



UPPER BEAVER PROJECT

Upper Beaver Gold Project Impact Statement

Section 7: Effects Assessment Methodology



Table of Contents

7.0	Effects Assessment Methodology	7-1
7.1	Introduction	7-1
7.1.1	Influence of Engagement with Indigenous Nations, Government Agencies and the Public	7-1
7.2	Environmental Baseline Methodology	7-3
7.3	Valued Components.....	7-4
7.4	Spatial Boundaries	7-11
7.5	Temporal Boundaries.....	7-13
7.6	Analysis of Effects.....	7-14
7.6.1	Pathways to Potential Effects.....	7-14
7.6.2	Mitigation and Enhancement Measures	7-14
7.6.3	Assessment of Potential Residual Changes	7-14
7.6.4	Characterization of Residual Changes	7-14
7.6.5	Determination of Significance	7-15
7.6.6	Management of Residual Changes	7-16
7.7	Assessment of Cumulative Effects	7-27
7.8	References	7-28

Tables

Table 7.3-1:	Rationale for Selection of Valued Components	7-7
Table 7.6-1:	Key Project Components and Activities by Project Phase	7-17
Table 7.6-2:	Template Interaction Matrix Table	7-21
Table 7.6-3:	Effect Analysis Attributes for Determination of Significance	7-24
Table 7.6-4:	Magnitude Attributes for Determination of Significance	7-25

Figures

Figure 7.3-1:	Interrelationships between pVCs and fVCs	7-10
Figure 7.4-1:	Project Area	7-12

Acronyms and Abbreviations

Agnico Eagle	Agnico Eagle Mines Limited
fVC	valued component under federal jurisdiction
IAAC	Impact Assessment Agency of Canada
LSA	Local Study Area
PA	Project Area
Project	Upper Beaver Gold Project
pVC	pathway valued component
RSA	Regional Study Area
SAR	Species at Risk
TISG	Tailored Impact Statement Guidelines
TSF	tailings storage facility

7.0 Effects Assessment Methodology

7.1 Introduction

The methodology described in this section and utilized throughout the Impact Statement has been developed to provide the Impact Assessment Agency of Canada (IAAC) with the information needed for decision-making under the amended *Impact Assessment Act*. The methodology has been developed based in part on the guidance presented in Next Steps in the Impact Statement Phase for the Upper Beaver Gold Project (Project; IAAC 2024).

Agnico Eagle Mines Limited (Agnico Eagle) understands that the aim of the Impact Statement is to provide sufficient information for IAAC to review and assess key issues relevant to federal decision-making in an efficient manner, with a focus on:

- Fish and fish habitat
- Migratory birds
- Indigenous Peoples.

The assessment of potential effects of the Project in the Impact Statement is completed in a stepwise manner:

- Characterize the existing conditions for the environmental, health, social and economic conditions (biophysical and human environment)
- Identify components of the environment that will serve as focal points for the Impact Assessment
- Determine the potential direct and indirect effects between components of the environment and the Project
- Apply appropriate mitigation measures to reduce or eliminate potential effects
- Assess and characterize residual effects after mitigation has been applied.

7.1.1 Influence of Engagement with Indigenous Nations, Government Agencies and the Public

Engagement has been ongoing for several years prior to and throughout the Impact Assessment process and will continue with Indigenous Nations and stakeholders such as government agencies and the public over the life of the Project. Sections 5 and 6 of the Impact Statement provides more detail on the extensive consultation process. The Record of Consultation (Appendix B) includes detailed comments received, and responses provided, during the development of the Impact Statement.

Feedback received through engagement has been addressed through direct responses (in writing and follow-up meetings) and incorporated into the Impact Statement, as appropriate. The key comments that influenced the Impact Assessment methodology are summarized below.

Valued Components, Indigenous Knowledge and Assessment Methodologies

Apitipi Anicinapek Nation (AAN), Matachewan First Nation (MFN), and Timiskaming First Nation (TFN) requested that Indigenous Knowledge, Nation-specific values, community-defined valued components, and Indigenous assessment methodologies be reflected in the Impact Assessment

framework. TFN also emphasized the importance of flexible valued component and indicator selection processes that can be refined as additional information becomes available.

In response, the methodology described in Section 7.3 incorporates engagement results, Indigenous Knowledge and community priorities into the identification and selection of valued components. Information provided through Indigenous Knowledge and land use studies, engagement activities, and Nation-specific submissions has informed the selection of valued components, indicators, and assessment approaches used throughout the Impact Statement. These methods are applied in the characterization of existing conditions, the assessment of residual and cumulative effects, and the assessment of effects on Indigenous Peoples.

Pathways of Effects

TFN requested additional examples demonstrating how Indigenous pathways of effects are incorporated into the assessment methodology and noted that Nation-specific interests extend across a broad range of environmental and socio-cultural topics. As described in Sections 7.3 and 7.6.1, the Impact Statement uses a pathways-based assessment framework that evaluates how Project activities may result in changes to environmental, social, economic, health, and rights-related components. This framework recognizes that changes to components such as vegetation, wildlife, water quality, air quality, and sound may influence Indigenous land and resource use, cultural practices, community well-being, and the exercise of Indigenous rights. These linkages are evaluated through the pathways analysis and the assessment of effects on Indigenous Peoples.

IAAC requested clarification on the process for determining which Project interactions identified during scoping would be carried forward into the detailed effects assessment. Agnico Eagle confirmed that only interactions with a plausible pathway to an effect will be advanced to the detailed assessment. Interactions lacking a meaningful pathway will be screened out, with a clear rationale documented to support transparency and traceability in the assessment process. Section 7.6.1 describes the pathway-based screening process and criteria for carrying interactions forward to detailed assessment.

Temporal Boundaries and Cumulative Effects

Beaverhouse First Nation (BHFN) noted that conventional assessment timelines do not fully reflect the community's experience with historical land use and cumulative industrial development. To address this comment, Sections 7.5 and 7.7 recognize that existing conditions reflect the influence of past and existing activities and that cumulative effects should be assessed in the context of broader, long-term changes on the landscape, including historical development and legacy mining activities. Information obtained through Indigenous knowledge and land use studies contributes to the characterization of existing conditions and informs the assessment of cumulative effects on Indigenous Peoples, including potential effects on Indigenous rights, cultural continuity, and current use of lands and resources.

Assessment Criteria, Indicators and Thresholds

BHFN and TFN requested information regarding how effects are evaluated, how indicators are selected, and how assessment criteria and thresholds are established. Section 7.6 describes the standardized assessment methodology used to evaluate environmental, health, social, and economic effects. The methodology includes the identification of pathways to effects, application of mitigation measures, assessment of residual effects, characterization of residual effects, and determination of significance. Indicators and assessment criteria are informed by baseline studies, Indigenous Knowledge, engagement activities, professional practice, regulatory

guidance, and the Tailored Impact Statement Guidelines (TISG). Thresholds and significance criteria are applied consistently throughout the Impact Statement.

