. The pit is currently actively dewatered with water being pumped to the TMF. Dewatering would be discontinued approximately five months prior to the start-up of tailings deposition into the open pit. Once dewatering ceases, groundwater infiltration and precipitation into the open pit would create subaqueous conditions for tailings disposal. Water treatment (cyanide destruction) would occur at the process plant prior to the tailings slurry leaving the plant for disposal. Tailings would be deposited by end-of-pipe discharge, beginning in the lower areas and moving radially around the exhausted pit. The tailings pipe would be suspended in the pond by floats or as the pit fills, a floating barge. Initially, the pipe would likely discharge from surface at a lower bench as the bottom of the pit has a deeper basin. Seasonal tailings deposition is proposed to occur in a manner that would avoid beaching of deposited tailings where ice lensing has been reported to occur at other Canadian open pit mines.

The open pit is proposed to collect all site drainage and runoff and replace the existing TMF. As the pit fills and becomes a lake, it would be treated as a batch reactor with the objective of adjusting the pH to precipitate metals to improve discharge quality. Water levels in the pit would be maintained below the spill elevation of 108 metres above sea level until the water in the pit lake meets the *Metal and Diamond Mining Effluent Regulations* (MDMER) discharge limits. Surplus water would be treated in situ or pumped and treated in an adjacent treatment plant or the existing Touquoy effluent treatment plant at a rate of approximately 400 cubic metres per hour. During closure, surplus water would be allowed to discharge via the proposed spillway/conveyance channel to Moose River, subject to meeting regulatory discharge criteria.

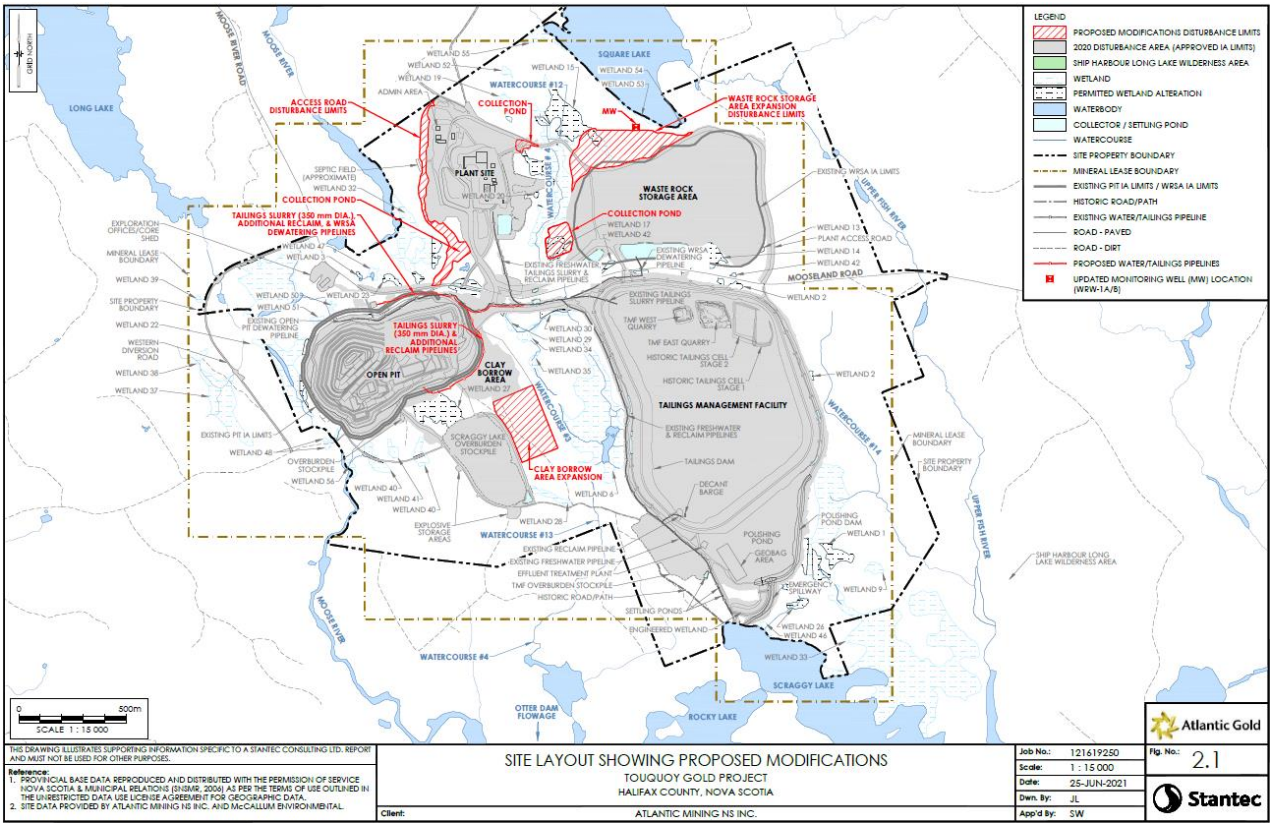
Waste rock storage area expansion: The storage capacity for waste rock and low/medium grade ore would increase by 7.1 hectares from 35 hectares to 42.1 hectares, of which 13 to 21 percent is potentially acid generating. This expansion would include alteration to Wetland 15, a coniferous and shrub swamp in which Blue Felt Lichen (listed as Special Concern under the *Species at Risk Act*) was identified. Updates to water management and drainage infrastructure would also be required.

Clay borrow area expansion: The clay borrow area would increase by 5.9 hectares from 8.4 hectares to 14.3 hectares. The expansion would avoid environmentally sensitive features (e.g. wetlands, watercourses, rare vegetation). Site preparation would involve incremental clearing and grubbing on a seasonal basis.

Relocation of the plant access road: The relocated plant access road would be 1278 metres long and 14.6 metres wide with a footprint of 4.45 hectares. Construction would involve clearing a right of way 20 metres in width and adding a 0.65 hectare parking lot. The proposed route would avoid sensitive environmental features (e.g. wetlands, watercourses and rare plants). The road would be constructed from waste rock and gravel sourced from the mine site and would include sediment control features such as a berm along the western side with surface grading to a ditch on the eastern side. The ditch would discharge to a clay-lined containment pond located at the low point along the road.

Portions of the plant access road and waste rock storage area expansion would be located on provincial Crown land that is currently leased by the Proponent.

Figure 1: Site Layout Showing Proposed Modifications (AMNS, 2021)



Analysis of Designation Request

Authority to designate the Project

The *Physical Activities Regulations* (the Regulations) of the IAA identify the physical activities that constitute designated projects. The Project, as described in the information provided by the Proponent, is an expansion of an existing mine which would result in an increase of less than 50% in the area of mining operations, and as such is not included in the Regulations.[1]

Under subsection 9(1) of the IAA the Minister may, by order, designate a physical activity that is not prescribed in the Regulations. The Minister may do this, if, in the Minister's opinion, the physical activity may cause adverse effects within federal jurisdiction or adverse direct or incidental effects, or public concerns related to those effects warrant the designation.

The carrying out of the Project has not substantially begun and no federal authority has exercised a power or performed a duty or function that would permit the Project to be carried out, in whole or in part.[2]

Given this understanding of the Project, the Agency is of the view that the Minister may consider designating this Project pursuant to subsection 9(1) of the IAA.

Potential adverse effects within federal jurisdiction

The designation request review identified the potential for adverse effects within federal jurisdiction, as defined in section 2 of the IAA, and gaps related to the Proponent's assessment. However, the Agency is of the view that potential changes in the environment that would cause effects within federal jurisdiction can be managed through existing legislative mechanisms.

The closest federal lands are *Indian Act* reserve lands (Millbrook First Nation) located 13 km from the Project. Effects on federal lands from the Project are not expected.

