AGNICO EAGLE

UPPER BEAVER
PROJECT

Upper Beaver Gold Project Impact Statement

Section 14: Effects of the Environment on the Project

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Acronyms and Abbreviations

Agnico Eagle	Agnico Eagle Mines Limited
CCRA	Climate Risk and Resilience Assessment
CDA	Canadian Dam Association
ECCC	Environment and Climate Change Canada
GISTM	Global Industry Standard on Tailings Management
Project	Upper Beaver Gold Project
PA	Project Area
TISG	Tailored Impact Statement Guidelines
TSF	Tailings storage facility

14.0 Effects of the Environment on the Project

14.1 Context

The Upper Beaver Gold Project (Project) has been designed with consideration of its natural surroundings and in accordance with engineering design standards that account for environmental stresses and incorporates appropriate safety margins. The Tailored Impact Statement Guidelines (TISG; Appendix A-1) require that the Impact Statement considers and describes how environmental conditions, including credible natural hazards and extreme environmental events, could adversely affect the Project and how they could result in major effects to the environment if they were to occur. Credible hazards and events that are reasonably likely to occur and could result in major environmental effects if not properly managed are considered in this section, in accordance with the TISG. Potential effects on current and future generations are considered in relation to whether environmental conditions affecting the Project could result in long-term changes to environmental, health, social or economic conditions, including during closure and post-closure phases.

14.2 Climate Change Considerations

Climate change has the potential to change future precipitation and temperature regimes, which would modify how weather-related hazards could affect the proposed Project. Therefore, understanding the current climate and projected future climate trends is important when evaluating the robustness of the Project's design. The following assessments related to climate change were completed to support this understanding:

- Development of a Climate Change Dataset for the Project (Appendix R-2)
- Completion of a Climate Risk and Resilience Assessment (CCRA; Appendix R-1)
- Preparation of a Climate Roadmap (Appendix R-3).

Knowledge gained through these assessments has been considered in the Project design and in evaluating the credible hazards and extreme environmental events that may affect the Project.

The detailed, site-level climate change dataset (Appendix R-2) was developed to support design and operation activities at the Project site and summarizes the existing, available local and regional climate data related to the current climate and projected future climate. This dataset was applied throughout the Impact Statement to support a consistent consideration of future climate conditions across the various assessments. Baseline climate statistics were established using representative data sources to characterize current climate conditions, forming the basis from which future projections were developed. Downscaled global climate model outputs were then used to describe how current climate conditions may change in the future. Recognizing the inherent uncertainty associated with climate projections, the results were derived from multiple models and scenarios, forming a multi-model ensemble consistent with recommendations from the Intergovernmental Panel on Climate Change (IPCC 2021). Projections from this multi-model ensemble were summarized using percentiles, where the 50th percentile represents the median value and higher percentiles (i.e., 90th and 95th percentiles) represent extreme projections for the site. As climate science continues to advance and new models and scenarios become available, the detailed climate change dataset completed for the Project provides a foundation for ongoing refinement and improvement at the site.

The CCRA provided in Appendix R-1 and summarized in Section 14.9 aims to understand where climate change risks may occur and how these risks can be managed to demonstrate the resilience of the Project to a changing climate over its planned lifetime. The CCRA has been prepared to estimate climate-change-associated risks for the proposed Project and to identify how potential risks may be managed throughout all the Project phases, including post-closure. The CCRA aligns with the revised Strategic Assessment on Climate Change (ECCC 2020) as well as the draft Technical Guide Relating to the Strategic Assessment on Climate Change: Assessing Climate Change Resilience (ECCC 2022), which provides technical guidance on how proponents pursuing a project under a federal Impact Assessment can consider the resilience of their project. The CCRA also considers A Guide on Incorporating Climate Change Adaptation into Decision Making for the Mining Sector (MAC 2021), outlining a stepwise approach that mining facilities, including the Project, can apply to integrate climate change adaptation into decision-making and strengthen climate resilience.

Lastly, the Climate Roadmap (Appendix R-3) demonstrates how climate change was considered throughout the Impact Statement.

14.3 Identification of Credible Hazards and Extreme Events

The TISG does not specify which hazards and events must be considered in the Impact Statement. Accordingly, a range of sources was consulted to identify potential natural hazards and extreme events that could interact with the Project, taking into account the local conditions and the following sources:

- Impact Assessment Agency of Canada Registry: past environmental assessments in northwestern Ontario (reviewed for topics considered)
- Canada Disaster Database (Government of Canada 2025)
- Earthquakes in Canada (Government of Canada 2026a,b)
- Northern Tornadoes Project (NTP 2026).

The following credible natural hazards and extreme events were identified that may interact with the Project based on historic and anticipated events:

- Wildfires
- Major precipitation events and floods
- Severe windstorms
- Extreme temperatures
- Low-intensity seismic events.

Natural (meteorological or geological) hazards not considered a credible hazard or extreme event for the Project include avalanches, droughts, hurricanes, landslides, major earthquakes, major tornadoes (i.e. greater than EF3), storm surges, tsunamis and volcanic eruptions.

14.4 Wildfires

14.4.1 Environmental Conditions

At the Project site in northeastern Ontario, the surrounding boreal forest landscape and associated fuel types (e.g., coniferous vegetation and accumulated forest floor material) may further influence wildfire susceptibility. The Project is located on patent lands but within the Timiskaming Forest Management Unit, where portions of the site have been subject to timber harvesting within the past 10 to 15 years. The Project Area falls under Sustainable Forest Licence No. 542247, held by the Timiskaming Forest Alliance Inc. (TFAI), which is responsible for forest management planning and implementation, including harvesting activities conducted in accordance with approved Forest Management Plans and Annual Work Schedules. As such, historical and ongoing forest management activities may locally influence fuel loading, stand composition, and fuel continuity, which are important factors in wildfire behaviour and risk.

