



Great Bear

Great Bear Gold Project Impact Statement

Section 6: Effects Assessment Methodology

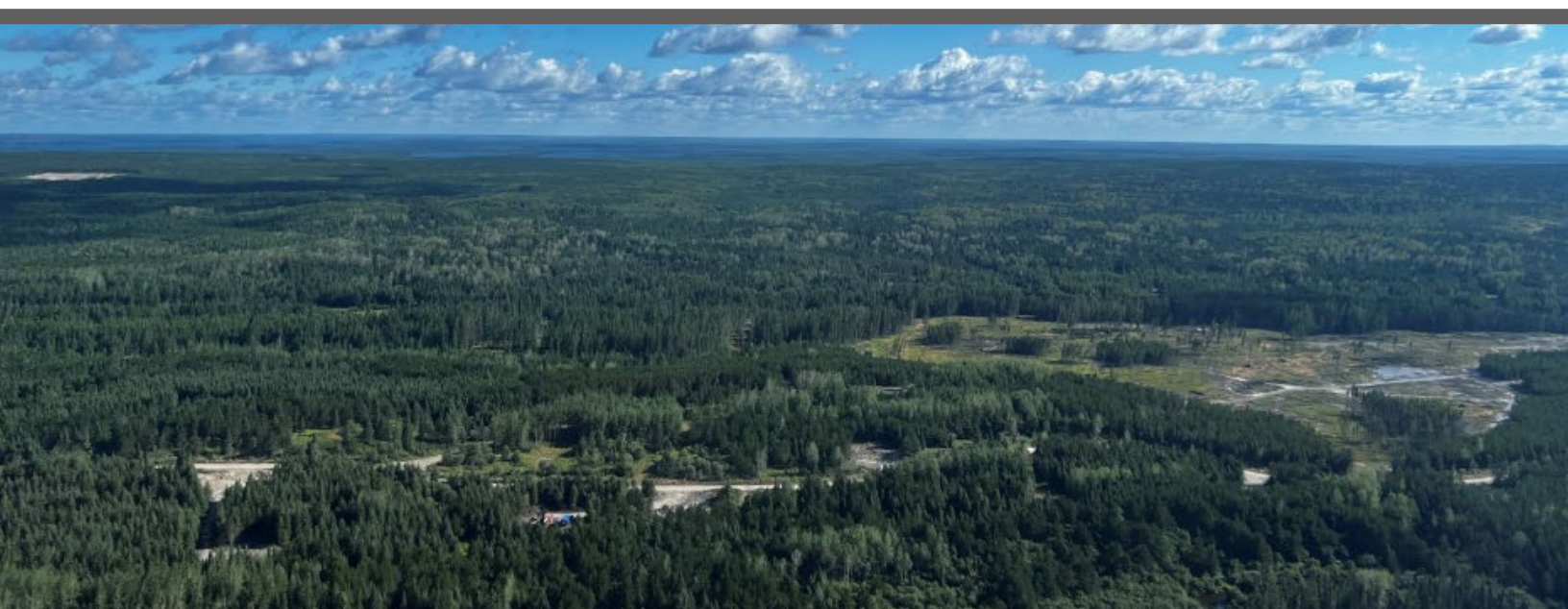


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Acronyms and Abbreviations

AEX	Advanced Exploration program
ANA	Asubpeeschoseewagong Netum Anishinabek (Grassy Narrows First Nation)
fVC	Valued component under federal jurisdiction
Great Bear Resources	Great Bear Resources Ltd.
IAAC	Impact Assessment Agency of Canada
LSA	Local Study Area
LSFN	Lac Seul First Nation
NWOMC	Northwestern Ontario Métis Community (Region 1)
PA	Project Area
Project	Great Bear Project
pVC	Pathway valued component
RSA	Regional Study Area
SAR	Species at risk
TISG	Tailored Impact Statement Guidelines
TMF	Tailings management facility
WFN	Wabauskang First Nation
VMF	Viggo management facility

6.0 Effects Assessment Methodology

6.1 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 Great Bear Gold Project (IAAC 2024). There are no known ongoing or completed applicable regional assessments.

Great Bear Resources Ltd. (Great Bear Resources) understands that the aim of the Impact Statement is to provide sufficient information for the 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 environmental effects of the Great Bear Project (Project) in the Impact Statement is completed in a step-wise 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 pathways for effects between components of the environment
- Apply appropriate mitigation measures to reduce or eliminate potential effects pathways
- Assess and characterize residual effects after mitigation has been applied.

An Anishnaabe-led impact assessment process is also being completed for the Project by Lac Seul First Nation (LSFN) and Wabauskang First Nation (WFN) supported by Great Bear Resources under separate cover. The methodology utilized in that process is aligned with their key principles and may differ from the methodology used in this Impact Statement.