Appendix I provides a summary table of the potential adverse effects and associated public concerns, mitigation measures proposed by the Proponent, and relevant legislative mechanisms if the Project proceeds. Appendix II lists the applicable regulatory mechanisms.

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[1] Section 19(c) in the case of an existing metal mine, other than a rare earth element mine, placer mine or uranium mine, if the expansion would result in an increase in the area of mining operations of 50% or more and the total ore production capacity would be 5000 tonnes per day or more after the expansion.

[2] The Minister must not make the designation if the carrying out of the physical activity has substantially begun, or a federal authority has exercised a power or performed a duty or function in relation to the project (subsection 9(7) of the IAA).

Fish and Fish Habitat

The Agency considered information provided by the Proponent, DFO, ECCC, NRCan, the requesters, and the Mi'kmaq of Nova Scotia in its analysis. Based on available information, the Agency is of the view that the Project has the potential to cause adverse effects to fish and fish habitat including through potential reduction of surface water quantity and quality. However, these effects are anticipated to be managed through existing regulatory and legislative frameworks.

Eastern Shore Forest Watch raised concerns that using the Touquoy pit to store tailings could result in a reduction of base flow to Moose River and changes in the groundwater and surface water quality of Fish River and Moose River. DFO advised that they have low confidence in the Proponent's conclusions regarding flow reductions for Moose River and recommended that additional studies be completed. NRCan stated that acid rock drainage and metal leaching from mine waste have the potential to impact the quality of groundwater, surface water, and sediments. ECCC and NRCan noted that any discharge into Moose River would be subject to the *Metal and Diamond Mining Effluent Regulations* until the mine achieves Recognized Closed Mine status at which time any effluent or discharges would need to meet the provincial *Contaminated Sites Regulations*.

Both Eastern Shore Forest Watch and the Native Council of Nova Scotia raised concerns with the predictions derived from groundwater modelling of the site. Project impacts to groundwater quality or quantity can impact surface water bodies by reducing base flow contributions or by contributing contaminants of concern causing deleterious effects on fish habitat. The KMKNO also identified several gaps related to the groundwater model and expressed concern that the model is not a reasonable representation of site conditions and current effects to groundwater from the pit dewatering that could be exacerbated by the expansion.

Eastern Shore Forest Watch expressed concern with adverse impacts to fish species, particularly Atlantic Salmon, in Fish River and Moose River. DFO advised that the Project has the potential to cause adverse effects to aquatic species at risk should Southern Upland Atlantic Salmon and/or American Eel be listed under the *Species at Risk Act*. DFO also disagreed with the Proponent's assessment that habitat in Moose River is not suitable for Atlantic Salmon spawning as juvenile salmon have been observed during previous fish surveys.

DFO, ECCC, and the KMKNO raised concerns with the lack of baseline information provided on the Project's effects on several water bodies of concern. DFO is concerned about impacts to nearby Square Lake from the expansion of the waste rock storage area, siltation from the haul roads and the new clay borrow pit, and reductions in flows in Watercourse #4. ECCC indicated a lack of baseline data on the concentrations of contaminants in sediments, as sediments are known to accumulate contaminants over time, and the lack of assimilative capacity studies for Watercourse #4.

DFO noted that if the Project results in the harmful alteration, disruption or destruction of fish habitat and/or the death of fish and impacts to aquatic species at risk, a *Fisheries Act* authorization would be required. There is currently insufficient information available to determine whether such an authorization would be required or if proposed mitigation measures would be sufficient to address concerns. If required, *Fisheries Act* authorizations would include mitigation and offsetting measures to address potential impacts to fish and fish habitat (including water withdrawal). Provided the Proponent engages with DFO through the regulatory

processes, the Agency is of the understanding this would be sufficient to address potential impacts that could arise from such activities.

The provincial Minister of Environment and Climate Change noted similar concerns regarding the Proponent's Environmental Assessment Registration Document in his September 8, 2021, determination that information was insufficient to make a decision on the Project and that additional information was required. The provincial Minister of Environment and Climate Change determined that the Proponent must provide additional information specifically related to issues raised by the requesters, the Mi'kmaq of Nova Scotia, and federal reviewers regarding: in-pit mine tailings disposal; groundwater and surface water; and, fish and fish habitat.

The Agency is of the view that the provincial requests for additional information and subsequent review process, combined with potential oversight from DFO through the *Fisheries Act* authorization process, is sufficient to address potential adverse effects to fish and fish habitat.

Migratory Birds

The Agency considered information provided by the Proponent, ECCC, the requesters, and the Mi'kmaq of Nova Scotia and is of the view that the potential for adverse effects to migratory birds due to the Project is expected to be limited and can be managed through compliance with applicable legislation and regulatory processes.

The Proponent stated that vegetation communities that provide habitat to migratory birds will be lost or disturbed by the Project including a portion of Wetland #15 which has the potential to support Canada Warbler (listed as "threatened" under Schedule 1 of the *Species at Risk Act*) breeding habitat. The Proponent noted these habitats that would be directly impacted by the Project are likely of low-quality due to their close proximity to the operating Touquoy Gold Mine. The Proponent also noted that these vegetation communities are regionally abundant, therefore the effects due to the loss of these habitats are anticipated to be limited.

The Agency understands that measures to avoid adverse effects to migratory birds, including to any listed species under the *Species at Risk Act,* have been incorporated into the planning and design Project (see Appendix I for proposed mitigations by the Proponent). Potential adverse effects would be appropriately managed through adherence to applicable legislation such as the Nova Scotia *Environment Act*, *Migratory Birds Convention Act*, *1994,* and the *Species at Risk Act*. To support compliance, ECCC recommended that activities related to vegetation removal be scheduled to avoid breeding season of birds found in the project area.

In his September 8, 2021, decision regarding the Proponent's Environmental Assessment Registration Document, the provincial Minister of Environment required additional information specifically related to the provision of additional flora and fauna data and additional analysis for the avoidance of Wetland #15, a Wetland of Special Significance under Nova Scotia Environment and Climate Change Wetland Policy. The Agency notes that the Nova Scotia *Environment Act* requires a Wetland Alteration Approval if avoidance of wetland habitat is not possible. Alterations to a wetland classified as a Wetland of Special Significance are not supported by Nova Scotia Environment and Climate Change unless work is being completed as a

Necessary Public Function or to maintain, restore, or enhance the wetland.[3] Should a provincial Environmental Assessment Approval, and subsequently a Weltand Alteration Approval, be issued, compensation for lost wetland habitat is required by the Province.

The Agency is of the view that the provincial requests for additional information and subsequent review process, combined with the required provincial Wetland Alteration Approval process (including the requirement for compensation), is sufficient to address the potential adverse effects to migratory birds.

Indigenous Peoples of Canada

The Agency considered information provided by the Proponent, DFO, ECCC, Health Canada, the requesters, KMKNO, and the Native Council of Nova Scotia.

The Agency is of the view that the potential for adverse effects to traditional and cultural use of lands is expected to be limited because the Project is largely located within the existing Touquoy Gold Mine site, and therefore access to the lands proposed for the Project is already restricted.

The Agency understands that potential effects to fish and migratory birds, as noted above, or other wildlife species of importance could adversely affect the current use of lands and resources for traditional purposes by the Mi'kmaq of Nova Scotia, and identified relevant regulatory processes and legislation in earlier sections of this report.

Results of the 2021 Archaeological Resource Impact Assessment (ARIA) and subsequent shovel testing in an area of high archaeological potential did not identify any cultural artifacts. Should archaeological sites be encountered or suspected during work, all activities would halt and the provincial Special Places Program would be contacted. The Proponent also indicated that if finds are in the Mi'kmaq context, the KMKNO, Confederacy of Mainland Mi'kmaq, or nearest Mi'kmaq community would also be contacted. KMKNO advised the Agency that based on the information provided by the Proponent and a review of their internal data sources, no major concerns were identified. However, KMKNO stressed the need for further consultation and engagement with Mi'kmaq communities to continue to research physical and cultural heritage of the surrounding area.