It can be conservatively assumed that fire intensity may increase over the longer term due to warmer temperatures, along with a potential rise in wildfire frequency driven by more frequent electrical (lightning) storms and longer annual fire seasons. National-scale projections indicate that climate change is expected to increase the frequency and severity of fire weather conditions, as well as lengthen the fire season across Canada (CDC 2024). Figure 14.4-1 provides a summary of the documented wildfires in the area. The Canada Fire Weather Index is projected to increase into the mid-century period (i.e., 2041 to 2070), with limited additional change anticipated later into the century. In Ontario, the wildland fire season extends from April 1 to October 31 each year. The Ministry of Natural Resources operates a forest fire management program to detect and control fires across the province, with the objective of reducing their potential magnitude and extent in accordance with the Wildland Fire Management Strategy (MNR 2014).

The overall influence of climate change on wildfires is difficult to quantify, as conditions that promote wildfire arise from multiple interacting factors, such as recent weather patterns, broader climate conditions, vegetation type and the amount of underbrush or deadfall.

14.4.2 Mitigation Measures

At the design stage, infrastructure siting and layout should incorporate wildfire risk reduction measures consistent with FireSmart Canada guidance and the National Guide for Wildland–Urban Interface Fires, including maintaining defensible space (up to 100 m where feasible) and implementing vegetation management and fuel breaks around critical assets.

Critical infrastructure should be designed to reduce fire susceptibility, including consideration of fire-resistant materials and protection of exposed components such as pipelines and communication lines. Facilities such as explosives storage must also comply with applicable federal regulations to minimize secondary risks.

Operationally, inspection and vegetation management programs will be implemented to maintain defensible space and reduce fuel loading across the site. Emergency response and health and safety plans will incorporate wildfire scenarios, including procedures for detection, evacuation and coordination with external responders.

To support operational continuity, backup power systems, such as diesel generators, will be in place, and business continuity planning will address potential access restrictions and temporary shutdowns resulting from wildfire effects.

During the closure and post-closure phases, revegetation strategies should consider species selection and landscape design to reduce long-term fire susceptibility, with fire breaks considered around any remaining critical infrastructure, as practical.

14.4.3 Potential Effects to the Environment, Health, Social and Economic Conditions

A wildfire may affect the Project and result in temporary cessation of operation; however, it is not expected to cause any additional major environmental effect. As personnel would be evacuated in such an event, no health effects specific to the Project are anticipated.

Local wildfires may require a temporary cessation of work in a small area or across the entire Upper Beaver Property to protect worker safety, including from indirect smoke effects. In the event of a large regional wildfire, operations are expected to pause until the fire is brought under control and safe access and power supply can be restored. Until a primary source of power is available (transmission line), processing operations will remain curtailed, as well as the associated economic benefit to the region. No generational effects are anticipated as a result of wildfire on the Project.

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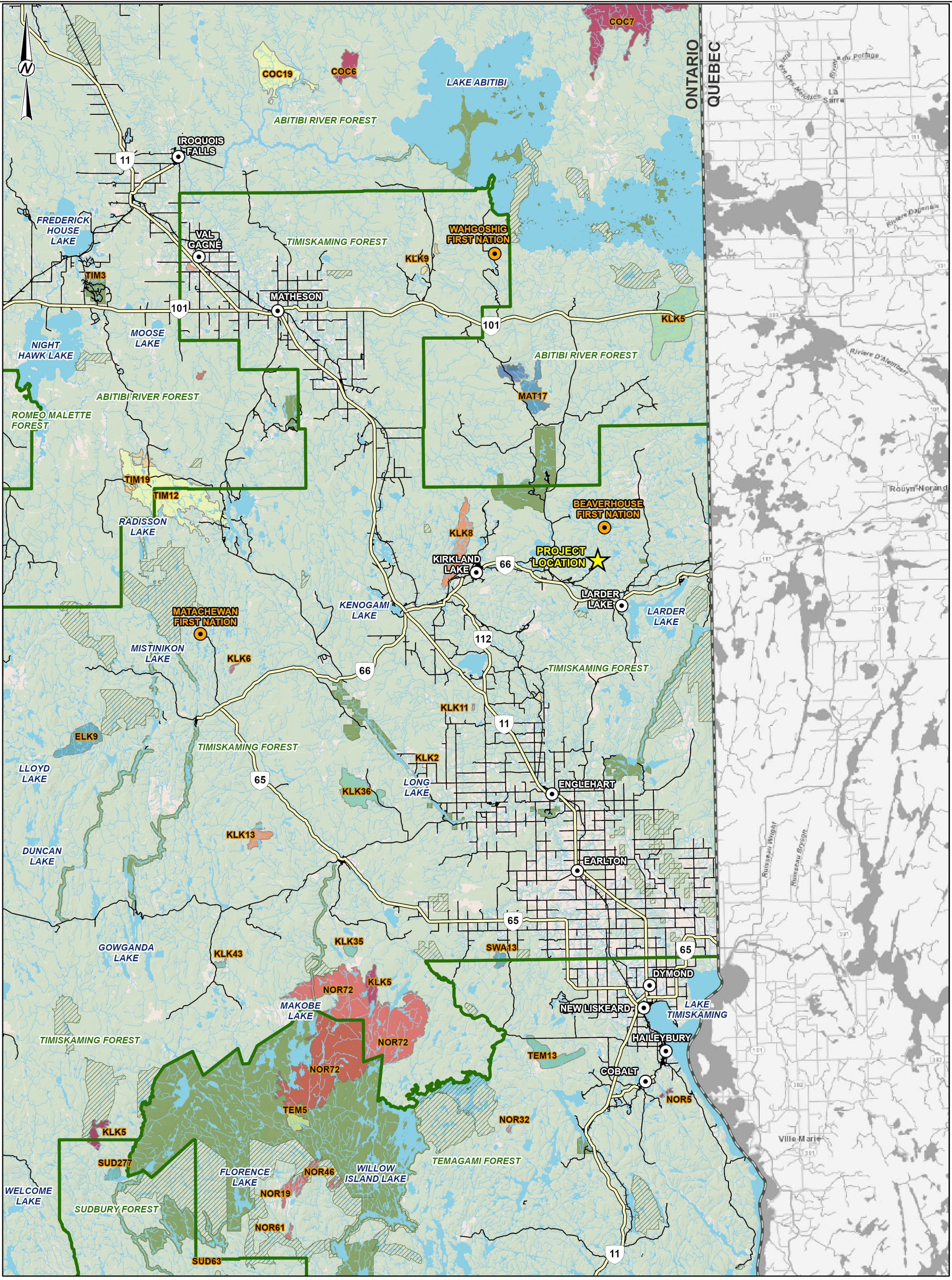