6.2 Environmental Baseline Methodology

Extensive baseline information has been collected for the Project starting in 2019. 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 effects assessment:

- Air quality (Appendix D-1)
- Sound (Appendix E-1 and Appendix E-2)
- Vibration (Appendix E-1 and Appendix E-2)
- Light (Appendix G)
- Groundwater (Appendix H-1)
- Surface water hydrology (Appendix I-1)
- Water quality (Appendix K-1)
- Aquatic resources (Appendix L-1)
- Terrestrial resources (Appendix M-1)
- Socioeconomic environment (Appendix O-1)
- Cultural heritage (Appendix P-1)
- Terrestrial and marine archaeology (Appendix Q-1 and Appendix Q-2)
- Climate (Appendix W-3).

Focused information from these comprehensive sources is provided in two locations in the main Impact Statement with an aim for efficient understanding of the surrounding text:

- A brief 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 4) and Project description (Section 5)
- Additional environmental baseline information is provided in the sections describing the assessment of effects (Section 7 to Section 15), as needed to understand the assessment of potential effects of the Project.

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

Great Bear Resources has supported the collection of Indigenous land, resource use and community knowledge information by local Indigenous communities 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.

6.3 Valued Components

As required by the Tailored Impact Statement Guidelines (TISG; Appendix A-1), 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.

Great Bear Resources 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 people.
- 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 preparation of the Impact Statement as summarized in Section 3 and detailed in Appendix C. Key documents used during consultation and engagement on potential valued components included:

- Preparation and issuance of a memo summarizing proposed valued components to LSFN, WFN, Asubpeeschoseewagong Netum Anishinabek (Grassy Narrows First Nation; ANA) and Northwestern Ontario Métis Community (Region 1; NWOMC) in October 2024
- Presentation of preliminary list of valued components for discussion during workshops with representatives of LSFN and WFN (June 2024), in addition to a valued components workshop with NWOMC community members (June 2025)
- Presentation of the refined list of valued components for discussion during LSFN and WFN open houses (July 2024)
- Presentation of the refined list of valued components for feedback during public open houses in Red Lake and Ear Falls (September 2024 and March 2025).

No additional valued components were raised as a result of these consultation and engagement activities. The following valued components were confirmed as important by representatives of the LSFN and WFN:

- Air
- Animals

- Indigenous Peoples
- Lands
- Waters.

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 6.4 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 components is linked to Indigenous interests or rights of Indigenous Peoples and whether an Indigenous community has requested the valued components*
- *Extent to which the valued components is linked to a federal, provincial, or municipal government priority*
- *Views of Indigenous communities, the public, or federal, provincial, municipal or Indigenous governments on the adverse or positive effect on the valued components*
- *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 components.*

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 valued components (pVCs).

This framework allows for an integration of environmental aspects under both federal and provincial jurisdiction with other components of interest to better accommodate an ecosystem approach.

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

- Air quality
- Sound
- Vibration
- Groundwater

-
- Surface water flows and levels
 - Water quality
 - Vegetation communities
 - Wild Rice
 - Moose
 - SAR
 - Other wildlife
 - Land and resource use
 - Cultural heritage
 - Archaeology
 - Local and regional economy.

The selected fVCs for this Impact Statement are:

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

Table 6.3-1 provides a summary of the rationale for the each of the valued components selected to be assessed in this Impact Statement.

Figure 6.3-1 provides a schematic of the interrelationships between the selected fVCs and pVCs for the Impact Statement.

¹ The Indigenous Peoples fVC is inclusive of: community services and infrastructure; current use of lands and resources for Traditional purposes; physical, cultural heritage structures sites or things; community well-being; and health.

Table 6.3-1: Rationale for Selection of Valued Components

Valued Component	fVC or pVC	Defining Rationale for Inclusion ⁽¹⁾
Air quality	pVC	<ul style="list-style-type: none"> • Indicator of environmental health identified of interest during engagement • Provincial regulatory interest • Includes greenhouse gases which are of related to the strategic assessment of climate change • May provide a pathway to affect fVCs (migratory birds and Indigenous Peoples)
Sound	pVC	<ul style="list-style-type: none"> • Provincial regulatory interest • Identified of interest during engagement • May provide a pathway to affect fVCs (migratory birds and Indigenous Peoples)
Vibration	pVC	<ul style="list-style-type: none"> • May provide a pathway to affect fVCs (migratory birds, fish and fish habitat, and Indigenous Peoples)
Groundwater	pVC	<ul style="list-style-type: none"> • Natural component important to other ecosystem elements • Provincial regulatory interest • Identified of interest during engagement • May provide a pathway to affect fVCs (migratory birds, fish and fish habitat, and Indigenous Peoples)
Surface water flows / levels	pVC	<ul style="list-style-type: none"> • Natural component important to other ecosystem elements • Provincial regulatory interest • Identified of interest during engagement • May provide a pathway to affect fVCs (migratory birds, fish and fish habitat, and Indigenous Peoples)
Water quality	pVC	<ul style="list-style-type: none"> • Indicator of environmental health identified of interest during engagement • Provincial regulatory interest • May provide a pathway to affect fVCs (fish and fish habitat, migratory birds and Indigenous Peoples)
Vegetation communities	pVC	<ul style="list-style-type: none"> • Natural component important to other ecosystem elements • May provide a pathway to affect fVCs (migratory birds and Indigenous Peoples)
Wild Rice	pVC	<ul style="list-style-type: none"> • Notable species of interest during Indigenous engagement • Provincial regulatory interest • May provide a pathway to affect a fVC (migratory birds and Indigenous Peoples)