IAAC requested clarification regarding the basis for the proposed significance determination framework and its alignment with the *Impact Assessment Act*. Agnico Eagle noted that the framework builds upon approaches applied in previous assessments and has been adapted to align with the significance continuum established under the *Impact Assessment Act*. Additional clarification was incorporated into the methodology to improve transparency regarding the significance evaluation process. Section 7.6.5 outlines the significance framework and assessment criteria.

Indigenous Culture, Heritage, Rights and GBA+

AAN and MFN emphasized the importance of considering spiritual, ceremonial, cultural, and heritage values and understanding how Project-related changes may affect Indigenous rights and cultural continuity. TFN requested clarification regarding the application of Gender-Based Analysis Plus (GBA+).

These considerations are incorporated into the assessment methodology through the Indigenous Peoples valued component, as described in Section 7.3 and Section 7.6. Indigenous cultural heritage, current use of lands and resources, health and well-being, social and economic conditions, and Indigenous rights are assessed using information from Indigenous Knowledge and land use studies and other engagement activities. GBA+ is an analytical framework, required by the TISG for the Project, and is used to identify and assess how diverse groups of people, including Indigenous Peoples and other potentially affected populations, may experience the effects, benefits, and opportunities associated with the Project differently based on the intersection of sex, gender, age, cultural identity, socioeconomic characteristics, and other relevant factors. Community knowledge contributes to the GBA+ analysis, which considers how Project effects and benefits may be experienced differently among Indigenous women, Elders, youth, 2SLGBTQIA+ individuals, harvesters, workers, and other community members. These considerations are incorporated into the characterization of residual effects and significance determinations, where applicable.

7.2 Environmental Baseline Methodology

Extensive baseline information has been collected for the Project over the last 15 years. The characterization of existing environmental (baseline) conditions has been completed to provide information on the components of the biophysical and human environment and their associated interrelationships through a combination of field and desktop investigations.

Comprehensive environmental baseline reports detailing the existing, pre-Project environmental conditions at and near the Project site have been prepared for the following topics to support the Impact Assessment:

- Air quality (Appendix D-1)
- Sound (Appendix E-1)
- Light (Appendix L)
- Groundwater (Appendix F-1)
- Hydrology (Appendix G-1)

- Water quality (Appendix G-2)
- Aquatic resources (Appendix I-1)
- Terrestrial resources (Appendix K-1)
- Socio-economic environment (Appendix N-1)
- Cultural heritage (Appendix M-1)
- Archaeology (Appendix M-2).

Focused information from these comprehensive sources is provided in two locations in the main Impact Statement, to support efficient interpretation of the surrounding assessment text:

- A summary of the environmental baseline conditions is provided in Section 2 of the Impact Statement to assist in interpretation of the assessment of alternatives (Section 3) and Project description (Section 4)
- Additional environmental baseline information is provided in the sections describing the assessment of effects (Sections 8 to 11), as needed to understand the assessment of potential effects of the Project.

The comprehensive environmental baseline reports provided in the appendices to the Impact Statement should be reviewed for detailed information.

Agnico Eagle has supported the collection of Indigenous land, resource use and community knowledge information by local Indigenous Nations for consideration in the Impact Statement. Although these documents have not been appended to the Impact Statement due to confidentiality, the information has been utilized in preparation of the Impact Statement as appropriate.

7.3 Valued Components

As required by Section 7.2 of the TISG, the Impact Statement must identify the valued components of the environment that will serve as the focal points for the Impact Assessment. Valued components are components of the natural and human environment that are of particular concern or value to participants and that may be affected by the Project.

Agnico Eagle identified a preliminary list of potential valued components based on comments raised during consultation and engagement on the Project, as well as data from extensive biophysical and human environment baseline studies and literature sources. In identifying the preliminary list of potential valued components, the following criteria were employed:

- Indicators of environmental health
- Components linked to provincial or federal policies
- Areas of notable biological diversity and significant habitat
- Species at Risk (SAR)
- Other notable species or species groups
- Natural components that are important to the functions of other ecosystem elements
- Environmental components valued by Indigenous Peoples

- Other components valued by the public, stakeholders and Indigenous Peoples who will potentially be affected by the Project.

A preliminary list of valued components was developed and consulted upon during the Impact Assessment process, as summarized in Section 5 and 6, and detailed in Appendix B.

Engagement and consultation did not identify additional standalone valued components beyond those selected for assessment in this Impact Statement. However, input received from Indigenous Nations, government agencies and the public informed the scope, indicators, pathways and assessment methods applied to the selected valued components. Indigenous Nation input, including information related to Indigenous Knowledge and Indigenous land and resource use was considered in refining the assessment approach. The preliminary list initially consulted upon, combined with the TISG guidance, was considered against the factors identified in Section 7.2 of the TISG listed below to select the valued components to be included in the Impact Statement:

- *Presence within the spatial boundaries (see Section 7.4 of this Impact Statement)*
- *Extent to which the effects of the Project and related activities have the potential to interact with the valued components*
- *Extent to which the valued components may be affected by other past, existing or future projects and activities and natural processes*
- *Extent to which the valued component is linked to Indigenous interests or rights of Indigenous Peoples and whether an Indigenous community has requested the valued component*
- *Extent to which the valued component is linked to a federal, provincial, or municipal government priority*
- *The possibility that an adverse or positive effect on the valued components would be of particular concern to Indigenous communities, the public, or federal, provincial, municipal or Indigenous governments*
- *Information from any ongoing or completed regional or strategic assessment processes*
- *Whether the potential effects of the Project on the valued components can be measured and/or monitored or would be better ascertained through the analysis of a proxy valued component.*

As the federal Impact Assessment process is intended to prevent or mitigate significant adverse effects within federal jurisdiction, the selected valued components were further characterized as:

- Valued components within federal jurisdiction: federal valued components (fVCs) as guided by key issues identified by IAAC (2024)
- Valued components that provide a pathway for direct or indirect effects to fVCs: pathway components (pVCs).

This framework integrates environmental aspects under both federal and provincial jurisdiction with health, social, and economic considerations, providing a comprehensive basis for assessing Project effects.

Based on the TISG and feedback received through engagement and consultation, the pVCs identified for assessment in the Impact Statement are:

-
- Air quality
 - Sound and vibration
 - Groundwater Quantity
 - Surface water flows and levels
 - Water quality (Surface and Groundwater)
 - Vegetation communities and wetlands
 - Moose
 - Other wildlife and habitat
 - SAR
 - Cultural heritage
 - Economic conditions
 - Social conditions.