LEGEND

- PROJECT LOCATION
- TOWN / COMMUNITY
- FIRST NATION COMMUNITY
- CONSERVATION RESERVE
- PROVINCIAL PARK
- HIGHWAY
- LOCAL ROAD
- RAILWAY
- PROVINCIAL BORDER
- FOREST MANAGEMENT UNIT
- WATERBODY / WATERCOURSE

WILDFIRE AREAS (LABELLED WITH ID)

FIRE YEAR

1966, 1971, 1972, 1975, 1976, 1977, 1984, 1988, 1992, 1997, 2001, 2003, 2004, 2005, 2007, 2010, 2012, 2016, 2018, 2021, 2023, 2024

0 5 10 20

1:600,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERBODIES AND WATERCOURSE EXTRACTED FROM LIO, MNRF AND MODIFIED TO MATCH SITE PLAN LAYOUT PROVIDED BY AGNICO EAGLE MINES; TO BE FIELD CONFIRMED.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
AGNICO EAGLE MINES

PROJECT
UPPER BEAVER GOLD PROJECT

TITLE
REGIONAL WILDFIRES

CONSULTANT		
	YYYY-MM-DD	2026-07-22
	DESIGNED	----
	PREPARED	KB
	REVIEWED	HL
	APPROVED	EC

PROJECT NO.	CONTROL	REV.	FIGURE
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14.5 Major Precipitation Events and Floods

14.5.1 Environmental Conditions

The Project is located in a region that experiences seasonal variability in precipitation, including short duration precipitation events and longer wet periods. Under current climate conditions, average annual total precipitation at the Project site is approximately 908 mm (Appendix R-2). Inter-annual variability is present, with a 1:5 wet year estimated at approximately 941 mm of total annual precipitation and a 1:100 wet year estimated at approximately 1,225 mm (Appendix R-2).

Climate projections indicate increases in total precipitation over future time horizons. At the 50th percentile, annual total precipitation at the Project site is projected to increase by approximately 4% by the 2030s (2021 to 2050) and approximately 6% by the 2060s (2051 to 2080; Appendix R-2). Projected changes are represented across multiple seasons, including winter months.

Extreme precipitation metrics are also projected to change. For the 1:100 year precipitation event, projected changes at the 50th percentile range from approximately 1% to 16% by the 2030s, with a median change of approximately 15% (Appendix R-2). By the 2060s, projected changes range from approximately 0% to 20%, with a median change of approximately 18% (Appendix R-2). Probable maximum precipitation (PMP) values for short duration events are projected to increase, with 1-day, 2-day, and 3-day PMP projected to change by approximately 19%, 16%, and 15%, respectively, by the 2030s and by approximately 23%, 21%, and 23%, respectively, by the 2060s (Appendix R-2).

Projected changes in combined rainfall and snowmelt depths vary by duration and return period. At the 50th percentile, projected changes range from approximately −4% to +12% in the 2030s and approximately −2% to +17% in the 2060s across durations (Appendix R-2). For the 1:100 year combined rainfall and snowmelt event, projected changes are approximately 11% by the 2030s and approximately 14% by the 2060s (Appendix R-2). Short duration combined rainfall and snowmelt events show higher projected changes than longer duration events. For longer durations, projected changes include both increases and decreases.

Across all precipitation-based indices, projected changes span a range of values depending on duration, return period, emissions scenario, and climate model, reflecting uncertainty in future precipitation projections.

14.5.2 Mitigation Measures

Extreme precipitation and associated flooding present risks to water management infrastructure, mining operations, tailings areas and site access through increased runoff, erosion and the potential for flows to surpass design capacity limits. Mitigation measures thus focus on integrating climate projections into design criteria and supporting alignment with established Canadian standards and industry guidance.

At the design stage, hydrological and hydraulic analyses should incorporate projected changes in precipitation intensity, peak flows and runoff to inform the sizing of diversion channels, dykes, retention ponds, culverts and drainage systems. Water-retaining and diversion structures will be designed with appropriate capacity and freeboard in accordance with the Canadian Dam

Association Dam Safety Guidelines (CDA 2013), including consideration of extreme flood design events and consequence classification of structures.

For mining infrastructure, open pit and underground systems should include sufficient dewatering capacity to manage increased inflows during extreme precipitation events. Diversion dykes and channels should be designed to maintain stability under high-flow conditions, supported by erosion protection measures. In addition, geotechnical and slope stability monitoring programs will be implemented to manage risks associated with increased saturation and runoff.

Water management systems are a primary control measure. The Project will implement site-wide water management and monitoring plans that incorporate climate change projections and apply an adaptive management approach. These plans will include periodic water balance updates, monitoring of inflows and storage capacity and provisions to adjust infrastructure and operations over time. Design considerations should include redundancy in pumping systems, controlled discharge infrastructure, and sufficient retention capacity to manage peak inflows and maintain treatment performance during extreme events.