Due to the proximity of Mi'kmaq of Nova Scotia communities to the Project, potential effects to their health could occur from project-related changes to air quality, water quality, noise, and country foods. Health Canada noted that further information is needed to fully understand the potential for the Project to cause adverse effects on human health such as:

- consideration of project impacts sensitive human receptors such as seniors, pregnant or nursing mothers and infants;
- consideration of project impacts on consumers of higher quantities of local country foods;
- assessment of baseline noise data, and providing noise monitoring data from 2017;
- providing historical air quality monitoring data, assessing current ambient levels of air pollutants; and,

[3] Short_Guide__Wetland_Alteration_Application_Approval_Process_1.0.pdf (novascotia.ca)

- consideration of the potential for country food contimantion from degredation in surface water quality by effluent.

Changes to air quality, water quality and noise that could trigger health, social or economic effects would be localized and addressed via provincial mechanisms in place. For example,the Agency understands that the Touquoy Gold Mine operates under an existing provincial Industrial Approval that contains terms and conditions related to noise and air emissions. It is expected that an amended Industrial Approval, should the Project be approved to proceed, would contain similar conditions. Further, in his September 8, 2021, decision regarding the Proponent's Environmental Assessment Registration Document, the provincial Minister of Environment required additional information specifically related to groundwater and surface water quality.

Transboundary Effects

Consideration of transboundary effects under federal jurisdiction includes transboundary waters, greenhouse gas and other air emissions, and climate change.

ECCC stated that the Project has the potential to cause adverse effects due to greenhouse gas emissions. The Proponent did not provide an estimate of greenhouse gas emissions, but predicted that emissions would be generated from fuel combustion from construction vehicles and machinery and limited to the construction phase of the expansion project. The Proponent will manage greenhouse gases from vehicle emissions according to the existing Greenhouse Gas Management Plan for the Touquoy Gold Mine. Annual air quality monitoring will continue to be conducted in accordance with the Industrial Approval requirements for the Touquoy Gold Mine.

Due to the distance from provincial and international borders (109 and 320 kilometres, respectively), transboundary effects in other provinces or outside of Canada are not anticipated.

Other Considerations

Cumulative Effects

The Agency considered information provided by the Proponent, ECCC, the requesters, and the Mi'kmaq of Nova Scotia and is of the view that cumulative effects can be addressed through existing regulatory processes.

Cumulative effects were a prominent concern of requesters and the Mi'kmaq of Nova Scotia, specifically the lack of consideration of the effects from the disposal of tailings from three additional mines into the Touquoy open pit in the Proponent's Environmental Assessment Registration Document. ECCC, HC, DFO also recommended that these effects be assessed. In addition, ECCC recommended the Proponent conduct a detailed capacity analysis of modified components in consideration of the anticipated waste resulting from the processing of ore from the proposed satellite mines.

The potential cumulative effects related to surface water resources, fish and fish habitat, wetlands, species at risk, loss of access to lands for the Mi'kmaq of Nova Scotia, long-term impacts to the availability of traditional resources, and trucking were also noted by requesters and/or reviewers.

In his September 8, 2021, decision regarding the Proponent's Environmental Assessment Registration Document, the provincial Minister of Environment and Climate Change required additional information specifically related to the mine pit capacity for project tailings and future proposed tailings deposition.

The Agency will conduct an assessment of any changes to processes and infrastructure at the Touquoy Gold Mine, such as the storage of project-related tailings in the open pit, in the coordinated federal-provincial environmental assessments under CEAA 2012 (Beaver Dam, Fifteen Mile Stream and Cochrane Hill). The Agency will also consider cumulative effects related to fish and fish habitat, trucking, species at risk, loss of access to lands and impacts on the Mi'kmaq of Nova Scotia, as part of these assessments, as applicable.

Species At Risk

The Agency understands that five federally listed migratory bird species and one lichen species listed on Schedule 1 of the *Species at Risk Act* have the potential to occur within the Project area and to the Agency's knowledge, no critical habitat under the *Species at Risk Act* is located within the Project footprint. DFO noted that the Southern Upland Atlantic Salmon and American Eel are currently under consideration for listing under the *Species at Risk Act.* Therefore, the Project has the potential to cause effects to aquatic species at risk should a future decision be made to list these species. Impacts to aquatic and migratory bird species at risk are considered in those sections of this report.

Requesters identified concerns with potentially impacted wetlands which provide habitat for Blue Felt Lichen (listed as "special concern" under Schedule 1 of the *Species at Risk Act* and "vulnerable" under the Nova Scotia *Endangered Species Act*). The Proponent recorded three occurrences of Blue Felt Lichen during 2004 and 2005 lichen surveys. Two of the occurrences are located outside of the Project footprint and no direct impacts to these wetlands are anticipated. Requesters expressed concern about the potential effects on Blue Felt Lichen caused by impacts to Wetland 15 from the expansion of the waste rock storage area. The Proponent noted that the Blue Felt Lichen observed within this wetland are located 125 metres from the project development area and this area is not expected to be impacted. The Proponent also noted that Wetland 15 is expected to be large enough to remain self-sufficient and retain its baseline hydrological and ecological function because only 0.62 hectares (6.5%) of the wetland will be directly impacted.

In his September 8, 2021, decision regarding the Proponent's Environmental Assessment Registration Document, the provincial Minister of Environment required the Proponent to provide additional analysis for avoidance of Wetland 15.

It is the view of the Agency that the potential adverse effects to species at risk would be limited through project design and existing legislative mechanisms.

Potential adverse direct or incidental effects

Direct or incidental effects refer to effects that are directly linked or necessarily incidental to a federal authority's exercise of a power or performance of a duty or function that would permit the carrying out, in whole or in part, of a project, or to a federal authority's provision of financial assistance to a person for the purpose of enabling that project to be carried out, in whole or in part.

The Project as described may potentially require the exercise of the following federal powers, duties, or functions:

- *Fisheries Act* authorization, administered by Fisheries and Oceans Canada; and
- *Species at Risk* Permit, administered by Fisheries and Oceans Canada.

The carrying out of the Project has the potential to cause adverse direct or incidental effects on fish and fish habitat, species at risk, and the Mi'kmaq of Nova Scotia. Additional information would be required to understand the potential effects; however, effects are expected to be addressed through the requirements set by the relevant federal authorities.

Potential federal authorizations or approvals are listed in Appendix II.

Public concerns

The Minister must consider if the public concerns related to effects within federal jurisdiction warrant the designation of the Project.

The concerns expressed by the requesters, the general public, and the Mi'kmaq of Nova Scotia that relate to effects within federal jurisdiction are noted above in the relevant section and in Appendix I.

Most concerns expressed relate to adverse effects within federal jurisdiction or adverse direct or incidental effects, including: effects on fish and fish habitat, migratory birds, species at risk, and the Mi'kmaq of Nova Scotia. The Agency is of the view that these concerns would be addressed through the provision of additional information requested through the provincial environmental assessment process, compliance with federal and provincial legislation, and through applicable federal and provincial permits (see Appendix I and Appendix II).

Potential adverse impacts on the rights of Indigenous peoples

The Agency, in relation to subsection 9(2) of the IAA, is of the view that while there is the potential for the Project to cause adverse impacts on rights that are recognized and affirmed by section 35 of the *Constitution Act, 1982* (section 35 rights), existing legislative mechanisms would include Indigenous consultation and address impacts.