The selected fVCs for this Impact Statement are:

- Fish and fish habitat
- Migratory birds
- Indigenous Peoples ⁽¹⁾.

Table 7.3-1 provides a summary of the rationale for each valued component selected to be assessed in this Impact Statement.

Figure 7.3-1 provides a schematic of the interrelationships between the selected fVCs and pVCs for the Impact Statement.

¹ Inclusive of health and well-being, social conditions, economic conditions, archaeology and heritage, and traditional land and resource use.

Table 7.3-1: Rationale for Selection of Valued Components

Valued Component	fVC or pVC	Defining Rationale for Inclusion ⁽¹⁾
Air quality	pVC	- Indicator of environmental health - Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - Provincial regulatory interest - Includes greenhouse gases, which are related to the strategic assessment of climate change - May provide a pathway to affect an fVC (migratory birds and Indigenous Peoples)
Sound and vibration	pVC	- Provincial regulatory interest - Identified to be of interest during engagement - Sound may provide a pathway of effect to an fVCs (migratory birds and Indigenous Peoples) - Vibration may provide a pathway to affect an fVCs (fish and fish habitat, and Indigenous Peoples)
Groundwater	pVC	- Natural component important to other ecosystem elements - Provincial regulatory interest - Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - May provide a pathway to affect an fVCs (fish and fish habitat, and Indigenous Peoples)
Surface water flows / levels	pVC	- Natural component important to other ecosystem elements - Provincial regulatory interest - Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - May provide a pathway to affect an fVCs (fish and fish habitat, and Indigenous Peoples)
Water quality	pVC	- Indicator of environmental health - Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - Provincial regulatory interest - May provide a pathway to affect an fVCs (fish and fish habitat, migratory birds and Indigenous Peoples)

Valued Component	fVC or pVC	Defining Rationale for Inclusion ⁽¹⁾
Vegetation communities and wetlands	pVC	- Natural component important to other ecosystem elements - Wetlands identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - May provide a pathway to affect an fVCs (migratory birds and Indigenous Peoples)
Moose	pVC	- Notable species of interest during engagement - Notable species of interest during Indigenous engagement - Provincial regulatory interest - May provide a pathway to affect an fVC (Indigenous Peoples)
Other wildlife	pVC	May provide a pathway to affect an fVC (Indigenous Peoples)
SAR	pVC	- Federal and provincial regulatory interest - Notable species of interest identified during engagement activities - Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Assessment of the Project - May provide a pathway to affect an fVC (Indigenous Peoples)
Cultural heritage	pVC	- Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - Provincial regulatory interest - May provide a pathway to affect an fVC (Indigenous Peoples)
Economic conditions	pVC	May provide a pathway to affect an fVC (Indigenous Peoples)
Social conditions (including the use of lands and resources for recreational purposes)	pVC	- Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - Provincial regulatory interest - May provide a pathway to affect an fVC (Indigenous Peoples)
Fish and fish habitat	fVC	- Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - Within federal jurisdiction (IAAC 2024) - Identified as a topic of interest during engagement - May provide a pathway to effects on Indigenous Peoples

Valued Component	fVC or pVC	Defining Rationale for Inclusion ⁽¹⁾
Migratory birds	fVC	- Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - Within federal jurisdiction - Identified as a topic of interest during engagement - May provide a pathway to effect Indigenous Peoples
Indigenous Peoples (including Indigenous health and well-being, Indigenous social conditions, Indigenous economic conditions, Indigenous archaeology and heritage, and current use of land and resources for traditional purposes)	fVC	- Identified in Section 7.2 of the TISG based on comments from participants during the Planning Phase of the Impact Assessment of the Project - Linked to Indigenous interests and comments received

Note:

- The rationales listed are the defining rationales for inclusion. The selected valued components generally meet the factors identified in Section 7.2 of the TISG.