For tailings and overburden areas, drainage and storage systems should be designed to manage elevated runoff and maintain slope stability. This includes incorporating future precipitation regimes into the water management system design and water treatment capacity. These measures will be supported by monitoring programs and the implementation of erosion and sediment control plans, consistent with industry best management practices.

Operational controls will include routine inspection and maintenance of drainage infrastructure (e.g., ditches, culverts, and conveyance systems) to maintain functionality during extreme events and to reduce blockage-related flooding risks. Monitoring systems will be implemented to track precipitation, water levels and system performance to enable timely response.

Large snowfall events could temporarily impede the movement of equipment and activities on site and may increase structural loads from snow accumulation. Buildings and related facilities will be designed according to the appropriate codes, such as the National Building Code of Canada (NRCC 2020a), to withstand snow loads and other precipitation-related loading conditions. Snow management procedures will be implemented, as required, to maintain safe access, protect worker safety and reduce the potential for damage to infrastructure, including removal of snow from roofs where snow accumulation could result in excessive loading.

Emergency response and business continuity planning will incorporate extreme precipitation and flooding scenarios, including procedures for managing high flow events, protecting infrastructure and maintaining safe site access. These plans will be regularly updated as part of ongoing health and safety and adaptive management processes.

For access infrastructure, climate projections should be incorporated into road design and upgrades, including appropriate sizing of culverts and drainage features. Maintenance programs will address erosion, washouts and sediment accumulation to maintain safe access during and following extreme events.

During the closure and post-closure phases, landform design, drainage systems and pit lake management should incorporate future climate projections to address long-term risks related to runoff, erosion and water quality. These considerations will be integrated into the closure plan and post-closure monitoring programs to support long-term stability.

14.5.3 Potential Effects to the Environment, Health, Social and Economic Conditions

With the application of design standards and codes as well as the proposed engineering best practices, major precipitation events are not expected to cause substantive damage to Project infrastructure or components during any phase of the Project, nor are they expected to result in a major environmental effect. No generational effects are anticipated from potential flooding effects on the Project.

14.6 Severe Windstorms

14.6.1 Environmental Conditions

The Project is located in northeastern Ontario, where wind conditions are influenced by regional synoptic weather systems and seasonal variability. Strong wind events typically occur in association with low-pressure systems, frontal passages, convective storms and winter storm events. These events may coincide with precipitation, snowfall or blowing snow, which can amplify wind-related effects.

Quantitative, site-specific projections of future wind speed are limited due to the absence of statistically downscaled wind data for the Project location. As a result, future wind conditions were assessed using regional-scale climate model results and published literature. Based on regional climate modelling studies applicable to the Project, projected changes in annual mean wind speeds range from approximately -4% to +4% by the late century relative to historical baselines. Projected changes in 50-year-return-period maximum wind speeds range from approximately -12% to +8%, reflecting high inter-model variability and low agreement (Appendix R-2).

Outputs from the Intergovernmental Panel on Climate Change Interactive Atlas indicate that annual average surface wind speeds in the region surrounding the Project are projected to decrease by approximately 3% by mid-century (2041 to 2060) and approximately 4% by late century (2081 to 2100), relative to a late-20th-century baseline under high-emissions scenarios (Appendix R-2). These projections are associated with low confidence, and no consistent trend in extreme wind speed changes is observed across available models.

Tornadoes have been recorded in every province and territory in Canada, but are infrequent in northeastern Ontario, and to date have all been of lower magnitude. Tornadoes are classified on the Enhanced Fujita Scale which has six intensity categories from zero to five, based on the damage they cause. Most recent data from the Northern Tornadoes Project of Western University indicate that there were tornadoes within 30 km of the Project associated with two storm events in 2024 and 2025 (Northern Tornadoes Project 2026), although there are limited known tornadoes prior to that time in northeastern Ontario. The associated tornadoes were categorized as lower intensity: EF1 (135 to 175 km/h) and EF2 (180 to 220 km/h). EF1 and EF2 categories are associated with moderate to considerable damage, and are not considered separately from high wind events.

Overall, available climate information does not indicate a systematic increase in mean or extreme wind speeds at the Project site under future climate conditions. Severe wind events are therefore expected to continue occurring within the range of historical variability throughout the Project life, although uncertainty remains regarding future wind extremes due to limitations in current climate modelling.

14.6.2 Mitigation Measures

Severe wind events have the potential to physically affect buildings and infrastructure, including wind-related erosion where exposed finer-grained materials are present. High winds could cause downed trees that block the mine access road and damage the regional transmission line or local distribution lines, resulting in temporary power loss or reduction of power availability. Vegetation management adjacent to roads and power infrastructure will reduce the potential for tree fall during severe wind events. Inspection, maintenance, and emergency response procedures will support timely restoration of access and power should wind-related disruptions occur.

The potential effect of storms on buildings is expected to be low, as they will be designed in accordance with professional engineering practices, applicable design standards and building codes to withstand extreme winds. Site design should consider securing exposed infrastructure (e.g., pipelines, conveyors, powerlines) and implementing vegetation management to reduce windthrow risks near critical assets.

Operationally, inspection and maintenance programs will be implemented for buildings, powerlines and communication systems, including vegetation clearing and debris management to reduce outage risk. Backup power systems (e.g., diesel generators) will be in place to maintain critical operations during wind-related outages.

This site will have a higher risk of dust dispersion due to dry stack tailings. Measures to address severe wind events at the tailings storage facility (TSF) during operations include a combination of engineered design controls, operational practices, and progressive stabilization measures. The TSF will be designed with a benched and terraced geometry, controlled slope angles, and compacted lift placement to reduce effective wind fetch and limit surface particle entrainment. Surface roughening techniques (e.g., track walking or ridging) will be applied to active and inactive areas to reduce near-surface wind velocities. Exposure of fine-grained tailings will be minimized through staged deposition and active management of the working face, with only limited areas left unconsolidated at any given time. Operational controls will include the application of dust suppressants during dry and high-wind conditions to maintain adequate surface moisture and cohesion. Progressive closure will be implemented throughout operations, such that inactive areas are stabilized using cover and/or vegetation where feasible, thereby reducing long-term wind erosion potential and dust generation. Supporting infrastructure, including geosynthetics and drainage systems, will be designed and anchored to withstand extreme winds. Emergency response and business continuity plans will incorporate severe wind scenarios, including procedures for safe shutdown, access management and post-event recovery.