Valued Component	fVC or pVC	Defining Rationale for Inclusion ⁽¹⁾
Moose	pVC	<ul style="list-style-type: none"> • Identified of interest during engagement • Notable species of interest during Indigenous engagement • Provincial regulatory interest • May provide a pathway to affect a fVC (Indigenous Peoples)
Other wildlife	pVC	<ul style="list-style-type: none"> • May provide a pathway to affect a fVC (Indigenous Peoples)
SAR	pVC	<ul style="list-style-type: none"> • Federal and provincial regulatory interest • Notable species of interest identified during engagement activities (Boreal Caribou and Wolverine) • Identified in Section 7.2 of TISG based on comments from participants during the Planning Phase of the impact assessment of the Project • May provide a pathway to affect a fVC (Indigenous Peoples)
Land and resource use	pVC	<ul style="list-style-type: none"> • Valued by the public and stakeholders during engagement • Provincial regulatory interest • May provide a pathway to affect a fVC (Indigenous Peoples)
Cultural heritage	pVC	<ul style="list-style-type: none"> • Provincial regulatory interest • May provide a pathway to affect a fVC (Indigenous Peoples)
Archaeology	pVC	<ul style="list-style-type: none"> • Provincial regulatory interest • May provide a pathway to affect a fVC (Indigenous Peoples)
Local and regional economy	pVC	<ul style="list-style-type: none"> • Valued by the public, stakeholders and Indigenous peoples • May provide a pathway to affect a fVC (Indigenous Peoples)
Fish and fish habitat	fVC	<ul style="list-style-type: none"> • Identified in Section 7.2 of TISG based on comments from participants during the Planning Phase of the impact assessment of the Project • Within federal jurisdiction (IAAC 2024) • Linked to Indigenous interests and comments received • May provide a pathway to affect a fVC (migratory birds and Indigenous Peoples)
Migratory birds	fVC	<ul style="list-style-type: none"> • Identified in Section 7.2 of TISG based on comments from participants during the Planning Phase of the impact assessment of the Project • Within federal jurisdiction • May provide a pathway to affect a fVC (Indigenous Peoples)



Valued Component	fVC or pVC	Defining Rationale for Inclusion ⁽¹⁾
Indigenous Peoples	fVC	<ul style="list-style-type: none">• Identified in Section 7.2 of 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:

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

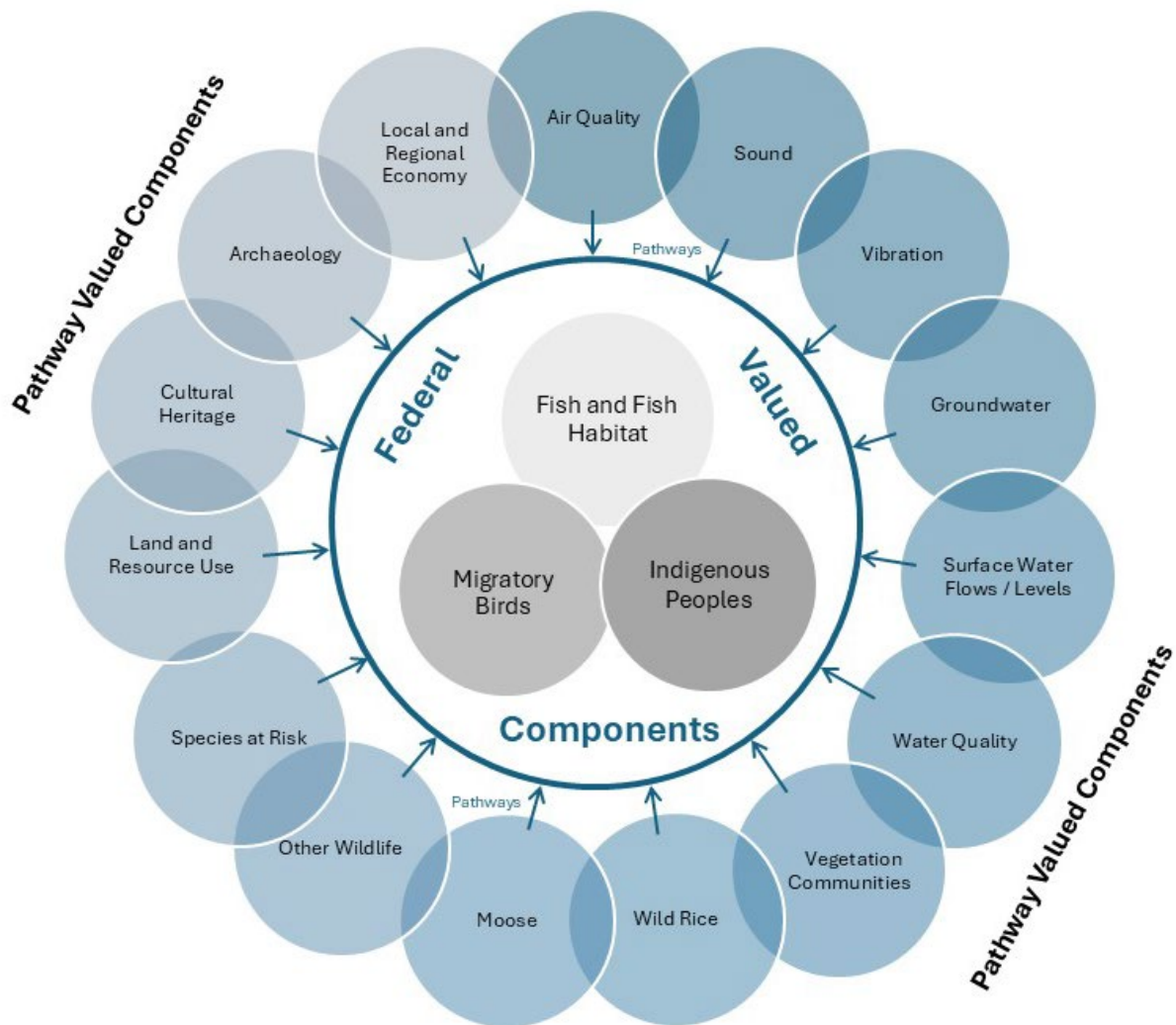


Figure 6.3-1: Interrelationships between pVCs and fVCs

6.4 Spatial Boundaries

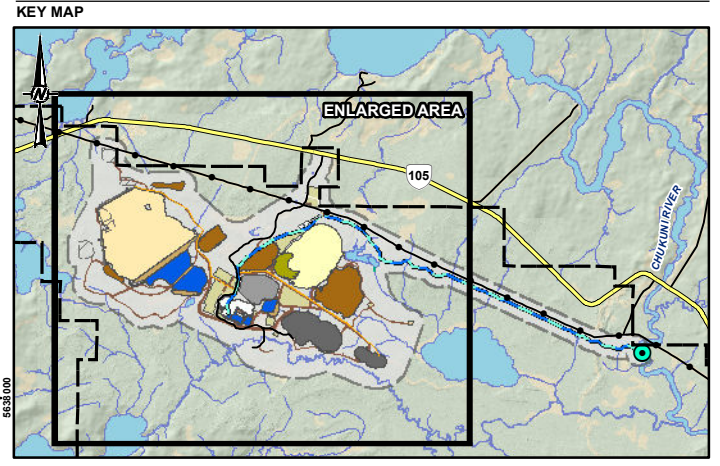
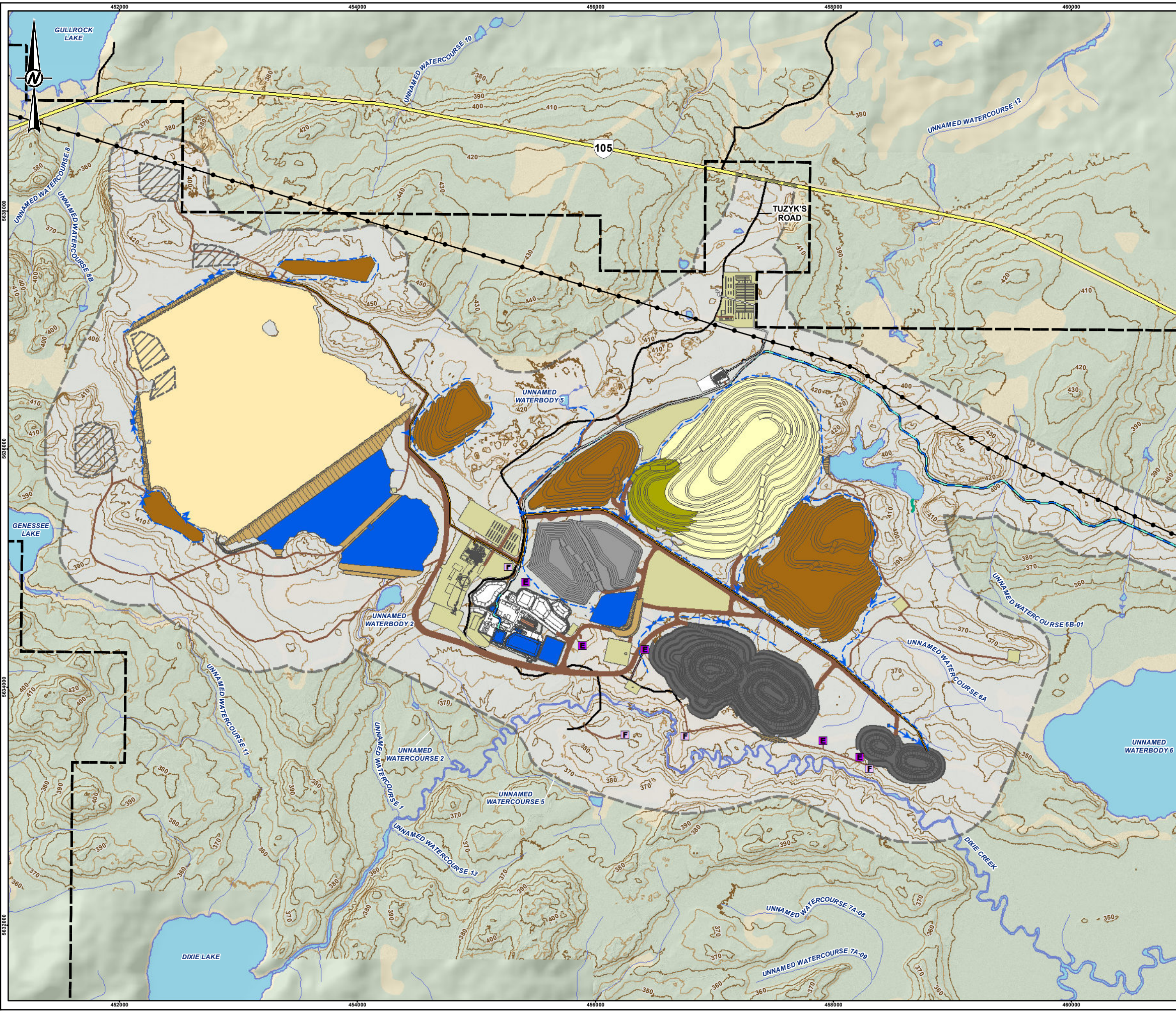
Spatial boundaries have also been defined to provide a focus for the assessment of potential effects on each valued component in accordance with the TISG. Note that the investigation areas defined for data collection purposes in the baseline reports may differ from the spatial boundaries for the effects 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 6.4-1).
- **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 to support a regional context in 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 mapping is provided in the related sections of the Impact Statement (Section 7 to Section 15).