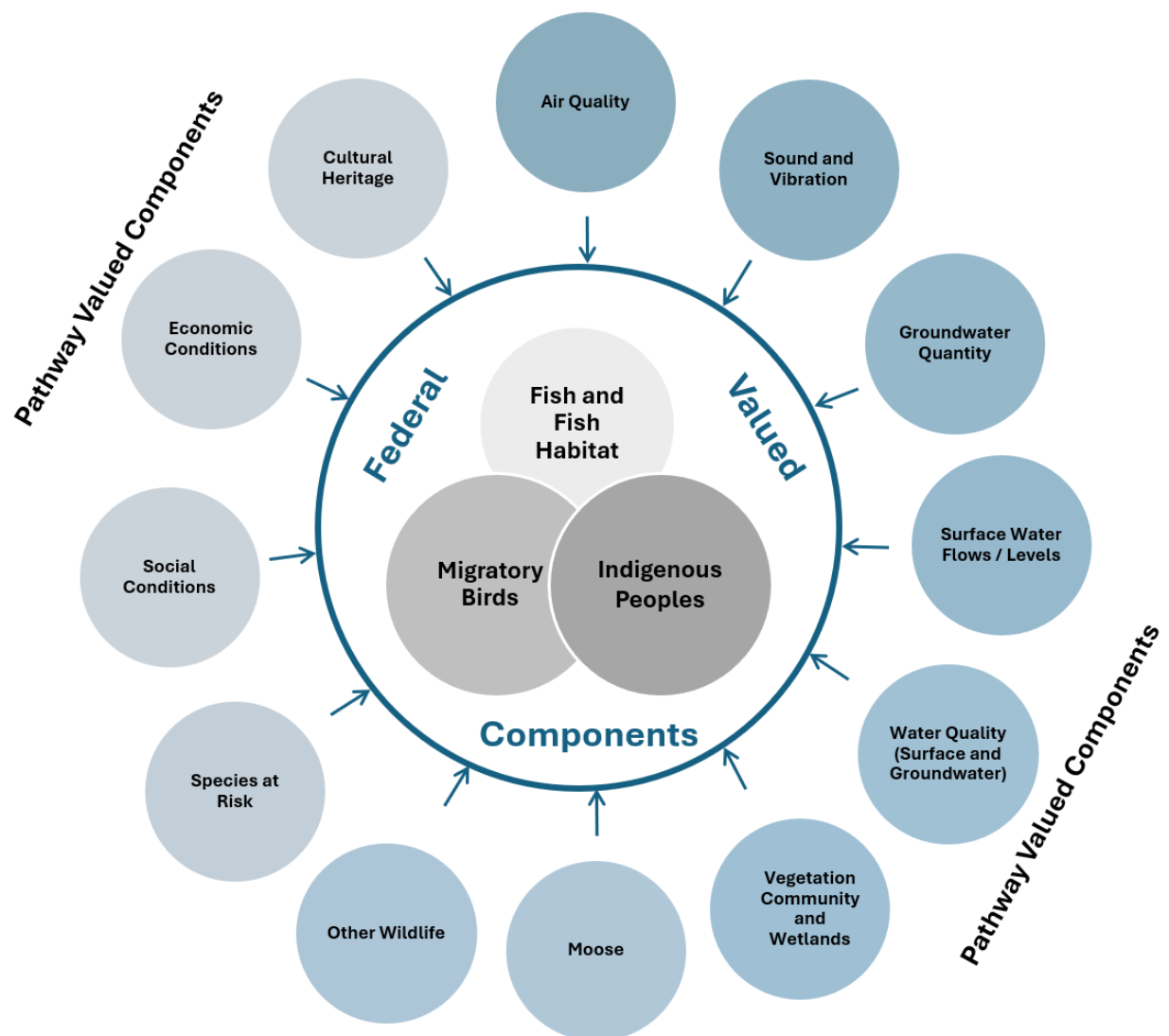


Figure 7.3-1: Interrelationships between pVCs and fVCs

7.4 Spatial Boundaries

Spatial boundaries have also been defined to provide a focus for the assessment of potential effects on each valued component in accordance with the TISG. Note that the investigation areas defined for data collection purposes in the baseline reports may differ from the spatial boundaries for the effects assessment.

Three spatial study areas have been defined for the Impact Statement:

- **Project Area (PA):** the Project footprint including all temporary and permanent areas associated with the mine site development, as well as an outside buffer to allow flexibility for design optimizations prior to construction and over the mine life (Figure 7.4-1).
- **Local Study Area (LSA):** extends beyond the PA and is intended to capture potential direct effects from the Project (such as emissions, discharges and habitat loss) and indirect effects resulting from the Project.
- **Regional Study Area (RSA):** encompasses the PA and LSA and, where appropriate, extends further. The RSA provides regional context in the understanding of the valued component and supports the assessment of potential Project effects. It is the maximum geographical extent or zone of influence in which potential effects from the Project are assessed.

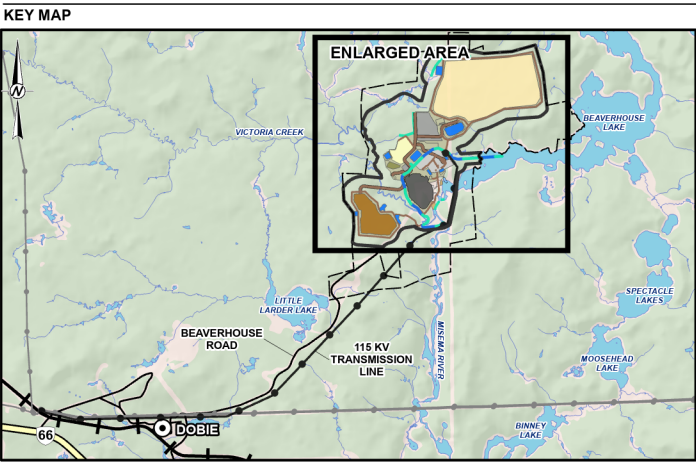
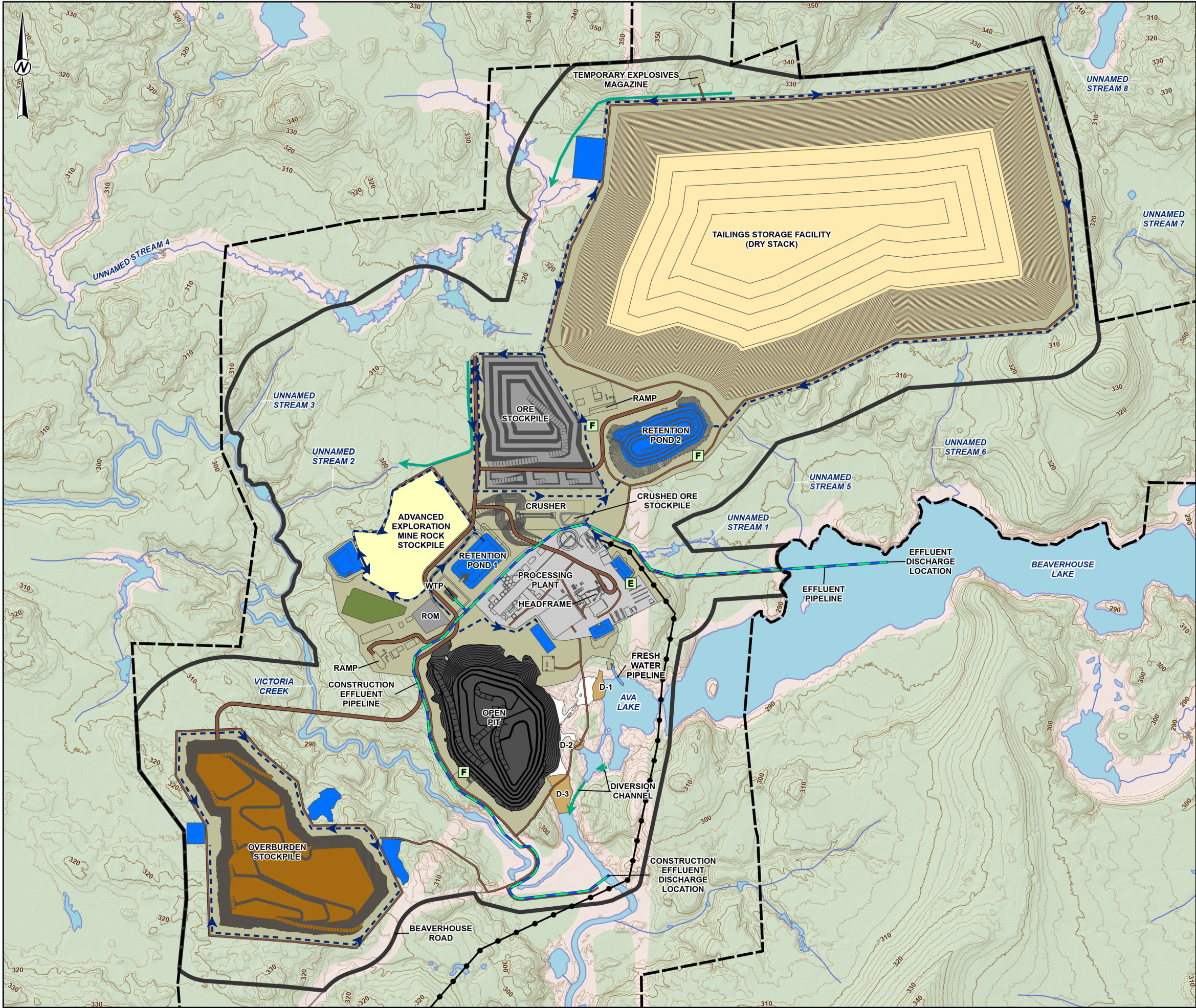
Specific study areas (LSAs and RSAs) for each valued component (pVC and fVC) have been established for the effects assessment and are shown in the related sections of the Impact Statement (Sections 8 to 16).