14.6.3 Potential Effects to the Environment, Health, Social and Economic Conditions

With the planned Project design features and mitigation measures, high winds are not expected to cause substantive damage to Project infrastructure or components during any phases of the Project, nor are they expected to result in major environmental effects. No generational effects are anticipated from extreme storms or high wind effects on the Project.

14.7 Extreme Temperatures

14.7.1 Environmental Conditions

The Project is located in an area that experiences a cold, continental climate with pronounced seasonal temperature variability. Historical minimum and maximum daily temperatures recorded in this area are approximately −36°C and 37°C, respectively (Appendix R-2). Sub-freezing conditions are common, with an average of approximately 200 days per year at or below 0°C and approximately 127 frost days annually (Appendix R-2). Ice days, defined as days with daily maximum temperatures below 0°C, occur frequently during winter months (Appendix R-2). Summer conditions are comparatively short, with an average of approximately 33 days per year with temperatures above 25°C, based on the historical climate record (Appendix R-2).

Climate projections for the area around the Project indicate a clear warming trend over future time horizons. Mean annual temperature is projected to increase by approximately 2.1°C by the 2030s (2021 to 2050) and approximately 3.6°C by the 2060s (2051 to 2080), relative to the baseline period. Warming is projected across all seasons, with the largest increases occurring during winter months (Appendix R-2).

Projected changes to temperature extremes include a decrease in the frequency and severity of extreme cold events and an increase in the frequency of warm and hot days. The number of frost days is projected to decline, and the frost-free season is projected to lengthen, reflecting earlier spring warming and later onset of freezing temperatures in the fall. Despite overall warming, extreme cold temperatures are still expected to occur periodically under future climate conditions, particularly during winter.

Overall, extreme temperature conditions at the Project site are projected to shift toward warmer averages over the Project life, with fewer cold extremes and more frequent warm temperature events.

14.7.2 Mitigation Measures

The facilities and infrastructure for the Project will be designed in accordance with professional standards and building codes to withstand anticipated temperatures and temperature variations. The intent of engineering design standards and codes is to maintain the integrity of the infrastructure and facilities. Therefore, with implementation of these design standards and codes, combined with engineering best practices, extreme temperatures are not considered to have the potential to cause substantive damage Project infrastructure or components during all phases of the Project.

As part of normal temperature fluctuations, freeze-thaw weathering can occur. Water enters cracks or pores in the material and when temperatures drop, the water freezes and expands, causing new cracks to form or existing fractures to widen. When the ice melts, water penetrates deeper into the cracked material, continuing the cycle. Over time, this process can degrade materials such as concrete and lead to cracking and other physical damage, potentially reducing their service life.

Safety procedures will be in place during extreme temperatures to maintain worker safety, which may include issuing work stop orders, mandatory breaks and other measures for specific Project locations or activities.

The site will be fully reclaimed after closure and will respond to high temperatures in the same manner as the surrounding environment. No additional environmental effects are projected to occur from high temperatures.

14.7.3 Potential Effects to the Environment, Health, Social and Economic Conditions

With the planned Project design features, ongoing maintenance and mitigation measures, extreme temperatures are not expected to cause substantive damage to Project infrastructure or components during any phase of the Project, nor are they expected to result in major environmental effects. No generational effects are anticipated from extreme temperatures on the Project.

14.8 Low Intensity Seismic Events

14.8.1 Environmental Conditions

The Project is situated north of Larder Lake in northeastern Ontario and lies within the Abitibi greenstone belt of the Archean Superior Province of the Canadian Shield, which underlies approximately two-thirds of Canada. Information regarding seismic events that have occurred in Canada is available in publications of Earthquakes Canada by Natural Resources Canada and their predecessor organizations. The Project is situated in a low-to-moderate risk seismic hazard zone (NRCan 2021). A seismic zoning map for Canada has been developed on the basis of these studies and is used in the National Building Code (NRCC 2020a) to help design and construct buildings that are appropriate for a given region.

The Geological Survey of Canada provides ground motion parameters (peak ground acceleration and spectral accelerations for various return periods) for locations within Canada. Peak ground acceleration is a measure of the intensity of ground shaking during an earthquake and is measured in units of acceleration due to gravity. The ground motion parameters are published in the 2020 National Building Code of Canada and made available through an online seismic hazard calculator tool (NRCC 2020c).

Based on available geotechnical information, the site is classified as Site Class E, and corresponding peak ground acceleration (PGA) values have been established for multiple return periods (Knight Piésold 2024).

14.8.2 Mitigation Measures

Project infrastructure will be designed in accordance with applicable codes and standards that incorporate seismic loading considerations. Buildings and structures will be designed in accordance with the National Building Code of Canada (NRCC, 2020), which provides seismic hazard parameters and associated design requirements.

While there are no dams or dykes associated with mine waste management facilities, including the TSF, these facilities are designed based on guidance provided in the Canadian Dam Association (CDA) Dam Safety Guidelines (2013, 2019, 2023) and the Global Industry Standard on Tailings Management (GISTM, 2020). The TSF will be assigned a consequence classification, and design criteria will be developed consistent with that classification (Knight Piésold 2024).

Seismic hazard parameters for the Project have been derived from the probabilistic seismic hazard database supporting the National Building Code of Canada. Stability analyses for the TSF incorporate these seismic hazard parameters, and the design earthquake criteria include:

- A **1:2,475-year return period earthquake** for design, consistent with CDA (2019) guidance for a significant consequence classification
- A **1:10,000-year return period earthquake** evaluated as part of sensitivity analyses, consistent with GISTM (2020) guidance (Knight Piésold 2024).

