

11.0 IMPACT ASSESSMENT

11.1 Methodology

The significance of each environmental effect (effect) described in Chapter 9 is determined through assessment criteria. Five assessment criteria have been selected to determine the significance of the residual adverse effects, or impacts, which may remain after considering the application of mitigation measures described in Chapter 10 ,as follows:

- Magnitude – a qualitative or quantitative measure to describe the size or degree of the effects relative to baseline conditions;
- Geographic extent – the area on, or through which each effect will take place;
- Duration – The time period over which the effect will, or is expected to occur;
- Frequency – the rate of occurrence of the effect; and
- Reversibility – the extent to which the effect can be reversed.

Table 11-1 presents the definition of the assessment levels for each of the assessment criterion presented above. The definitions apply for the physical, biological and human environment disciplines and indicators.

Table 11-1: Impact Assessment Criteria Levels Definitions

Assessment Criteria	Level I	Level II	Level III
Magnitude	The magnitude is defined for each indicator, see Table 11-2.		
Geographic Extent	Effect is restricted to the Project footprint.	Effect extends into the local study area.	Effect extends into the regional study area.
Duration	The duration of the effect is less than or equal to 2 years.	The duration of the effect is between 2 and 15 years.	The duration of the effect is beyond 15 years.
Frequency	Effect occurs infrequently.	Effect occurs intermittently or with a certain degree of regularity.	Effect occurs frequently or continuously.
Reversibility	Effect is fully reversible.	Effect is partially reversible.	Effect is not reversible.

11.1.1 Magnitude

The definition of the magnitude assessment criteria for each of the physical, biological and human effects assessment indicator is presented in Table 11-2.

Table 11-2: Magnitude Assessment Criteria Definitions

Discipline	Indicator	Level I	Level II	Level III
Air Quality	Suspended Particulate Matter (Dust) as Total Particulate Matter (PM _{tot.})	Concentrations are comparable to baseline levels (21.4 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<120 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>120 µg/m ³).
Air Quality	Suspended Particulate Matter (Dust) as Particulate Matter (PM ₁₀); 24 Hour Average	Concentrations are comparable to baseline levels (13.9 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<50 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>50 µg/m ³).
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); 24 Hour Average	Concentrations are comparable to baseline levels (9.8 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<25 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>25 µg/m ³).
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); Annual Average	Concentrations are comparable to baseline levels (4.2 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<8.8 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>8.8 µg/m ³).
Air Quality	Sulphur Oxides (SO _x), mainly as Sulphur Dioxide (SO ₂)	Concentrations are comparable to baseline levels.	Concentrations are below Federal and/or Provincial criteria.	Concentrations exceed Federal and/or Provincial criteria.
Air Quality	Nitrogen Dioxide (NO ₂); 24 Hour average	Concentrations are comparable to baseline levels (24.6 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<200 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>200 µg/m ³).
Air Quality	Nitrogen Dioxide (NO ₂); 1 Hour Average	Concentrations are comparable to baseline levels (24.6 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<400 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>400 µg/m ³).
Air Quality	Arsenic; 24 Hour Average	Concentrations are comparable to baseline levels (0.0018 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<0.3 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>0.3 µg/m ³).