The PA and most LSAs do not extend onto federal lands or outside the Province of Ontario, with one exception. The LSA for the assessment of Indigenous Peoples, which includes federal reserve lands, located in Ontario and Quebec, for local Indigenous Nations participating in the Impact Assessment for the Project. The nearest provincial boundary with Quebec is shown on study area mapping where applicable. Select RSAs (e.g. social conditions) extend over limited federal lands and outside the Province of Ontario due to their regional extent.

The inclusion of reserve lands in the LSA for Indigenous People is intended to support the assessment of potential pathways of effect and does not restrict the assessment of current use of lands and resources for traditional purposes and Indigenous rights. These considerations may extend beyond reserve lands and are assessed using spatial boundaries appropriate to the valued component being considered.

The inclusion of reserve lands is intended to support the assessment of potential pathways of effect and does not restrict the assessment of current use of lands and resources for traditional purposes and Indigenous rights. These considerations may extend beyond reserve lands and are assessed using spatial boundaries appropriate to the pathway, issue, or valued component being considered.

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LEGEND

	PROPERTY BOUNDARY		MINOR CONTOURS (2 M INTERVAL)
	PROJECT AREA		MAJOR CONTOURS (10 M INTERVAL)
	LOCAL ROAD		
	WATERCOURSE		
	WATERBODY		

PROPOSED SITE FEATURE

	OPEN PIT		POND / SUMP
	VENTILATION RAISE FRESH AIR INTAKE		DYKE (LABELLED WITH ID)
	VENTILATION RAISE EXHAUST		DEWATERED AREA
	PROCESSING PLANT		HAUL ROAD
	INFRASTRUCTURE AREA		ACCESS ROAD
	CRUSHED ORE STOCKPILE		115 KV TRANSMISSION LINE
	ORE STOCKPILE		DITCH
	OVERBURDEN STOCKPILE		DIVERSION CHANNEL
	TAILINGS STORAGE FACILITY		EFFLUENT PIPELINE
	ADVANCED EXPLORATION MINE ROCK STOCKPILE		FRESH WATER PIPELINE
	ADVANCED EXPLORATION OVERBURDEN STOCKPILE		



NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. CONTOURS EXTRACTED FROM LIDAR, PROVIDED BY AGNICO EAGLE MINES, 2021.
3. SITE PLAN, PROPERTY BOUNDARY AND 115 KV TRANSMISSION LINE PROVIDED BY AGNICO EAGLE MINES, FEBRUARY / SEPTEMBER 2025.
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
AGNICO EAGLE MINES

PROJECT
UPPER BEAVER GOLD PROJECT

TITLE
PROJECT AREA

CONSULTANT	YYYY-MM-DD	2026-07-23
	DESIGNED	----
	PREPARED	MD
	REVIEWED	----
	APPROVED	----



PROJECT NO. CA0042150.6518	CONTROL 0035	REV. A	FIGURE 7.4-1
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7.5 Temporal Boundaries

The purpose of a temporal boundary is to identify when a potential effect may occur in relation to specific Project phases and activities. The temporal boundaries for the assessment are based on the timing and duration of Project activities, and the nature of the interactions with valued components. The temporal boundaries for the Impact Statement have been defined according to the three phases common to mining projects: construction phase, operations phase and decommissioning and closure phase (abbreviated as closure phase for brevity going forward). Potential Project-related effects to valued components are assessed for each of these phases.

Further detail regarding each of the primary phases is provided in Section 4.4, and summarized as follows:

- Construction phase:
 - Years -2 to -1
 - Representing the construction period for the Project
- Operations phase:
 - Years 1 to 14
 - During Year 1, the Project will transition from construction into operations and will not be at full capacity
 - Open pit mining will be completed in about four years
 - Underground mine and ore processing will occur over the entire phase
- Decommissioning and closure phase (Closure phase):
 - Decommissioning period: Years 15 to 16, when the majority of the decommissioning and reclamation of the PA are completed, including the filling of the mine workings with water, and excess water is treated until acceptable for passive release to the environment in accordance with applicable regulatory requirements
 - Final closure period: less than one year in length after the open pit is filled with water, and site waters are acceptable for passive release to the environment in accordance with applicable regulatory requirements, when water treatment infrastructure is removed.

7.6 Analysis of Effects

The analysis of effects by Project phase is completed in a structured manner as described in the following sections.

7.6.1 Pathways to Potential Effects

Project components and activities that could result in potential effects are identified prior to the application of mitigation measures. Key Project components and activities by Project phase are described in Table 7.6-1. These Project components and activities are evaluated using an interaction matrix to identify potential pathways to effects on each value component (Table 7.6-2).

A completed matrix identifying pathways to potential effects for each identified pVC and fVC included with the effects assessments is provided in Section 8 and Sections 9 to 12, as applicable. Potential effects include both direct and indirect effects, as well as negative and positive effects, where applicable. Interactions that are not likely to have a material effect on a valued component are screened out based on input received from Indigenous Nations, government agencies, the public and technical experts from the Project team.

7.6.2 Mitigation and Enhancement Measures

Technically and economically feasible measures are proposed for the Project to eliminate, reduce, control or offset the adverse effects and may include restitution for any damage caused by those effects through replacement, restoration or compensation. If the Project-related effect is positive, the actions that could be taken to enhance the effect are indicated.

7.6.3 Assessment of Potential Residual Changes

The potential residual changes to a valued component, after the application of mitigation measures, are assessed using applicable analytical or qualitative methods. Where applicable, a summary of the analytical methods is provided, along with the key assumptions and conservative approaches that would result in a conservative prediction of effects (i.e., an over-estimation of effects) for each valued component. The level of confidence in the assessment is described and considers factors such as the certainty of the scientific information, the level of rigor in the modelling and assessment methods, professional judgement and the effectiveness of proposed mitigation. A follow-up monitoring program may be developed to confirm determinations with higher levels of uncertainty where appropriate.