Project infrastructure will be constructed in accordance with the design developed through geotechnical analysis. Placement and compaction of tailings and mine rock in the TSF will be controlled to meet design specifications, and construction will be carried out under engineering oversight. Stability analyses will be completed for the TSF and the facility design will meet the minimum factor of safety requirements recommended by CDA (2019) under static, seismic, and post-earthquake loading conditions (Knight Piésold 2024).

The diversion dykes will be designed, constructed, and operated in accordance with guidance provided in the CDA Dam Safety Guidelines and the GISTM, as well as applicable provincial regulatory requirements under the *Lakes and Rivers Improvement Act* (LRIA). Under the LRIA, the diversion dykes are subject to provincial approval and must demonstrate that they are safely designed with respect to potential loading conditions, including seismic events. The diversion dykes will be designed to maintain stability under applicable design seismic events, taking into account the hazard potential classification of the structure and the potential consequences of failure.

Climate change is not considered in the assessment of seismic hazard, as seismic hazard parameters are derived from probabilistic seismic hazard models and are not associated with climate-related factors.

14.8.3 Potential Effects to the Environment, Health, Social and Economic Conditions

With implementation of applicable design criteria and mitigation measures, seismic events are not expected to result in major environmental effects. Low intensity seismic activity is also not anticipated to produce any generational effects on the Project.

14.9 Climate Resilience

As discussed in Section 14.2, the CCRA (Appendix R-1) aligns with the revised Strategic Assessment on Climate Change (ECCC 2020) and the draft Technical Guide Relating to the Strategic Assessment on Climate Change: Assessing Climate Change Resilience (ECCC 2022), and considers A Guide on Incorporating Climate Change Adaptation into Decision Making for the Mining Sector (MAC 2021). The following sections provide an overview of the CCRA, including a brief description of the approach, methodology and results of the assessment.

Note that the CCRA (Appendix R-1) follows the approach and terminology of ECCC (2022), which uses the language of treatment and adaptation measures to describe actions that support climate change resilience. In this section as well as the overall Impact Statement, the treatment and adaptation terminology used to describe the CCRA results have been replaced with the term mitigation measures, consistent with the TISG and the *Impact Assessment Act*.

14.9.1 Approach and Methodology

Figure 14.9-1 outlines the assessment approach taken to evaluate the resilience of the Project to future climate conditions, including:

- Characterization of climate hazards and components
- Physical risk assessment
- Identification of mitigation measures.

As an initial step, the assessment identified relevant Project infrastructure components that could be affected by climate hazards. These components were reviewed and categorized into infrastructure categories based on Project documentation. Only infrastructure components present during the operations and post-closure phases were considered for this assessment; the construction and closure phases were excluded as they occur over relatively short durations, during which climate hazard variability is expected to fall within normal, interannual fluctuations rather than long-term, climate change trends. The construction and closure phases are addressed through design codes, construction management, emergency response, closure planning and adaptive management. Updated climate observations and projections will also be available prior to closure planning and design and will be incorporated at that time.

Next, climate hazards with the potential to affect Project infrastructure were selected. This involved determining which climate hazards are relevant to the Project region and identifying which physical characteristics of the Project that could be sensitive to those hazards.

Likelihood was used to describe the frequency at which an interaction between climate hazards and an infrastructure component may occur. A likelihood scale was applied to categorize this frequency (details provided in Appendix R-1). For each climate hazard, an associated climate indicator was used to estimate the likelihood of an interaction. For example, average annual total precipitation may be used as an indicator for increasing precipitation as a climate hazard.

Consequence scores were then assigned to describe the expected effect of a given climate-hazard interaction should it occur. Consequences for each interaction were evaluated across three main categories: monetary effects, licence to operate and safety. This consequence scale was adapted from the Agnico Eagle Mines Limited (Agnico Eagle) internal risk management frameworks (Appendix R-1).

Once the climate projections were compiled and the climate interactions were characterized with likelihoods and consequences scores, potential future risks were calculated. This step identified where potential climate change related risks may exist to inform mitigation measures. Each interaction was categorized as high, moderate or low risk to support prioritization of adaptation planning.

In the final step of this assessment, and consistent with the ECCC (2022), potential mitigation measures were identified for all estimated climate risks. Mitigation measures were developed to address multiple interactions with similar effects. These measures were identified to mitigate or reduce climate effects or the likelihood of occurrence associated with each infrastructure component. The resulting expected resilience of infrastructure to climate hazards was then characterized. As the Project remains in the planning phase, the objective of this analysis was to determine how potential climate-related risks can be managed and at what stage of the Project life cycle they should be further evaluated or addressed. The proposed mitigation measures form the basis for enhancing Project resilience to future climate conditions and for integrating climate considerations into continuous improvement throughout the Project's life.

14.9.2 Climate Hazards and Conditions

Interactions were identified between relevant climate hazards and Project components. The climate hazards considered included:

- Temperature-related: temperature increase, evapotranspiration, extended cold spells and freeze-thaw cycles
- Precipitation-related: increases in precipitation and snowfall
- Extreme events: freezing rain, high winds, extreme heat, extreme precipitation, drought, flooding and wildfires.

The potential effects of these climate hazards were evaluated for Project infrastructure during the operations and post-closure phases. Infrastructure was grouped into the following categories:

- Access
- Buildings and supporting infrastructures
- Post closure
- Mining and aggregate infrastructure
- Power supply
- Tailings and mine rock management
- Water management systems.

In total, 143 climate hazard-infrastructure interactions were assessed across all time periods (Appendix R-1).