Potential adverse effects within federal jurisdiction, as described in Appendix I, that could impact section 35 rights, include effects on local water resources, potential impacts to fish and fish habitat, and potential impacts on traditional practices such as harvesting and hunting. In conducting this analysis, the Agency considered potential impacts to the Mi'kmaq of Nova Scotia and the comments received from KMKNO. KMKNO advised the Agency that the Project would clearly negatively impact their Section 35 rights to hunt and fish throughout Mi'kma'ki (unceded land of the Mi'kmaq people). The Project continues to impede that ability in the surrounding area. Specifically, American Eel, Atlantic Salmon, and Brook Trout are all species that are important to the Mi'kmaq and are all found in the project area. KMKNO and the Native Council of Nova Scotia also noted a lack of consultation and engagement with this Project.

DFO noted that there are Mi'kmaq of Nova Scotia fisheries that may overlap with the project area and that the Project has the potential to cause adverse effects to aquatic species at risk should a future decision be made to list Southern Upland Atlantic Salmon and/or American Eel under the *Species at Risk Act*. The Agency notes that DFO would consult with the Mi'kmaq of Nova Scotia should an application for a *Fisheries Act* authorization or *Species at Risk Act* permit be required.

The Province also consults with the Mi'kmaq of Nova Scotia throughout its environmental assessment review and subsequent permitting processes. The Agency notes that the provincial Minister of Environment and Climate Change has required additional information from the Proponent, including in several areas of concern noted by the Mi'kmaq of Nova Scotia, and will hold an additional comment period on the Addendum to the Registration Document, once submitted.

Regional and strategic assessments

There are no regional or strategic assessments pursuant to sections 92, 93, or 95 of the IAA that are relevant to the Project.

Conclusion

To inform its analysis, the Agency sought and received input from the Proponent, ECCC, DFO, Health Canada, Natural Resources Canada, Indigenous Services Canada, Transport Canada, and Nova Scotia Environment and Climate Change. In addition, the Agency considered the concerns in the letter sent to the Minister by Eastern Shore Forest Watch and the Native Council of Nova Scotia as well as comments received from KMKNO. Further, the Agency considered the potential for the Project to cause adverse impacts on the rights that are recognized and affirmed by section 35 of the *Constitution Act, 1982.*

The Agency is satisfied that the potential for adverse effects, as described in subsection 9(1) of the IAA, would be managed through existing legislative mechanisms and regulatory processes, including the provincial environmental assessment, provincial and federal regulations, provincial consultation, and federal permits, if required.

Appendix I

Appendix I: Analysis Summary Table

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
A change to fish and fish habitat, as defined in subsection 2(1) of the *Fisheries Act*	**Proponent:** The Proponent confirmed the presence of thirteen fish species in the upper Fish River Watershed. Of those thirteen species, twelve were confirmed to be present in Scraggy Lake and are assumed to be present in Square Lake and Moose River. The Proponent stated that fish and fish habitat may be affected by the removal of riparian vegetation, alterations to stream flow, introduction of sediments and contaminants of potential concern, alteration of groundwater quantity and quality, and changes in water levels in waterbodies caused by water management activities: • Without mitigations, water management activities associated with the Waste Rock Storage Area (WRSA) expansion and the new Clay Borrow Area would be expected to result in changes to stream flow to Watercourse #4 (8.3% to the upper catchment and 2.8% in the total catchment). To avoid a loss of water quantity, Watercourse #4 will be supplemented with flow from a newly constructed water management pond. After flow is returned to Watercourse #4 from the WRSA, the Proponent anticipates that nitrate concentrations would increase for a period of time. The Proponent intends on limiting nitrate concentrations by establishing a vegetated cover. Given that the maximum elevated predicted concentrations are anticipated to be temporary, and the predicted nitrate concentrations are expected to be below Canadian Water Quality Guidelines – Freshwater Aquatic Life (CWQG-FAL), a substantial change to fish habitat quality is not anticipated by the Proponent. • An engineered spillway will be connected to Watercourse #4 which may result in a small area of fish habitat loss below the ordinary high-water mark. The operation of heavy equipment below the high-water mark for the engineered discharge could impact fish health and survival due to direct or indirect injury to fish, larvae, or eggs.	• Authorization pursuant to section 34.4(1) of the *Fisheries Act* for the death of fish may be required. • Authorization pursuant to section 35(1) of the *Fisheries Act* for the harmful alteration, disruption, or destruction of fish habitat may be required. • The Project must comply with the prohibitions and requirements of the MDMER. • Class I Environmental Assessment Approval under the provincial *Environment Act.* • Approval for the use or alteration of a

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	The Proponent states that when practically feasible, work would only occur during the low flow period to avoid in-water work. • Groundwater seepage associated with the WRSA expansion has the potential to result in changes to surface water quality. The Proponent does not anticipate that this seepage would result in exceedances to CWQG-FAL, Nova Scotia Tier 1 Environmental Quality Standards (NS Tier 1 EQS), or baseline concentrations within Fish River and Ship Harbour Wilderness Area, and therefore is not expected to impact the quality of fish habitat. • As the water level within the in-pit tailings disposal area rises above the shallow bedrock, there is a potential for changes in fish habitat within Moose River as a result of groundwater seepage. Moose River is limited in its capacity to assimilate aluminum, arsenic, and iron due to its baseline exceedances of CWQG-FAL. Assimilative capacity modelling shows that water quality will meet CWQG-FAL (or baseline) at the end of the 120 m mixing zone within Moose River, except for arsenic which will be below the Site Specific Water Quality Objectives of 30 µg/L. The Proponent predicts that there will be no measurable effects downstream of the Local Assessment Area and Regional Assessment Area, or within the Ship Harbour Wilderness Area. • Discharges of effluent containing concentrations of contaminants of potential concern above the CWQG-FAL into Moose River from the open pit tailings disposal and into Watercourse #4 from the new water management pond could result in impacts to fish and fish habitat. Fish health could be affected by the uptake of metals or other pathological effects (i.e. gill damage). The Proponent will manage and treat the effluent to meet the *Metal and Diamond Mining Effluent Regulations* (MDMER) authorized limits or site-specific guidelines prior to discharge. The Proponent stated that effects to fish and fish habitat are not expected, and if they do occur they would be localized to the mixing zone. The Proponent stated that potential effects to fish and fish habitat will be assessed by Environmental Effects Monitoring programs as required under MDMER for final discharges.	watercourse, water resource or wetland under the provincial *Environment Act*. • Amendment to the existing Industrial Approval under the provincial *Environment Act*

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	• Treated effluent from the in-pit disposal area and new water management pond has the potential to be a higher temperature than the receiving waters. The temperature of the effluent from the in-pit disposal area is anticipated to be similar to those recorded in Square Lake. Therefore the Proponent does not anticipate the temperature difference to negatively impact fish habitat quality in Moose River. Changes in water temperature from the water management pond will be mitigated by discharging cooler water from the bottom of the pond into Watercourse #4. The Proponent proposed to implement the following additional measures to mitigate potential effects to fish and fish habitat, including: • avoiding work within 30 metres of a watercourse, wetland, or the property boundaries, without necessary permits; • implementing sediment and erosion control measures prior to clearing activities; • performing work at a time and in a manner to protect watercourses from siltation and disturbance; • installing sediment control measures prior to construction, which will be maintained until erodible material is stabilized; • avoiding refuelling activities within 30 metres of a watercourse or waterbody; • planning the duration of work below the ordinary high-water mark to respect Fisheries and Oceans Canada (DFO) timing windows, as required; • scheduling work to avoid high precipitation and runoff events, or other periods that could increase the potential for erosion and sedimentation; • using fish screens or other barriers to prevent fish from entering the in-pit disposal area; • using water management infrastructure as far upstream as is practically feasible; and • treating effluent (as required) to applicable regulatory limits prior to discharge.	