The PA and LSAs do not extend onto federal lands or outside the Province of Ontario. Select RSAs extend over limited federal lands. Federal lands and the nearest provincial boundary with Manitoba are shown on study area mapping where map scale reasonably allows.



LEGEND

	PROPERTY BOUNDARY		WATERCOURSE
	PROJECT AREA (PA)		WATERBODY
	HIGHWAY (INCLUDING ENBRIDGE PIPELINE)		MAJOR CONTOURS (10 M INTERVAL)
	LOCAL ROAD		MINOR CONTOURS (5 M INTERVAL)
	EXISTING TRANSMISSION LINE		

PROPOSED MINE FEATURE

	OPEN PIT		ADVANCED EXPLORATION SITE (AEX)
	MINE ROCK STOCKPILE (NPAG)		ROCK QUARRY (Q) / SAND AND GRAVEL PIT (B)
	MINE ROCK STOCKPILE (PAG)		DIVERSION CHANNEL
	LOW GRADE ORE STOCKPILE (LGO)		EXHAUST VENT RAISE
	OVERBURDEN STOCKPILE (OVB)		FRESH AIR VENT RAISE
	TAILINGS MANAGEMENT FACILITY (TMF)		TRANSMISSION LINE
	DAM		TAILINGS PIPELINE
	POND		PASTE PLANT PIPELINE
	COLLECTION DITCH		EFFLUENT / FRESH WATER PIPELINE CORRIDOR
	MINE FACILITIES / INFRASTRUCTURE		EFFLUENT DISCHARGE LOCATION
	ROAD		
	PORTAL		

0 0.5 1 2
1:32,000 KILOMETRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. CONTOURS ACQUIRED FROM 2022 LIDAR SURVEY
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
PROJECT AREA

CONSULTANT	YYYY-MM-DD	2026-03-31
	DESIGNED	---
	PREPARED	MD
	REVIEWED	---
	APPROVED	SD

PROJECT NO.	CONTROL	REV.	FIGURE
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6.5 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 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 going forward). Potential Project-related effects to valued components are assessed for each of these primary phases. Where appropriate, for individual valued components, conditions after these Project phases are complete (i.e., post-closure) are also discussed.