7.6.4 Characterization of Residual Changes

Based on the results of the assessment, residual changes with a predicted measurable change in the valued component are then characterized utilizing the following attributes:

- Ecological and social context: a qualitative measure of the sensitivity and/or resilience of the valued component to the residual change
- Magnitude: a quantitative or qualitative measure of the size or severity of the change after mitigation relative to the baseline condition and/or applicable guideline
- Geographic extent: the geographic area where the change is expected to occur
- Duration: the period of time over which a change is expected to occur

- Frequency: how often a change is expected to occur
- Reversibility: the ability for the change to be reversed
- Timing: the degree to which the change is expected to occur during a sensitive period for the valued component.

For the purposes of the Impact Assessment, a measurable change is defined as a detectable and quantifiable change when compared to the existing conditions and/or applicable guidelines.

The assessment and characterization of residual changes in pVCs are carried forward into the assessment of the relevant fVCs, but there is no standalone determination of significance for residual changes to pVCs. Residual changes to pVCs are evaluated as pathways that may contribute to effects on fVCs, including fish and fish habitat, migratory birds, and Indigenous Peoples. Where a residual change to a pVC is predicted, the change is considered, as applicable, in the characterization of residual effects and the significance determination for the relevant fVC.

For each residual change, the level of confidence in the assessment, key sources of uncertainty, and any important knowledge gaps are also identified. Confidence and uncertainty may reflect limitations in baseline information, predictive models, future Project design details, scientific understanding, or the availability of Indigenous Knowledge and other information. Where uncertainty exists, the assessment applies conservative assumptions where reasonable and identifies whether additional monitoring or follow-up would improve confidence in the predicted residual change.

7.6.5 Determination of Significance

For each fVC, a determination of significance of non-negligible, adverse residual change under federal jurisdiction is needed to support a federal decision on the Project. The determination is presented in a reasoned manner, consistent with Guidance: Describing Effects and Characterizing Extent of Significance (IAAC 2023a), including in consideration of knowledge received through consultation and engagement activities for the Project. If there are no predicted residual changes for the fVC, a determination of significance is not completed.

For fVCs, the attributes are evaluated according to the three threshold levels (Levels I, II and III), which is detailed further in Table 7.6-3 and Table 7.6-4 to support a determination of significance.

For a residual change of a fVC to be determined significant, the following criteria must both be satisfied:

- A Level II or III rating is attained for ecological and/or social context
- A Level II or III rating is attained for all of the attributes involving magnitude, extent, duration, frequency, reversibility and timing, as applicable.

Conversely, if a Level I rating is achieved for any of the attributes involving magnitude, extent, duration, timing or frequency or if a Level I rating is achieved for ecological and/or social context (where applicable), the change is considered not significant.

Using this methodology, a predicted change is not considered significant if it has one or more of the following:

- Low magnitude and/or extent

- Short term duration including residual change (i.e., the change itself is short term)
- Very infrequent occurrence (or not at all) with little potential for long-term effects.

Similarly, the change is not likely to be significant if it has low or limited importance to the ecological and/or social context.

The likelihood or probability of the significant adverse effect occurring is assessed, although a level is not provided, recognizing that there is some overlap in the concepts of duration, timing, frequency and likelihood. In addition, significant residual effects for non-negligible, adverse effects under federal jurisdiction are characterized in accordance with the Guidance: Describing Effects and Characterizing Extent of Significance (IAAC 2023a).

7.6.6 Management of Residual Changes

Where residual changes are identified, additional information is provided on how the change will be managed. This may include the application of federal or provincial permitting, policies, guidelines and adaptive management. An overall summary of how the residual change will be managed is provided and may include a map illustrating the area of influence, as applicable.

Table 7.6-1: Key Project Components and Activities by Project Phase

Project Component / Activity	Description
Construction Phase	
Site preparation activities in the PA including clearing and establishment of onsite haul and access roads	- Clearing of vegetation, grubbing and movement of organics, soil and overburden with heavy equipment including within the open pit footprints - Establishment of onsite road infrastructure
Establishment and operation of water management and treatment facilities	- Establishment and operation of the integrated water management system and treatment facilities (water management ponds, ditches, sumps, water treatment plants and pipelines) in parallel with site preparation activities, potentially as temporary facilities to be replaced as permanent facilities for operations - Onsite treatment of domestic sewage
Construction of the diversion system (dykes and channel) in the Ava Lake and York Lake areas	Installation of the two diversion channels and dykes to isolate a portion of York Lake to support open pit mining. Activities include site preparation in the area between York Lake and Ava Lake, the isolation of the in-water construction area, and the construction of the dykes using haul trucks and construction equipment. It excludes the construction of access roads and the excavation of construction material.
Controlled dewatering of the open pit basin	Occurs once the diversion system has been completed. It involves the removal and transfer of fish, and subsequent dewatering from the isolated portion of York Lake. The water from the dewatering of York Lake will be discharged to the Misema River, either directly or following settling and treatment, as necessary to comply with applicable regulatory requirements.
Development and management of stockpiles for ore and unconsolidated materials	Transportation of overburden, organics, topsoil, and ore to centralized stockpiles using haul trucks, and managing the stockpiles using heavy equipment
Stripping of lakebed sediments and overburden at the open pit	Occurs after the isolated portion of York Lake has been dewatered. It includes the stripping of lakebed sediment and overburden from the footprint of the open pit using heavy equipment. It also includes the temporary stockpiling of lakebed sediment within a designated area prior to placement in the tailings storage facility (TSF).
Mining in the open pit	Blasting and extraction of mine rock and the use of haul trucks and construction equipment within the pit

Project Component / Activity	Description
Mining underground	Blasting and extraction of mine rock from underground workings expanding on the advanced exploration workings, ventilation, and transport of the mine rock to the surface using trucks along the ramps and shaft
Establishment of fish habitat and compensation measures	Establishment of fish habitat offsetting and compensation measures in local and off-property locations
Construction of the foundation for the TSF	Preparation of the foundation of the TSF with mine rock from the open pit or underground workings and/or aggregate using heavy equipment
Construction and operation of buildings and other onsite infrastructure	- Construction of the process plant and other buildings, fuel supply and onsite infrastructure not identified in other activities - Relocation of Advanced Exploration Program facilities and infrastructure to accommodate development if needed
Waste management	Management of construction, industrial and domestic wastes
Commissioning of the process plant	Commissioning of the process plant including processing of ore and production of tailings
Employment and expenditures	Employment of individuals and expenditures related to procurement and contracting
Operations Phase	
Underground mining	Operation of the underground mine, including underground blasting, extraction of mine rock and ore for transport to surface by truck on the ramp and by shaft, ongoing dewatering and management of contact water to surface, and transport of backfill underground
Open pit mining	Operation of the open pit including removal of overburden, in-pit blasting, hauling of mine rock and ore, ongoing dewatering and management of contact water to surface
Management of overburden and ore in designated facilities	Ongoing development and management of overburden and ore stockpiles including the use of heavy equipment to haul and manage the materials on surface
Operation of the process plant	Operation of the process plant, including the processing of ore and production of tailings