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	Additionally, the Proponent proposed measures to mitigate potential impacts to groundwater, surface water, and wetlands that could potentially affect fish and fish habitat, including: • using standard seepage cut-off collars where trenches extend below the water table to mitigate preferential flow paths; • using standard bedrock grouting methods along the wall of the open pit to prevent migration of groundwater; • collecting and treating effluent composed of inflows, runoff, or seepage from the open pit walls, WRSA, and the tailings management facility (TMF) if required, prior to discharge to the environment during the operation and post closure phases; • constructing a water management pond to supplement the flow and attenuate peak discharges to Watercourse #4; and • avoiding intact forest stands and wetlands, when possible. If intact habitat cannot be avoided, minimize overall areas of disturbance and maintain existing vegetation cover, if practicable. The Proponent stated that with the implementation of the proposed mitigation measures, best management practices, site-specific design features, and the adherence to existing management plans for the current mine, significant residual environmental effects on fish and fish habitat are not anticipated. **Federal Authorities:** Environment and Climate Change Canada (ECCC) stated the Project has the potential to cause adverse effects to groundwater and surface water quality through the release of suspended solids, ammonia, nitrate, hydrocarbons, and other contaminants through erosion, sedimentation, runoff, and the settling of airborne particulate matter into surface water. ECCC noted that the use of the open pit for the storage of tailings has the potential to result in interactions between groundwater and surface waters which may degrade surface water quality, impacting fish and fish habitat.	

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	Natural Resources Canada (NRCan) also noted that acid rock drainage and metal leaching associated with the Project would potentially impact groundwater, surface water, and sediment quality. In addition, there is potential for a reduction in the quantity of surface and groundwater caused by using the open pit for tailings disposal and by the expansion of the WRSA, which has the potential to alter the volume of water in nearby water bodies. DFO advised that as proposed, the Project has potential to cause adverse effects to fish and fish habitat. DFO acknowledged that connecting an engineered spillway to Watercourse #4 will result in the loss of fish habitat from Watercourse #4. DFO is concerned about potential impacts to fish and fish habitat in Watercourse #4 from siltation from the mine site and a reduction in flows. DFO advised that there were inconsistencies and issues with the Proponent's assessment and daily flow monitoring data for Moose River, and that DFO has low confidence in the Proponent's assessment of the effects of the Project on Moose River. DFO advised that additional information and studies are needed to understand whether project activities have resulted in flow reductions at Moose River. DFO does not agree with the Proponent's assessment that Moose River is not suitable for Atlantic Salmon spawning as fish surveys have identified juvenile Atlantic Salmon in Moose River in the vicinity of the mine site. DFO conducted site visits in 2008 and 2020 and assessed Moose River as suitable spawning habitat. DFO noted that the Proponent did not adequately show that the temperature of waterbodies receiving discharges from the mine site would not be affected. It was also noted that the Proponent did not provide enough information to determine that fish in Watercourse #3 would not be stranded by the change of flow. DFO expressed the following concerns with the mitigations proposed by the Proponent: • Sedimentation of fish habitat has been an issue for the mine, as stated in the Environmental Assessment Registration Document (EARD), and the Proponent intends on updating and using the existing Erosion and Sediment Control Plan to mitigate these issues;	

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	• DFO noted that the EARD refers to "proven mitigation measures"; however, the Proponent did not provide information to support the likely effectiveness of these measures; and • Mitigation measures to prevent the erosion of the clay borrow area were not provided by the Proponent. DFO noted that small sediment particles could become mobilized during precipitation events. DFO noted that while discharges to Moose River from the open pit may meet MDMER concentration limits, results of ECCC's Third National Assessment of Environmental Effect Monitoring Data from Metal Mines[4] shows that effluent from mines meeting the MDMER concentration limits are often associated with a variety of adverse effects to fish and fish habitat downstream, including the effect levels that are considered to pose a higher risk to the environment. **Requesters and Mi'kmaq of Nova Scotia:** Requesters expressed concerns with groundwater and surface water quality and quantity, which has the potential to affect fish and fish habitat. Concerns were raised about potential changes to groundwater resources, including that the anticipated reduction of base flow to Moose River would result in changes to groundwater quality and quantity. In addition, requesters noted that groundwater modelling indicates that the average concentration of arsenic and other parameters of primary concern would take approximately 150 years to stabilize in Moose River.	

[4] Third national assessment of environmental effects monitoring information from metal mines subject to the Metal Mining Effluent Regulations / Industrial Sectors, Chemicals and Waste and Environmental Protection Operations Directorates, Environment and Climate Change Canada.: En14-64/2016E-PDF - Government of Canada Publications - Canada.ca

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	Concerns were also raised regarding the potential for the water quality in Moose River to degrade as a result of seepage from the Open pit, as well as the redirection of surface flow into Moose River via a constructed spillway or discharge structure. Cumulative effects to wetlands due to the close proximity of the three other gold mines proposed by the Proponent were raised as concerns as well. Of particular concern is the potential cumulative effects of water drawdown from the four separate mines. **Province:** The province determined that the Proponent's EARD did not contain adequate information to make a decision about the Project. The province requested the following additional information regarding fish and fish habitat, as well as in-pit mine tailings disposal, groundwater, and surface water: • fish surveys and relevant data that has been completed at or near the Touquoy site; • fish and fish habitat surveys in Square Lake, including an analysis; • Moose River fish sampling; • information to support that there are no or limited impacts to fish and fish habitat in Square Lake, Upper Fish River, Watercourse 14, Watercourse 13, and Watercourse 3; • a description of mine pit permeability including mitigation measures to decrease pit permeability; • a description of the proposed in-situ water treatment plan and schedule; • a description of how the pit and WRSA discharge points will meet MDMER and *Fisheries Act* requirements; • a third-party expert review of the ground and surface water modelling presented in the EARD; • a description of current and potential impacts to Watercourse 4, including any monitoring data not included in the EARD;	

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	• a detailed analysis of the impacts to Moose River currents, and as a result of the Project; and • in consultation with the Inspection and Compliance Division and Water Resources Branch at Nova Scotia Environment and Climate Change, information or clarification related to water quality and quantity analysis inconsistencies.	
A change to aquatic species, as defined in subsection 2(1) of the *Species at Risk Act*	**Proponent:** The same mitigation measures identified by the Proponent for the protection of fish and fish habitat would also mitigate potential effects on federally listed aquatic species at risk. No adverse effects to marine plants are anticipated, as there is no interaction between the Project and the marine environment. **Federal Authorities:** DFO advised that if a future decision to list Southern Upland Atlantic Salmon or American Eel under the *Species at Risk Act* is made, the Project would have potential to cause adverse effects to aquatic species at risk. The Proponent may require a permit under the *Species at Risk Act* for any prohibited effects to these species from the planned discharges. **Province:** The province determined that the Proponent's registration did not contain adequate information to make a decision about the Project. The information requested by the province in the Fish and Fish Habitat section above would also be relevant to aquatic species at risk.	The legislative mechanisms identified for fish and fish habitat also apply to aquatic species at risk. Additional mechanisms include: • DFO advised that a permit under the *Species at Risk Act* may be required; and • Section 73 of the *Species at Risk Act* could potentially manage effects that result in prohibited effects to aquatic species at risk.
A change to migratory birds, as	**Proponent:** Five federally listed migratory bird species at risk are predicted to occupy habitats in the	• Class I Environmental Assessment Approval