Further detail regarding each of the primary phases is provided in Section 5.3, and summarized as follows:

- Construction phase:
 - Years -3 to Year -1, 3 years in length
 - Representing the primary period of Project construction
 - Mining of the Viggo pit will be completed during this phase
 - Development in the LP Central pit will be initiated in the last year of construction
- Operations phase:
 - Years 1 to Year 26, 26 years in length
 - During Year 1 the Project will transition from construction into operations and will not be at full capacity
 - Underground mine and ore processing will occur over the entire phase
 - Open pit mining in the LP Central pit will be completed in about nine years
- Closure phase:
 - Active closure period: three years in length when the majority of the decommissioning and reclamation of the PA is completed
 - Passive closure period: approximately one additional year, while the site is on care and maintenance as filling of the mine workings with water is completed, and excess water is treated
 - Final closure period: less than one year in length after the LP Central pit is filled with water, and site waters are acceptable for passive release to the environment, when water treatment infrastructure is removed.

6.6 Analysis of Effects

The analysis of effects by Project phase is completed in a structured manner as follows:

- Identification of potential effects: identifies the potential interactions of Project facilities and activities with valued components (pVCs and fVCs).
- Mitigation and enhancement measures: technically and economically feasible measures proposed for the Project, to eliminate, reduce, control or offset the potential adverse effects, and include restitution for any damage caused by those effects through replacement, restoration or compensation are described. If the Project-related effect is positive, the actions that could be taken to enhance the effect are indicated.
- Assessment of changes after mitigation: Project-related effects are identified for a given valued component, that could reasonably be expected to occur, based on interactions with Project facilities and activities. The professional judgement of technical experts with applicable experience and input from stakeholders and Indigenous communities is used to identify and screen potential effects that will be or might reasonably be expected to be caused by the Project, as not all Project facilities or activities will have a material direct or indirect effect on the valued component. The spatial and temporal extent of the changes relative to the boundaries established for each valued component are described where appropriate.
- Change pathway outcome: an overall summary is provided of the changes to the environment after mitigation. Where changes are identified, additional information is provided on how the change will be managed, including through the provincial environmental approvals processes. A description of confidence in the assessment is also provided.

Table 6.6-1 summarizes the key Project facilities and activities by Project phase utilized in the assessment of effects in Section 7 to Section 15, as applicable.

A further step is taken to characterize the extent of significance for non-negligible, adverse effects under federal jurisdiction in a reasoned manner, consistent with Guidance: Describing Effects and Characterizing Extent of Significance (IAAC 2023), including in consideration of Indigenous knowledge received through consultation and engagement activities for the Project. An assessment of the significance of residual changes to the environment is needed for fVCs, to support a federal decision on the Project. The significance of potential adverse residual effects to a fVC is evaluated in a structured format described below. An assessment of the degree of confidence in the significance prediction is also determined. If there are no predicted residual effects for the fVC, a significance determination is not completed.

The significance of residual effects to a fVC is evaluated utilizing the following attributes according to the three threshold levels (Levels I, II and III) detailed further in Table 6.6-2 and Table 6.6-3:

- Ecological and social context: a qualitative measure of the sensitivity and / or resilience of the fVC to the potential effect
- Magnitude: a quantitative or qualitative measure of the size or severity of the effect after mitigation relative to the baseline condition and / or applicable guideline
- Geographic extent: the geographic area where the effect is expected to occur

- Duration: the period of time over which an effect is expected to occur
- Frequency: how often an effect is expected to occur
- Reversibility: the ability for the effect to be reversed
- Timing: the degree to which the effect is expected to occur during a sensitive period for the fVC (applicable to select fVCs).

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

- A Level II or III rating is attained for ecological and / or social context and
- 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 effect is considered not significant.

Utilizing this methodology, a predicted effect is not considered to be significant if it is of:

- Low magnitude and / or extent or
- Short term duration including residual effects (i.e., the effect itself is short term) or
- Is likely to occur very infrequently (or not at all) with little potential for long-term effects.

Similarly, the effect 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.

The level of confidence is described for the significance determination 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.

Table 6.6-1: 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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
Mining in the open pits	<ul style="list-style-type: none"> • Blasting and extraction of mine rock and ore, and the use of haul trucks and construction equipment within the pits
Mining underground	<ul style="list-style-type: none"> • Blasting and extraction of mine rock from underground workings expanding on the advanced exploration workings, air transfer, and transport of the rock to the surface using trucks along the ramps
Development and management of stockpiles for rock and unconsolidated materials	<ul style="list-style-type: none"> • Transportation of ore, mine rock unconsolidated materials (overburden, and potentially organics and topsoil) to centralized stockpiles using haul trucks, and managing the stockpiles using heavy equipment
Establishment of onsite fish habitat and compensation measures	<ul style="list-style-type: none"> • Placement of a berm, creation of a pond and establishment of a channel to Unnamed Watercourse 6B-01 • Establishment of additional fish habitat within the Dixie Creek floodplain south of Unnamed Waterbody 6
Establishment of aggregate operations (quarries, and sand and gravel pits) on the Property	<ul style="list-style-type: none"> • Excavation of sand and gravel, and blasting and quarrying of rock on the Property for Project use, with local stockpiling and the use of haul trucks to transport the material as needed for site construction
Construction of the starter embankments for the tailings management facility (TMF)	<ul style="list-style-type: none"> • Preparation of the foundation and the construction of the initial starter embankments of the TMF with mine rock from the Viggo pit and / or aggregate using heavy equipment