Project Component / Activity	Description
Management of tailings and mine rock in the TSF	Ongoing operation of the TSF for mine rock and tailings. It includes the use of haul trucks for the transportation of mine rock from the open pit and underground workings, and the placement of filtered tailings in the TSF with co-disposed mine rock forming the outer structural shell.
Operation of water management and treatment facilities	Operation of the integrated water management system for the mine site, including: the operation of the collection ditches, sumps and ponds, water treatment facilities (domestic sewage and effluent) and pipelines with discharge of treated effluent to Beaverhouse Lake
Operation and maintenance of buildings and infrastructure	Ongoing operation and maintenance of buildings and infrastructure (site roads, permanent camp, fuel supply and similar)
Waste management	Management of industrial and domestic wastes
Progressive reclamation activities	Progressive reclamation within the PA including the stabilization and reclamation of inactive disturbed areas where practical, such as when maximum extent is achieved
Employment and expenditures	Employment of individuals and expenditures related to procurement and contracting
Closure Phase	
Active closure period	- Removal of assets that can be salvaged - Demolition and removal of site facilities, equipment and infrastructure excluding elements required during passive closure and disposal of related wastes in approved facilities off site - Stabilization and reclamation of disturbed areas not progressively reclaimed during operations, such as by regrading, placing of cover and revegetation in accordance with the provincial closure plan - Initiation and completion of passive and active filling of the underground mine workings and open pit with fresh water actively pumped from Ava Lake - Monitoring and maintenance of the integrated water management system for the mine site including water levels within the open pit lake, with discharge of treated effluent to Beaverhouse Lake until site water quality meets regulatory requirements and passive discharge to the environment is allowed

Project Component / Activity	Description
Final closure period	• Connection of the open pit lake to natural water system once the pit lake water meets applicable regulatory requirements • Reclamation of the Misema River diversion system and reestablishment of the pre-existing flow path • Demolition and removal of the limited water management and treatment facilities and infrastructure remaining on site, after regulatory approval received for passive site discharge • Periodic monitoring of environmental media within the PA during final closure, as well as monitoring of remaining onsite structural facilities
Employment and expenditures	• Employment of individuals to support the decommissioning and closure of the Project, and expenditures related to procurement and contracting for the closure phase

Table 7.6-2: Template Interaction Matrix Table

Project Phase / Activity ⁽¹⁾	Air Quality	Sound and Vibration	Groundwater	Surface Water Flows and Levels	Water Quality	Vegetation Communities and	Moose	Other Wildlife	Species at Risk	Social Conditions	Economic Conditions	Cultural Heritage	Migratory Birds	Fish and Fish Habitat	Indigenous Peoples
Construction Phase															
Site preparation activities in the PA including clearing and establishment of onsite haul and access roads															
Establishment and operation of water management and treatment facilities															
Construction of the diversion system (dykes and channel) in the Ava Lake and York Lake areas															
Controlled dewatering of the open pit basin															
Development and management of stockpiles for ore and unconsolidated materials															
Stripping of lakebed sediments and overburden at the open pit															
Mining in the open pit															
Mining underground															



Project Phase / Activity ⁽¹⁾	Air Quality	Sound and Vibration	Groundwater	Surface Water Flows and Levels	Water Quality	Vegetation Communities and	Moose	Other Wildlife	Species at Risk	Social Conditions	Economic Conditions	Cultural Heritage	Migratory Birds	Fish and Fish Habitat	Indigenous Peoples
Establishment of fish habitat and compensation measures															
Construction of the foundation for the TSF															
Construction and operation of buildings and other onsite infrastructure															
Waste management															
Commissioning of the process plant															
Employment and expenditures															
Operations Phase															
Underground mining															
Open pit mining															
Management of overburden in designated facilities															
Management of ore in designated facilities															



Project Phase / Activity ⁽¹⁾	Air Quality	Sound and Vibration	Groundwater	Surface Water Flows and Levels	Water Quality	Vegetation Communities and	Moose	Other Wildlife	Species at Risk	Social Conditions	Economic Conditions	Cultural Heritage	Migratory Birds	Fish and Fish Habitat	Indigenous Peoples
Management of tailings and mine rock in the TSF															
Operation of the process plant															
Operation of water management and treatment facilities															
Operation and maintenance of buildings and infrastructure															
Waste management															
Progressive reclamation activities															
Employment and expenditures															
Closure Phase															
Active closure															
Final reclamation															
Employment and expenditures															

Note:

1. The activities listed in this table are further described in Table 7.6-1.

Table 7.6-3: Effect Analysis Attributes for Determination of Significance

Attributes	Description	fVC Effect Analysis Attributes		
		Level I	Level II	Level III
Ecological and Social Context	A qualitative measure of the sensitivity and/or resilience to change, based on professional judgement, consultation and Indigenous Knowledge	fVC may or may not be sensitive, and can support the predicted effect with typical mitigation measures	fVC is sensitive and requires special measures to support the predicted effect	fVC is sensitive and unable to support the predicted effect even with special measures
Magnitude	A quantitative or qualitative measure to describe the size or degree of the residual effects relative to baseline conditions	See Table 7.6-4		
Extent	The geographic (spatial) extent over which the residual effect is expected to occur	Effect is restricted to the LSA	Effect extends beyond the LSA but within the RSA	Effect extends beyond the RSA
Duration	The time over which the residual effect is expected to occur	Effect occurs over the short term, typically less than or equal to 2 years ⁽¹⁾	Effect occurs over the medium term (more than 2 years but less than or equal to 18 years ⁽¹⁾)	Effect occurs over the long term: (greater than 18 years ⁽¹⁾)
Frequency	The rate the residual effect is expected to occur	Effect occurs once or infrequently (or not at all)	Effect occurs intermittently or regularly	Effect occurs frequently or continuously
Reversibility	The extent to which the residual effect can be reversed	Effect is fully reversible during Project phases	Effect is partially reversible during Project phases	Effect is not reversible during Project phases
Timing ⁽²⁾	A measure of whether the residual effect occurs during a sensitive period of the year	Effects do not occur during a sensitive period or related effects are fully mitigated	Effects occur during a sensitive period and are partially mitigated	Effects occur during a sensitive period and are not mitigated

Notes:

1. These timelines approximately align with the Project: construction phase is approximately 2 years, operations phase is approximately 14 years, and the active closure period is an additional 2 years.
2. As applicable.