14.9.3 Risk Assessment Results

The climate risk analysis was completed without considering future mitigation measures to understand where climate risk may exist. Additional information is provided in Appendix R-1. Each identified interaction was categorized as low, moderate, high and very high risk across three time periods. Figure 14.9-2 presents the number of interactions by risk level and time period, illustrating the distribution of risks and how they are projected to change over time. The current and 2030s time periods have the greatest number of interactions because they include all operating infrastructure. By the 2060s, only closure and post-closure infrastructure will remain, resulting in a reduced number of interactions and associated risks.

14.9.3.1 Current Time Period

Likelihood scores for the climate risks in the current time period were assessed to be unlikely or rare; no high risks were identified for the current time period. A total of 22 moderate risks were estimated. Of these risks, six relate to extreme precipitation, three to fluvial (riverine) flooding, two to freezing rain, two to extreme heat, and nine to wildfire.

Although the likelihood scores for these climate hazards were assessed as unlikely (likelihood score of two), the associated consequences were more severe, resulting in an overall medium risk rating. Confidence in the climate projections for extreme precipitation, extreme heat and extreme cold indicators is high, while projections for fluvial flooding, wildfire and freezing rain have a moderate to low confidence.

14.9.3.2 2030s Time Period

Very high risks were estimated for two infrastructure categories and two climate hazards for the operation period (2021 to 2050). Fluvial flooding has the potential to affect mining and surface infrastructure, including diversion dykes and the open-pit mine they protect. Wildfire drives the other very high risk, associated with the explosive storage facility. This risk rating reflects the potential consequence associated with wildfire interaction with explosives storage before consideration of Project-specific mitigation measures. The explosive storage facility is planned to be located away from the main operational area and later moved underground and will be designed, operated and managed in accordance with applicable federal requirements, site security measures, wildfire protection measures and emergency response procedures. With implementation of these controls, including fire prevention, response planning, evacuation procedures and coordination with external responders, the residual risk associated with wildfire interaction with explosives storage is expected to be managed,

A total of 20 high risks were estimated across 6 infrastructure categories during the operations phase: mining and aggregate infrastructure, water management systems, tailings storage, buildings and supporting infrastructure, power supply and access infrastructure. These risks are driven by climate change, increasing the likelihood of interactions with extreme precipitation, fluvial flooding, freezing rain, extreme heat and wildfire, which were all drivers of risks in the current period.

Wildfires can cause consequential damage to infrastructure such as buildings, facilities, pipelines and powerlines, regardless of infrastructure types. Wildfires may also result in localized releases to the environmentdepending on the affected component, as well as health and safety effects, notably through poor air quality and potentially deaths in the case of a catastrophic event. As such, an Emergency Response Plan will be in place, and firewater tanks are planned for the Project. For wildfire, the application of best practice in structure protection, effective staff evacuation procedures and fire containment measures are expected to reduce higher risks at the Project.

Extreme precipitation and flooding also have the potential to cause widespread damage to infrastructure on-site, with potentially major health and safety effects. Similarly, extreme heat and cold may damage infrastructure through equipment overheating or thermal stress, leading to operational disruptions. Agnico Eagle is actively integrating climate projections into water management designs for the Project, which will help address high risks associated with extreme precipitation, flooding and extreme heat.

Freezing rain poses high risks to access infrastructure, including provincial and site access roads, due to substantial driving hazards and associated health and safety concerns. These risks can be minimized through effective operations and maintenance plans and business continuity planning.

Across all climate hazards for operating infrastructure (current and 2030s time periods), the consequence categories contributing most to the high risks were health and safety, environmental and community effects (including stakeholder and reputational effects and increased operational costs). These consequence drivers informed the development of potential treatment and adaptation measures.

14.9.3.3 2060s Time Period

Most of the operating infrastructure will be removed before or early in the closure / post-closure phases based on the current Project schedule, resulting in a lower number of interactions and risks associated with post-closure infrastructure. For post-closure infrastructure, one interaction driven by higher extreme precipitation and two interactions driven by wildfire were assessed as high risk. Integrating climate projections into the design and maintenance of post-closure infrastructure will help manage these risks by proactively accounting for potential future climate conditions.

Wildfire, increasing average and extreme precipitation, extreme heat and increased evapotranspiration were also estimated to have moderate risk interactions during the closure and post-closure period (13 moderate risks in total). The reduced number of infrastructure components in the post-closure phase results in fewer interactions and correspondingly lower consequence effects.

Since post-closure infrastructure will not be in place until the second half of the century, there is additional time to integrate climate change treatment and adaptation measures into the post-closure design and management. Achieving resilient post-closure infrastructure will require consideration of future climate effects during planning, adherence to mining sector guidelines and regulations and the application of existing risk management and adaptation frameworks.

14.9.4 Mitigation Measures

As part of the final step, mitigation measures were identified for high, medium and low climate-related risks. Appendix R-1 summarizes the interactions by pre-mitigation risk level for each infrastructure category and suggestions for potential mitigation measures to manage climate change related risk for the Project throughout its lifetime. Mitigation measures were provided for all climate risk levels. Below is a summary of the type of mitigation measures identified for each climate risk level:

- For potential high risks, mitigation measures should be the highest priority for consideration and should be considered in the detailed design and construction phases as well as infrastructure management plans and procedures. These measures involve the development of design criteria and management strategies that incorporate the projected changes in climate so that infrastructure is resilient to future changes.
- For potential moderate risks, mitigation measures should be considered the next priority for implementation and / or incorporated in Best Management Practices Plans, along with relevant design considerations. Agnico Eagle's policies to regularly update the Best Management Practices to account for observed conditions, operational requirements and changes in likelihood are incorporated.

- For potential low risks, existing codes and standards for the infrastructure types, along with the current risk mitigation measures that will form part of the Operating, Surveillance and Monitoring Plans developed for the operation and closure / post-closure phases, are sufficient to manage these risks in both the short and long term. Agnico Eagle requires these plans to be regularly updated so that observed conditions and operational experience are incorporated.