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994*	local assessment area.[5] Habitat supporting migratory bird species at risk will be lost by direct impacts of the Project, specifically the SH8, SP5, and IH6 vegetation communities which provide foraging habitats for migratory bird species at risk. In addition, a portion of Wetland #15 containing MH1 vegetation community has the potential to support Canada warbler breeding habitat and will be lost. The Proponent noted that these vegetation communities are regionally abundant, therefore the loss of these habitats are not anticipated impacting migratory bird species at risk. Indirect effects to migratory birds and wildlife, such as vehicle interactions, edge effects, and sensory disturbance are anticipated to be consistent with those already occurring from mining operations. The Proponent predicted that effects to wildlife, including migratory birds, will not be significant because many of the impacted areas do not provide high quality habitat due to previous disturbance, and direct and indirect effects to wildlife would be mitigated through measures such as: • micro-siting project infrastructure to avoid observed species at risk and species of conservation concern; • avoiding intact forest stands and wetlands, when possible. If intact habitat cannot be avoided, minimize overall areas of disturbance and maintain existing vegetation cover, if practicable; • limiting the use of lights to only the amount necessary for safe operation within the Touquoy Gold Mine Site. Install lighting facing downward and use motion-sensing lights wherever practicable; • limiting the amount of exposed soil to discourage ground- or burrow nesting species; and	under the provincial *Environment Act*. • Compliance with the *Migratory Birds Convention Act, 1994*, which prohibits the harming of migratory birds, the nests of migratory birds and/or their eggs. • Adherence to the Nova Scotia *Environment Act.* • Approval under the provincial *Environment Act* for the use or alteration of a watercourse, water resource or wetland.

[5] Migratory bird species at risk potentially impacted by the Project include: Barn Swallow, Canada Warbler, Common Nighthawk, Olive-sided Flycatcher, and Eastern Wood-pewee.

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	• considering the use of a deterrent system for the in-pit tailings disposal to deter wildlife from using the open pit during and after filling. **Federal Authorities:** ECCC advised that there is potential for adverse effects on migratory bird species at risk because the Project is expected to result in additional loss of habitat and disturbance. It does not appear that breeding bird surveys were conducted in the Local Assessment Area. This data is required to adequately evaluate the potential effects and cumulative effects of the Project on migratory birds, including migratory bird species at risk and species of conservation interest, and to develop mitigation and monitoring plans. Birds may be attracted to Project infrastructure and new habitat created by the Project. ECCC recommends that activities related to vegetation removal be scheduled to avoid the breeding season of birds found in the project area. It is also recommended that the Proponent implement a migratory bird monitoring program throughout the lifespan of the Project to verify attraction and use of the project area by migratory bird species at risk. ECCC advised that for wetlands that cannot be avoided and for those where direct and indirect effects cannot be entirely minimized, conservation allowances should be considered. ECCC identified measures listed in the Proponent's Environmental Protection Plan and Wildlife Management Plan for the existing Touquoy mine that are contrary to measures and best management practices that would support avoiding harm to migratory birds, their eggs and nests. ECCC recommends theses plans be updated to include clear measures to avoid harm to migratory birds, and who is responsible for implementation.	

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	ECCC noted there is potential for significant impacts to birds should a fuel or tailings spill into a waterbody occurs. Any adverse effect to fish can also be an adverse effect to migratory bird species that use wetlands, rivers, and lakes. **Province:** The province determined that the Proponent's registration did not contain adequate information to make a decision about the Project. The province requested the Proponent to provide all fauna survey data referenced in the EARD with corresponding analysis.	
A change to the environment that would occur on federal lands	**Proponent**: No adverse environmental effects on federal lands are anticipated, as there are no federal lands in the vicinity of the Project. The nearest federal lands (Beaver Lake Reserve No. 17) is approximately 13 kilometres northeast of the Project. Potential environmental effects are anticipated to be localized and mitigated within the Regional Assessment Area, which does not extend beyond regional watershed boundaries.	• A determination under section 82 of the *Impact Assessment Act* would be required for projects on federal lands, but is not applicable to the Project.
A change to the environment that would occur in a province other than the one in which the project is being carried out or outside Canada	No adverse transboundary effects in other provinces or outside Canada are anticipated. The nearest provincial and international borders are approximately 109 kilometres north and 320 kilometres west of the Project, respectively. **Proponent**: The Proponent did not provide an estimate of greenhouse gas emissions, but predicted that emissions would be generated from fuel combustion from construction vehicles and machinery and limited to the construction phase of the expansion project. The Proponent stated that greenhouse gases from vehicle emissions will be managed according to the Greenhouse Gas Management Plan developed for the Touquoy Gold Mine.	• The Project would be subject to federal greenhouse gas emissions reporting, pursuant to the *Canadian Environmental Protection Act, 1999*, if it emits 10 kilotonnes or more of greenhouse

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	Federal Authorities: ECCC stated that the Project has the potential to cause adverse effects to greenhouse gas emissions and climate change.	gas emissions, in carbon dioxide equivalent units per year.
With respect to the Indigenous peoples of Canada, an impact - occurring in Canada and resulting from any change to the environment - on physical and cultural heritage; or on any structure, site, or thing that is of historical, archaeological, paleontological or architectural significance	**Proponent**: Results of the 2021 Archaeological Resource Impact Assessment (ARIA) indicate that there is an area of high archaeological potential for the recovery of archaeological resources identified within a 50-metre buffer of Square Lake and Moose River. The CRM Group archaeologists conducted a shovel test program, involving the excavation of 102 shovel tests within the area of high potential for archaeological resources. Many areas had been recently altered (trees removed, silt fencing installed) or showed evidence of historical disturbance. No cultural artifacts were recovered. The Proponent proposes to mitigate adverse effects on cultural and heritage resources by: • updating the ARIA prior to disturbance if any further changes are made to the layout of the mine site beyond the area of previous ARIAs; • prohibiting ground disturbance within 50 metres of Moose River or Square Lake without additional archaeological assessment, including shovel testing; • providing any historical resources related to European occupation unintentionally discovered during Project activities to the Moose River Museum for curating; • protecting any features or archaeological sites encountered or suspected during work by; • stopping all work in the areas as to not further disturb the site; isolating and protecting the area; • noting the location and leaving all discoveries in place; and • reporting the discovery to supervisors and AMNS's Environment Department Representative who would contact the Special Places Program. If finds are in the Mi'kmaq context, the Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO), the	• The *Special Places Protection Act* provides for the preservation, protection, regulation, exploration, excavation, acquisition and study of archaeological sites which are considered important parts of natural or human heritage of the province. • A Heritage Research Permit would be required if archaeological work is conducted for the Project.

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	Confederacy of Mainland Mi'kmaq, or nearest Mi'kmaq community would be contacted. Work would not recommence until permissions have been given to proceed by the Special Places Program. **Requesters and Mi'kmaq of Nova Scotia:** KMKNO advised the Agency that based on the information provided by the Proponent and a review of their internal data sources, no major concerns were identified. However, KMKNO stressed the need for further consultation and engagement with Mi'kmaq communities to continue to research physical and cultural heritage of the surrounding area.	
With respect to the Indigenous peoples of Canada, an impact - occurring in Canada and resulting from any change to the environment - on current use of lands and resources for traditional purposes	**Proponent:** The Proponent did not consider impacts to current use in the provincial EARD. **Requesters and Mi'kmaq of Nova Scotia:** KMKNO advised the Agency that they believe that there may be some effect to the current use of lands and resources for traditional purposes based on potential changes to groundwater quantity and quality that could affect fish, wildlife, and plants that are traditionally harvested. KMKNO stated that pit dewatering is leading to a lower water table near the mine, and some of the groundwater that would maintain flows in Moose River, Watercourse #4, and Wetland #22 is being captured or diverted by the open pit. Reduced base flow has the potential to lead to local adverse environmental effects, reducing the health and abundance of resources used for traditional purposes. Reduced flows are a greater issue during active pit dewatering and would be expected to reduce as the pit fills during closure. KMKNO stated that the proposed physical modifications are within the existing mine lease area and would not change the access or land use from a fish and water perspective.	• Authorization pursuant to section 34.4(1) of the *Fisheries Act* for the death of fish may be required. • Authorization pursuant to section 35(1) of the *Fisheries Act* for the harmful alteration, disruption, or destruction of fish habitat may be required. • A permit under the *Species at Risk Act* may be required.