Table 7.6-4: Magnitude Attributes for Determination of Significance

Criteria	Magnitude
Fish and Fish Habitat	
Changes to Fish Habitat	Level I: Measurable Project-related residual effect on fish habitat, fish community or fish health that would be offset with measures implemented in an approved offset plan as required under the <i>Fisheries Act</i>
Changes to Fish Communities	Level II: Measurable Project-related residual effect on fish habitat, fish community or fish health that would not be offset with measures implemented in an approved offset plan as required under the <i>Fisheries Act</i> and/or may affect the sustainability of local fish populations
Changes to Fish Health and Mortality	Level III: Measurable Project-related residual effect on fish habitat, fish community or fish health that would not be offset with measures implemented in an approved offset plan as required under the <i>Fisheries Act</i> and/or may affect the sustainability of regional fish populations
Migratory Birds	
Changes to Abundance of Habitat	Level I: Measurable Project-related residual effect has a low potential to adversely affect birds and/or the habitat required for birds to carry out the life processes necessary to survive and reproduce. Habitat functions are likely maintained elsewhere in the RSA.
Changes to Function, Connectivity and Quality of Habitat	Level II: Measurable Project-related residual effect has moderate potential to adversely affect birds and/or the habitat required for birds to carry out the life processes necessary to survive and reproduce (e.g., some temporary changes in behaviour but not expected to have long-term effects on the population or change the status of local populations or the availability of unique habitats). Bird habitat functions are likely maintained elsewhere in the RSA. Project-related changes in habitat are between 5% and 10% of the RSA.
Changes to Density and Populations	
Changes to Risk of Mortality	Level III: Measurable Project-related residual effect has high potential to adversely affect birds and/or the habitat required for birds to carry out the life processes necessary to survive and reproduce. Habitat functions are not maintained elsewhere in the RSA. Project-related changes in habitat are greater than 10% of the RSA.
Indigenous Peoples	
Change in Current Use of Lands and Resources for Traditional Purposes	- Level I: Measurable Project-related residual effect results in a change to traditional activities and/or use by an Indigenous person or group but could be practiced in the same or similar manner as before. - Level II: Measurable Project-related residual effect results in a change to preferred resources, locations or means to practice traditional activities and the use by Indigenous person or group may be modified or limited. - Level III: Measurable Project-related residual effect results in a change so that traditional activities that can no longer be carried out by an Indigenous person or group in their preferred manner and/or location.

Criteria	Magnitude
Change in Indigenous Physical or Cultural Heritage, and Structures, Sites, or Things of Significance	• Level I: Measurable Project-related residual effect that results in a change from existing conditions to Indigenous physical and cultural heritage, but not sufficient to alter how Indigenous heritage structures, sites or things, are used, accessed or experienced. • Level II: Measurable Project-related residual effect that results in a change from existing conditions to Indigenous physical and cultural heritage that is sufficient to cause a change to how Indigenous heritage structures, sites or things are used, accessed, or experienced. Associated Indigenous interests (such as intergenerational knowledge transfer) may be affected. • Level III: Measurable Project-related residual effect that results in a change from existing conditions to Indigenous physical and cultural heritage that is sufficient to cause a loss of Indigenous heritage structures, sites or things, and/or change in use, access or experience. Associated Indigenous interests (such as intergenerational knowledge transfer) are impeded.
Change in Health, Social and Economic Conditions	• Level I: Measurable Project-related residual effects that result in minor changes to Indigenous health, social and economic conditions that are within the range of normal variability experienced by affected Indigenous communities, and the change is not anticipated to have a measurable adverse outcome at the community or population level. • Level II: Measurable Project-related residual effects that result in discernible changes to Indigenous health, social and economic conditions that are outside the range of normal variability experienced by affected Indigenous communities but is not anticipated to have a measurable adverse outcome at the community or population level. • Level III: Measurable Project-related residual effects that result in substantive or persistent changes to Indigenous health, social and economic conditions that are anticipated to have measurable adverse outcomes that are widespread, long-term, or irreversible at the community or population level.

7.7 Assessment of Cumulative Effects

The approach used for assessing the potential for cumulative effects from the Project in the Impact Statement is consistent with the requirements of the Policy Framework for Assessing Cumulative Effects under the *Impact Assessment Act* (IAAC 2023b). Paragraph 22(1)(a) of the *Impact Assessment Act* specifies that an Impact Assessment must consider cumulative effects that are likely to be caused by the carrying out of a designated project. Per the Policy, cumulative effects are changes to the environment or health, social and economic conditions resulting from the residual effects of a project, combined with other physical activities that have been or will be carried out.

The policy statement suggests a stepwise assessment including scoping, analysis, mitigation, classification and follow up, with the latter steps included as needed based on the results of the analysis:

- Scoping: residual effects can only have a cumulative effect on a valued component if they overlap spatially and temporally, with the residual effects of other projects or activities that have been or will be carried out. Existing baseline conditions reflect cumulative effects from past and existing physical activities and are accounted for within the residual effects assessment for the Project. For Indigenous Peoples, the cumulative effects assessment also considers how historical and existing changes to the environment may contribute to broader changes in the current use of lands and resources, Indigenous cultural continuity, community well-being, and the exercise of Aboriginal and treaty rights.
- Analysis: the residual effects from the Project are assessed with the effects of other projects and physical activities in the cumulative effects assessment.
- Mitigation: technically and economically feasible measures are considered to reduce adverse cumulative effects.
- Description: identified residual cumulative effects after mitigation are described using the same criteria in the assessment of residual effects from the Project (Section 7.6); magnitude, geographic extent, duration, frequency, reversibility and timing (where applicable).
- Follow-up: provided where cumulative effects are identified that addresses Project-specific cumulative effects to the extent reasonable for an individual proponent (Section 17).

If adverse cumulative effects are identified within federal jurisdiction (i.e., for fish and fish habitat, migratory birds and / or Indigenous Peoples), an assessment of significance is completed, in the same manner as for residual effects (Section 7.6).

7.8 References

- Canadian Environmental Assessment Agency. 2018. Technical Guidance for Assessing Cumulative Environmental Effects under the *Canadian Environmental Assessment Act*, 2012. Accessed from: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/assessing-cumulative-environmental-effects-ceaa2012.html.s>
- Impact Assessment Agency of Canada (IAAC). 2023a. Guidance: Describing effects and characterizing extent of significance. Accessed from: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-describing-effects-characterizing-extent-significance.html#toc12>.
- Impact Assessment Agency of Canada (IAAC). 2023b. Policy Framework for Assessing Cumulative Effects under the *Impact Assessment Act*. Accessed from: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/policy-framework-assessing-cumulative-effects-under-impact-assessment-act.html>.
- Impact Assessment Agency of Canada (IAAC). 2024. Next Steps in the Impact Statement Phase for the Upper Beaver Gold Project. Letter to Agnico Eagle Mines Limited dated December 19, 2024.