A high-level summary of this analysis, along with the anticipated resilience associated with each climate risk level after mitigation measures are applied, is presented in Table 14.9-1. Additional details are provided in Appendix R-1.

All estimated Project climate risks are anticipated to be managed through proposed mitigation measures based on this assessment.

14.9.5 Climate Change Resilience

This CCRA considers infrastructure components for the operations and closure / post-closure phases of the Project. Through the assessment, it was identified that climate interactions result in a range of potential physical climate risks, from low to high. Mitigation measures have been proposed that could be implemented during the design, operation and closure / post-closure phases to manage these climate risks.

As described above, climate risks were first assessed without incorporating future climate considerations into the design. This approach was used to identify which potential climate risks could result in the greatest effect on the Project, and to then propose potential mitigation measures capable of effectively managing those risks so that the Project remains resilient to future climate conditions. Proposed risk mitigation measures were developed systematically, evaluating each climate interaction risk by considering the underlying effect associated with each interaction and its estimated risk level so that the mitigation measure intervention aligned with the potential risk to the Project. Finally, an evaluation was completed to understand how resilient infrastructure may be to a future climate if the proposed mitigation measures were implemented.

The performance of the implemented measures will be monitored throughout the duration of the Project. As a part of the continual improvement process, an ongoing monitoring and surveillance program will be established. This process will guide decision-making regarding when additional actions are required to enhance climate resilience. The continual improvement process will be updated over the lifetime of the Project and may include expanding on the preliminary list of potential climate change opportunities. Results from monitoring programs will be incorporated into the continual improvement process to evaluate the effectiveness of resilience and adaptation actions and to manage unexpected outcomes.

By following this continual improvement approach and with the implementation of proposed mitigation measures summarized in Appendix R-1, the Project is expected to remain resilient to a changing climate over its planned lifetime.

Table 14.9-1: Resilience After Mitigation

Climate Change-related Risk Level (Prior to Mitigation)	Infrastructure Categories Potentially Affected	Resilience Statement after Mitigation
Potential High Risks	• Power Supply • Water Management System • Buildings and Supporting Infrastructure / Systems • Mining and Aggregate Infrastructure • Access (roads) • Closure and Post-Closure	• Consideration of future climate conditions in infrastructure design and operations will provide resilience to future climate-related risks • Implementation of best management practices will adapt to manage future climate conditions • Consideration of future climate conditions in health and safety plans will help manage potential effects associated with extreme events
Potential Medium Risks	• All infrastructure	• Consideration of future climate conditions in design and operations will provide resilience to climate-related risks • Best management practices will be adapted to manage future climate conditions
Potential Low Risks	• All infrastructure	• Implementing existing procedures will manage low climate risks to Project infrastructure

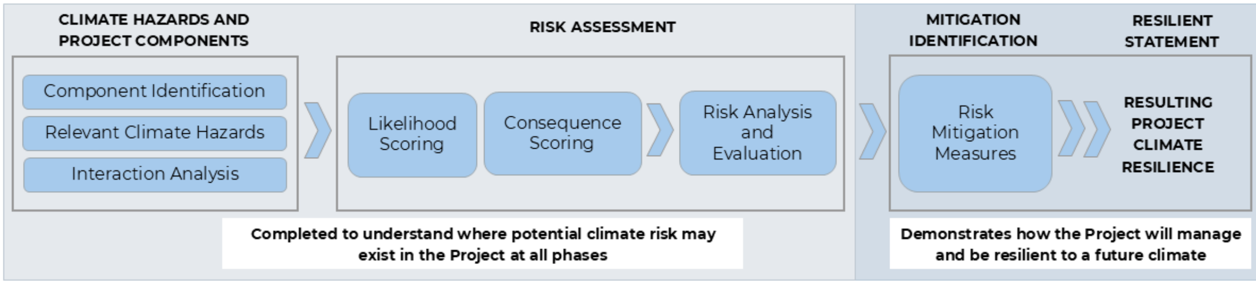

Figure 14.9-1: Climate Change Risk Assessment Approach

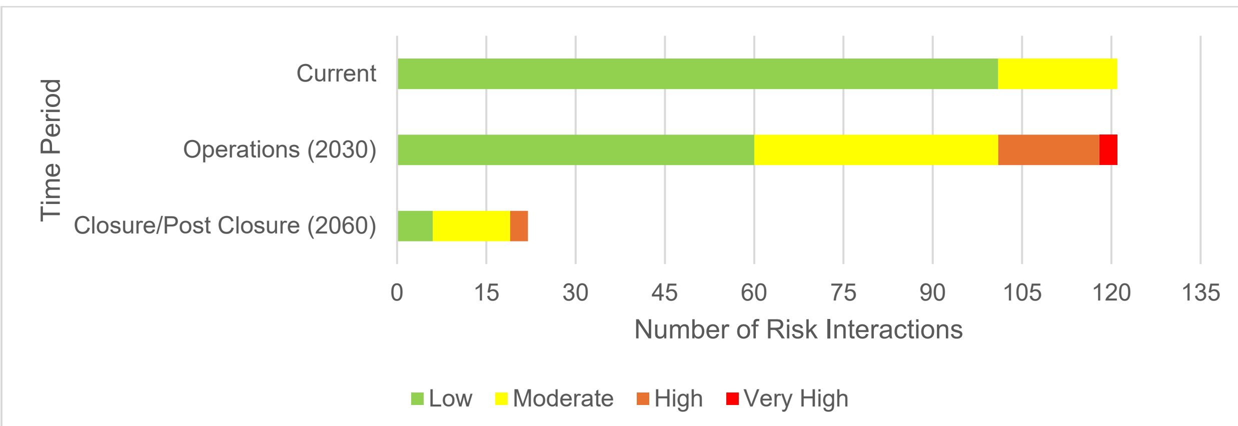

Figure 14.9-2: Number of Interactions by Risk Category and Time Period

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