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	However, the Project has the potential to remove a small amount of fish habitat in Moose River and should an accident occur, there is the potential for changes in water quality, which could affect fish in the watercourses and lakes downstream of the Project that may be used by the community. Requester concerns describe how Atlantic salmon and American Eel are known to occur or are assumed to occur in Moose River, emphasizing that these are species of conservation concern and have special cultural significance for the Mi'kmaq of Nova Scotia. Requesters noted that several concerns were raised by Mi'kmaq communities as stated in the EARD, including about potential impacts on local water resources, to fish and fish habitat, and impacts on traditional practices such as harvesting and hunting. It is the requester's view that Mi'kmaq rights and interests were not considered substantively by the Proponent. Further, the Proponent did not include an assessment of the cumulative loss of access to lands for the Mi'kmaq.	• The Agency notes that DFO would consult with the Mi'kmaq of Nova Scotia should an application for a *Fisheries Act* authorization or *Species at Risk Act* permit be required. • The Project must comply with the prohibitions and requirements of the MDMER. • Approval for the use or alteration of a watercourse, water resource or wetland under the provincial *Environment Act*. • The province consults with the Mi'kmaq of Nova Scotia through its Environmental Assessment and subsequent permitting under the provincial *Environment Act*.

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
Any change occurring in Canada to the health, social or economic conditions of the Indigenous peoples of Canada	**Proponent:** The Proponent stated that construction will result in the temporary release of particulate and combustion emissions, noise, and artificial lighting; however, changes to the existing air, noise, or light emissions were not predicted and are expected to be consistent with those identified for the Touquoy Gold Mine. The Proponent states that dust will be mitigated by implementing the existing Fugitive Dust Control Plan used for the Touquoy Gold Mine Project. The Proponent did not identify any effects to human health related to air, noise, or light. The Proponent noted that groundwater has the potential to be a source of potable water. One potential groundwater well user was identified within 5 kilometres of the Project area, Camp Kidston, which operates only in the summer months and is located 3.5 kilometres northeast of the Touquoy Gold Mine. The Proponent noted the following potential environmental effects to groundwater from the Project: • Groundwater will flow into or seep out of the open pit during various times, depending on pit water levels. Seepage from the open pit has the potential to affect groundwater quality and quantity; and • The expansion of the WRSA will change the catchment area, and has the potential to cause changes to seepage from the WRSA to groundwater. The operation of the clay borrow area also has potential to lower the groundwater table locally within the footprint of the clay borrow area. Mitigation measures proposed by the Proponent to reduce adverse effects on groundwater resources are outlined above in the “fish and fish habitat” section of this table. The Proponent stated that with proposed mitigation and environmental protection measures, the anticipated changes in groundwater quality resulting from the WRSA expansion or the in-pit disposal of tailings is not considered to be significant. With respect to changes in social or economic conditions of the Indigenous peoples of Canada, the Proponent states that without the modifications proposed, the Touquoy Gold	• Deposit of deleterious substances into waters frequented by fish, unless authorized by regulations or other federal legislation, is prohibited under the *Fisheries Act*. • The Project must comply with the prohibitions and requirements of the MDMER. • An amendment to existing Industrial Approval under the provincial *Environment Act*. The current Industrial Approval for the Touquoy Mine contains terms and conditions related to noise and air emissions, and it is expected that an amended Industrial Approval would contain similar conditions.

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	Mine Project would be shortened which would reduce potential economic benefits for the region such as local employment, expenditures, and royalty payments. **Federal Authorities:** Health Canada advised that the information provided by the Proponent is not sufficient to confirm whether there is potential for the Project to cause adverse effects on human health in areas under federal jurisdiction (i.e., effects to the health of Indigenous peoples). Health Canada is of the opinion that the Project may have the potential to cause adverse effects to human health associated with noise, air quality, country foods, and water quality. Health Canada noted that although the Proponent identified the concerns of the Mi'kmaq of Nova Scotia regarding potential adverse effects relating to health, the steps taken to address the broad scope of potential project-related health impacts have not been detailed. Appropriate mitigation and monitoring measures to maintain acceptable environmental quality are not presented in the EARD, and it is unknown if a Human Health Risk Assessment has been completed. Health Canada noted that further information is needed to fully understand the potential for the Project to cause adverse effects on human health: • Locations of the nearest receptors that may be impacted by the Project were not clearly identified. Consideration should also be given to potentially sensitive or unique receptors that may be exposed to increased levels of risk (i.e. seniors, pregnant or nursing mothers, and infants); • The potential for human health risks associated with temporarily elevated levels of noise which potentially would cause effects to hearing, sleep, speech comprehension, complaints, and annoyance, as well as the potential for noise-related cumulative impacts, was not assessed in detail; • Impulsive noise sources such as hammering, pile driving, or blasting should be avoided at night and early morning. Noise management and noise monitoring plans should include complain resolution and be included as part of the Environmental Management Plan;	

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	• Historical air quality monitoring was not provided, therefore it is not possible to evaluate whether adverse effects on human health due to air emissions, including cumulative impacts from future and existing projects, will occur; • Several Project activities may impact water quality, including drinking water, in the area. Drinking water effects may be caused by the release of harmful elements from the tailings or other mine wastes, the infiltration of contaminated water into watercourses, accidents or malfunctions (i.e. spills or releases), dust and increased sediment runoff, and by the other potential interactions associated with the deposition of tailings, related associated surface water management activities, and metal leaching/acid rock drainage management activitie; • If additional sources of drinking water within the local assessment area are identified, baseline sampling of these wells for quantity and quality may be necessary. Private well owners should be notified of potential drinking water quality changes; • The potential for human health risks associated with country foods were not properly assessed. The EARD does not identify or describe any past, current, or future country food harvesting by the Mi'kmaq of Nova Scotia within the local or regional assessment areas of the Project. Deposition of airborne contaminants, increased sediment runoff from the larger mine area footprint, accidents during construction or operation, discharge of mine effluent to the aquatic environment, and groundwater-surface water interactions would potentially cause contamination of country foods; • The EARD does not discuss other potential effects of the Project on country foods, such as food insecurity;	

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	• For additional information, the Proponent should refer to Health Canada's guidance[6] on human health impacts related to country foods; and • A contingency plan was not provided for the discharge of mine effluent stored in the open pit if it is not of an acceptable quality for Moose River, and no information is provided regarding the potential for uncontrolled seepage of mine effluent stored in the open pit or runoff associated with the WRSA to nearby waterbodies. NRCan identified potential adverse economic and socio-economic impacts to the Mi'kmaq of Nova Scotia, including: effects to traditional sustenance/barter economies; displacement of local businesses; negative changes to socioeconomic relations; migration between communities; increases to cost of living; and loss of revenue from other reasonable development opportunities that are incompatible with this Project.[7] **Requesters and Mi'kmaq of Nova Scotia:** KMKNO advised that the Proponent did not adequately explain the assessment of potential effects to the Mi'kmaq of Nova Scotia and did not provide sufficient information to determine whether there are potential effects to the current use of lands and resources for traditional purposes, therefore, it cannot be adequately determined whether and how the Project may result in changes to the First Nations communities' health, social or economic conditions. Additional time and resources would be required to adequately assess the potential effects of the Touquoy Gold Mine Expansion Project to the First Nation communities and their traditional and treaty rights. **Province:**	

[6] Health Canada. 2018. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. http://publications.gc.ca/pub?id=9.855584&sl=0