Project Component / Activity	Description
Construction and operation of buildings and other onsite infrastructure	<ul style="list-style-type: none"> • Construction of the temporary camp, permanent camp, process plant and other buildings, fuel supply and onsite infrastructure not identified in other activities • Relocation of advanced exploration (AEX) program facilities and infrastructure to accommodate development if needed
Waste management	<ul style="list-style-type: none"> • Management of construction, industrial and domestic wastes, including operation of onsite landfill
Power supply	<ul style="list-style-type: none"> • Continuation of power generation from natural gas and draw of available power from the regional grid (facilities established during the AEX program)
Commissioning of the process plant	<ul style="list-style-type: none"> • Commissioning of the process plant including processing of ore and production of tailings
Employment and expenditures	<ul style="list-style-type: none"> • Employment of individuals and expenditures related to procurement and contracting
Operations Phase	
Underground mining	<ul style="list-style-type: none"> • 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 cemented rock backfill and paste backfill underground
Open pit mining in the LP Central pit	<ul style="list-style-type: none"> • 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, mine rock and ore in designated facilities	<ul style="list-style-type: none"> • Ongoing development and management of stockpiles including the use of heavy equipment to haul and manage the materials on surface • Segregation of mine rock according to geochemical characteristics
Operation of the process plant	<ul style="list-style-type: none"> • Operation of the process plant, including the processing of ore, and production of desulphurized tailings and concentrate tailings
Management of desulphurized tailings in the TMF	<ul style="list-style-type: none"> • Ongoing operation of the TMF including the placement of mine rock and / or aggregate to periodically raise the TMF embankments using heavy equipment
Management of concentrate tailings in the depleted Viggo pit	<ul style="list-style-type: none"> • Ongoing operation of the east Viggo management facility (east VMF) for sulphide tailings storage and site contact water management

Project Component / Activity	Description
Operation of water management and treatment facilities	<ul style="list-style-type: none"> • Operation of the integrated water management system for the mine site, including: the operation of the collection ditches, sumps and ponds (including temporary storage of reject solution in the west VMF), water treatment facilities (domestic sewage, membrane filtration and effluent) and pipelines, with discharge of treated effluent to the Chukuni River
Construction of a mine water pond	<ul style="list-style-type: none"> • Establishment of the pond downstream of the TMF using heavy equipment with mine rock and / or aggregate for embankments to provide additional capacity for management of site contact waters
Operation and maintenance of buildings and infrastructure	<ul style="list-style-type: none"> • Ongoing operation and maintenance of buildings and infrastructure (site roads, permanent camp, fuel supply and similar)
Waste management	<ul style="list-style-type: none"> • Management of industrial and domestic wastes
Power supply	<ul style="list-style-type: none"> • Continuation of power generation from natural gas and power draw from the regional electric grid
Progressive reclamation activities	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Employment of individuals and expenditures related to procurement and contracting
Closure Phase	
Active closure period	<ul style="list-style-type: none"> • 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 • Pumping of reject solution to the underground mine and initiation of active filling of the underground mine workings, LP Central pit and VMF with fresh water pumped from the Chukuni River • Redirection of site runoff to the LP Central pit lake



Project Component / Activity	Description
Passive closure period	<ul style="list-style-type: none"> • Continuation and completion of the active and passive filling of the underground mine, VMF and the LP Central pit with water • Monitoring and maintenance of the integrated water management system for the mine site including water levels with the VMF and the LP Central pit lake, with discharge of treated effluent to the Chukuni River, until site water quality meets regulatory requirements and passive discharge to the environment is allowed
Final reclamation period	<ul style="list-style-type: none"> • Connection of LP Central pit lake to natural water system once the pit lake water meets all regulatory requirements • Demolition and removal of the limited water management and treatment facilities and infrastructure remaining on site, after regulatory approval received for passive site discharge
Employment and expenditures	<ul style="list-style-type: none"> • Employment of individuals to support the decommissioning and closure of the Project, and expenditures related to procurement and contracting for the closure phase

Table 6.6-2: 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 change with typical mitigation measures	fVC is sensitive and requires special measures to support the predicted change	fVC is sensitive and unable to support the predicted change even with special measures
Magnitude	A quantitative of qualitative measure to describe the size or degree of the residual effects relative to baseline conditions	See Table 6.6-3		
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 3 years ⁽¹⁾	Effect occurs over the medium term (more than 3 years but less than or equal to 32 years ⁽¹⁾)	Effect occurs over the long term: (greater than 32 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 3 years, operations phase is approximately 26 years and the active closure period is an additional 3 years.
2. As applicable.