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	The province determined that the Proponent's EARD did not contain adequate information to make a decision about the Project. The province requested additional information about groundwater and surface water quality, which is outlined in the "Fish and Fish Habitat" section of this table.	
Adverse direct or incidental effects	The Project as described would potentially require the exercise of the following federal powers, duties, or functions: • Authorizations from DFO, issued under the *Fisheries Act*, would include conditions requiring avoidance, as well as mitigation, offsetting, contingency and monitoring measures; and • A permit from DFO or ECCC, issued under the *Species at Risk Act*, would include requirements to assess and mitigate effects on the species or its critical habitat or the residences of its individuals. **Requesters and Mi'kmaq of Nova Scotia:** Requesters expressed their understanding that the use of the open pit would fall within the scope of paragraph 5(1)(b) of the MDMER administered by ECCC. The requesters stated that ECCC's oversight and enforcement duties and functions under the MDMER would effectively give the Proponent license to use the Touquoy Mine pit as a tailings impoundment area as long as all relevant monitoring and reporting requirements were being met.	If federal authorizations or permits are required, the carrying out of the Project has the potential to cause adverse direct or incidental effects on fish and fish habitat, species at risk and the Mi'kmaq of Nova Scotia. Additional information would be required to understand the potential effects; however, effects are expected to be addressed through the requirements set by the relevant federal authorities. ECCC is responsible for administering compliance under the MDMER. Information provided by the Proponent and reviewed

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
		by ECCC determined that a Schedule 2 amendment under the MDMER would not be required for this Project.
Effects on federally listed Species At Risk under the *Species at Risk Act*	**Proponent:** The Nova Scotia Wetland Conservation Policy states that wetlands known to support at-risk species as designated under the federal *Species at Risk Act* or the Nova Scotia *Endangered Species Act* are considered Wetlands of Special Significance. The Proponent noted three occurrences of Blue Felt Lichen, listed as "special concern" under Schedule 1 of the *Species at Risk Act* and "vulnerable" under Nova Scotia's *Endangered Species Act,* within Wetlands 27, 15, and 40. Of these three occurrences, only Wetland 15 was within the local assessment area for the Project. A portion of Wetland 15 is expected to be altered by the WRSA expansion. The Proponent noted that the Blue Felt Lichen occurance is over 125 metres from the project development area, and therefore is not expected to be affected by the Project. The Proponent also noted that only 0.62 hectares (6.5 percent) of Wetland 15 would be directly impacted and is expected to be large enough to remain self-sufficient and retain its baseline hydrological and ecological function. **Requesters and Mi'kmaq of Nova Scotia:** Requesters noted that the Project would impact a Wetland of Special Significance, in which Blue Felt Lichen is known to be present. ESFW is of the view that effects to	• Class I Environmental Assessment Approval under the provincial *Environment Act*. • Approval under the provincial *Environment Act* for the use or alteration of a watercourse, water resource or wetland. • The Project must comply with the prohibitions and requirements of the Nova Scotia *Endangered Species Act*.

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the *Impact Assessment Act*	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	Wetlands of Special Significance, including the resulting effects to Blue Felt Lichen, should be assessed cumulatively with the proposed Beaver Dam, Cochrane Hill, and Fifteen Mile Stream mining projects. The Native Council of Nova Scotia also noted that the WRSA expansion will intersect Wetland 15, which contains Blue Felt Lichen. It is their view that the Proponent did not adequately explore alternatives to expanding the WRSA to determine whether there is a feasible option that would avoid impacts to Blue Felt Lichen habitat. Requesters also raised concerns about potential effects to wildlife species listed under Nova Scotia's *Endangered Species Act* including Mainland Moose, noting that wetlands provide Mainland Moose with important habitat and suitable moose habitat in mainland Nova Scotia is scarce. **Province:** In his September 8, 2021, decision regarding the Proponent's EARD, the provincial Minister of Environment required additional information specifically related to the provision of additional flora and fauna data and additional analysis for the avoidance of Wetland #15.	

Appendix II

Appendix II: Potential Federal and Provincial Authorizations Relevant to the Project

Authorization	Description
Authorization issued by DFO, pursuant to 34.4(2)(b) of the *Fisheries Act*.	• A *Fisheries Act* section 34.4(2)(b) authorization includes requirements to assess and mitigate effects arising from carrying out a work, undertaking or activity that results in the death of fish. The authorization must identify measures to offset those effects and monitoring commitments to address and assess the effectiveness of the offset measures. • An authorization will be required if the Project is likely to result in the death of fish. • If an authorization is required, consultation with affected Indigenous groups would be conducted prior to its issuance.
Authorization issued by DFO, pursuant to 35(2)(b) of the *Fisheries Act*.	• A *Fisheries Act* section 35(2)(b) authorization includes requirements to assess and mitigate effects arising from carrying out a work, undertaking or activity that results in harmful alteration, disruption or destruction of fish habitat. The authorization must identify measures to offset those effects and monitoring commitments to address and assess the effectiveness of the offset measures. • An authorization will be required if the Project is likely to cause the harmful alteration, disruption, or destruction to fish habitat. • If an authorization is required, consultation with affected Indigenous groups would be conducted prior to its issuance.

Permit under the *Species at Risk Act* authorizing and activity affecting listed wildlife species.	• The Southern Upland population of Atlantic Salmon and the Eastern Canadian population of American Eel are currently under consideration for listing under SARA. Both of these species have been identified within the project area.
	• A permit may be required if a future decision is made to list Southern Upland Atlantic Salmon or American Eel under the *Species at Risk Act.*
	  • DFO may be required to consult with affected Mi'kmaq of Nova Scotia prior to the issuance of a *Species at Risk Act* permit.
	  • Such permits may only be issued if: all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted; all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and if the activity will not jeopardize the survival or recovery of the species.

Approval under the provincial *Environment Act* for the use or	• New or amended Water Approvals from Nova Scotia Environment and Climate Change for the alteration of wetland habitat within the footprint of the WRSA Expansion.

Authorization	Description
alteration of a watercourse, water resource or wetland.	• In consultation with Nova Scotia Environment and Climate Change, the Proponent will be required to develop measures, including wetland compensation, to mitigate any loss of wetland habitat. • Watercourse alterations that do not require approval are required to adhere to the Nova Scotia Watercourse Alterations Standard.
Heritage Research Permit under the *Special Places Protection Act*.	• A Heritage Research Permit would be required if archaeological work is conducted for the Project.
Amendment to existing Industrial Approval under the provincial *Environment Act*.	• The Project will require an amendment to the existing Industrial Approval (IA#2012-084244-08) for the Touquoy Gold Mine Project. • The Proponent submitted an application to Nova Scotia Environment and Climate Change for an amendment in December 2020. • Upon review, the Minister of Environment and Climate Change determined that a Class I Environmental Assessment under the *Environment Act* would be required before the existing IA could be amended.
Class I Environmental Assessment under the provincial *Environment Act*.	• The Proponent registered the Touquoy Gold Mine Project Site Modifications for environmental assessment, in accordance with Part IV of the *Environment Act*. • On September 8, 2021, the Minister of Environment determined that the Registration information was insufficient to make a decision on the Project and that additional information is required. The Proponent must provide information regarding in-pit mine tailings disposal, ground and surface water, fish and fish habitat, protected areas, wildlife, wetlands and historical mine tailings. The Proponent must submit this information by September 8, 2022. • The addendum will be subject to a technical review, with federal department participation, and a public comment period.
Migratory Birds Convention Act, 1994	• The *Migratory Birds Convention Act, 1994* prohibits killing, harming, or collecting adults, young and eggs of migratory birds and screens and provides regulatory responses for effects to migratory birds. • A permit is required for all activities affecting migratory birds, with some exceptions detailed in the *Migratory Birds Regulations*.
Letter of Authority for activities on Crown land under the existing lease.	• The proposed Plant Access Road and WRSA expansion area will be located on Crown land, and will require an updated Letter of Authority.