Table 6.6-3: Magnitude Attributes for Determination of Significance

Criteria	Magnitude
Fish and Fish Habitat	
Changes to Fish Habitat	<ul style="list-style-type: none"> • Level I: measurable Project-related residual effect on fish habitat area or changes in flow that would be offset with measures implemented in an approved offset plan as required under the <i>Fisheries Act</i>. • Level II: measurable Project-related residual effect on fish habitat area or changes in flow 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. • Level III: measurable Project-related residual effect on fish habitat area or changes in flow 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.
Changes to Fish Communities	<ul style="list-style-type: none"> • Level I: measurable Project-related residual effect on fish abundance, or fish community structure that would be offset with measures implemented in an approved offset plan as required under the <i>Fisheries Act</i>. • Level II: measurable Project-related residual effect on fish abundance, or fish community structure 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. • Level III: measurable Project-related residual effect on fish abundance, or fish community structure 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.
Changes to Fish Health and Mortality	<ul style="list-style-type: none"> • Level I: measurable Project-related residual effect on water quality, fish tissue contaminants or fish growth that would be offset with measures implemented in an approved offset plan as required under the <i>Fisheries Act</i>. • Level II: measurable Project-related residual effect on water quality, fish tissue contaminants or fish growth 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. • Level III: measurable Project-related residual effect on water quality, fish tissue contaminants or fish growth 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.



Criteria	Magnitude
Migratory Birds	
<p>Changes to Abundance of Habitat</p> <p>Changes to Function, Connectivity and Quality of Habitat</p> <p>Changes to Density and Populations</p> <p>Changes to Risk of Mortality</p>	<ul style="list-style-type: none"> • 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. • Level II: measurable Project-related residual effect has a 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 impacts 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. • Level III: measurable Project-related residual effect has a 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	
<p>Change in Community Services and Infrastructure</p>	<ul style="list-style-type: none"> • Level I: Project-related demand for regional services and infrastructure used by local Indigenous people are manageable, and well within the existing regional capacity. • Level II: some elements of regional services and infrastructure used by local Indigenous people are operating close to or beyond capacity; however, the Project-related demand for regional services and infrastructure can be managed with mitigation measures. • Level III: some elements of regional services and infrastructure used by local Indigenous people are operating tenuously close to or beyond capacity, and the Project-related demand for regional services and infrastructure cannot be managed with mitigation measures.
<p>Change in Current Use of Lands and Resources for Traditional Purposes</p>	<ul style="list-style-type: none"> • Level I: Project-related changes may increase the effort necessary but will not reduce the ability of Indigenous Peoples to practice traditional activities related to the current use of lands and resources for traditional purposes. • Level II: Project-related changes may reduce but not eliminate the ability of Indigenous Peoples to practice traditional activities related to the current use of lands and resources for traditional purposes. • Level III: Project-related changes will greatly reduce or eliminate the ability of Indigenous Peoples to practice traditional activities related to the current use of land and resources for traditional purposes.



Criteria	Magnitude
Change in Indigenous Physical or Cultural Heritage, and Structures, Sites, or Things of Significance	<ul style="list-style-type: none"> • Level I: negligible to small Project-related change that is insufficient to alter how Indigenous heritage structures, sites or things, are used, accessed or experienced. • Level II: measurable Project-related change that may alter 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: Project-related change that will result in a loss of Indigenous heritage structures, sites or things, and loss of access or use. Associated Indigenous interests (such as intergenerational knowledge transfer) are impeded.
Change in Community Well-being	<ul style="list-style-type: none"> • Level I: measurable Project-related change in social determinants of well-being that may result in a slight adverse change in the population-level social and / or economic conditions of local Indigenous people. • Level II: measurable Project-related change in social determinants of well-being that will result in a material adverse change in the population-level social and / or economic conditions of local Indigenous people. • Level III: measurable Project-related change in social determinants of well-being that will result in a substantive adverse change in the population-level social and / or economic conditions of local Indigenous people.
Change in Health	<ul style="list-style-type: none"> • Level I: measurable Project-related changes in environmental exposures and / or social determinants of health are unlikely to result in a material adverse change in population-level health status of local Indigenous people. • Level II: measurable Project-related changes in environmental exposures and / or social determinants of health may result in a material adverse change in population-level health status of local Indigenous people. • Level III: measurable Project-related changes in environmental exposures and / or social determinants of health will result in a substantial adverse change in population-level health status of local Indigenous people.

6.7 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 2025). 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 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.
- **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 6.6); magnitude, geographic extent, duration, frequency, reversibility and timing (where applicable).
- **Follow-up:** is provided where cumulative effects are identified that addresses Project-specific cumulative effects to the extent reasonable for an individual proponent (Section 15).

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 6.6).

6.8 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>
- Impact Assessment Agency of Canada (IAAC). 2023. 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). 2025. 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 Great Bear Gold Project. Letter to Kinross Gold Corporation dated December 18, 2024.