Discipline	Indicator	Level I	Level II	Level III
Air Quality	Lead	Concentrations are comparable to baseline levels.	Concentrations are below Federal and/or Provincial criteria.	Concentrations exceed Federal and/or Provincial criteria.
Air Quality	Manganese; 24 Hour Average	Concentrations are comparable to baseline levels (0.0055 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<0.2 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>0.2 µg/m ³).
Air Quality	VOCs	Concentrations are comparable to baseline levels.	Concentrations are below Federal and/or Provincial criteria.	Concentrations exceed Federal and/or Provincial criteria.
Air Quality	Other Key Metals	Concentrations are comparable to baseline levels.	Concentrations are below Federal and/or Provincial criteria.	Concentrations exceed Federal and/or Provincial criteria.
Air Quality	Hydrogen Cyanide (HCN); 24 Hour Average	Concentrations are comparable to baseline levels (0.18 µg/m ³).	Concentrations are below Federal and/or Provincial criteria (<8 µg/m ³).	Concentrations exceed Federal and/or Provincial criteria (>8 µg/m ³).
Noise & Vibration	Daytime Noise Level	Noise level below or equal to daytime baseline of 44 dBA.	Noise level above daytime baseline (44 dBA) and below or equal to 45 dBA.	Noise level above 45 dBA.
Noise & Vibration	Nighttime Noise Level	Noise level below or equal to nighttime baseline of 34 dBA.	Noise level above nighttime baseline (34 dBA) and below or equal to 40 dBA.	Noise level above 40 dBA.
Noise & Vibration	Blasting Noise Level	Blasting noise level below or equal to the adjusted baseline noise level of 39 dBA.	Blasting noise level above the adjusted baseline noise level (39 dBA) but below the regulatory limit of 120 dBL.	Blasting noise level above of the 120 dBL regulatory limit.
Noise & Vibration	Blasting Vibration Level	Blasting vibration level at the receptor is below the perceptible vibration level (0.14 mm/s).	Blasting vibration level at the receptor is above perceptible vibration level (0.14 mm/s) and below the regulatory limit (10 mm/s).	Blasting vibration level is above the 10 mm/s regulatory limit, which is a concern for building damage.
Hydrology	Change in Flow	<10% or a change in flow which does not affect the hydrological characteristics.	10-30% and has the potential to affect the hydrological characteristics.	>30% and considerably changes the hydrological characteristics.

Discipline	Indicator	Level I	Level II	Level III
Water Quality	Change in Water Quality	Concentrations less than baseline concentrations.	Concentrations greater than baseline concentrations, but less than water quality guidelines, where applicable.	Concentrations greater than baseline concentrations and greater than water quality guidelines, where applicable.
Hydrogeology	Groundwater Levels (Water Table)	Change in the water table elevation is predicted to be less than 1 m.	Change in the water table elevation is predicted to be between 1 and 5 m.	Change in the water table elevation is predicted to be greater than 5 m.
Aquatic Biology	Aquatic Toxicity	Median concentrations less than guidelines or less than chronic toxicity thresholds for substances without guidelines.	Maximum concentrations greater than guidelines but less than acute toxicity thresholds for resident species.	Median concentrations greater than guidelines but less than sublethal toxicity thresholds.
Aquatic Biology	Commercial, Recreational and Aboriginal Fisheries	There is no measurable residual effect to communities or populations.	Project activities expected to limit or reduce some life history requirements but measurable population level effects not expected.	Project activities are expected to have measurable effects on one or more of the populations.
Aquatic Biology	Loss of Aquatic Habitat	Less than 10% of lotic habitat (stream length - m) and /or lentic habitat (lake area - m ²) within the local study area.	Greater than 10% of lotic habitat (stream length - m) and /or lentic habitat (lake area - m ²) but less than 35% within the local study area.	Greater than 35% of lotic habitat (stream length - m) and /or lentic habitat (lake area - m ²) within the local study area.
Terrestrial Biology	Upland Plant Community Types	There is no measurable residual effect to the abundance and distribution of plant populations and communities.	The residual effect to the abundance and distribution of plant populations or communities is measurable, but the changes are well within the predicted adaptive capability to be self-sustaining.	The residual effect to the abundance and distribution of plant populations or communities is expected to be large enough that the changes are approaching the predicted adaptive capability limits to be self-sustaining.

Discipline	Indicator	Level I	Level II	Level III
Terrestrial Biology	Wetlands	There is no measurable residual effect to the abundance and distribution of plant populations and communities.	The residual effect to the abundance and distribution of plant populations or communities is measurable, but the changes are well within the predicted adaptive capability to be self-sustaining.	The residual effect to the abundance and distribution of plant populations or communities is expected to be large enough that the changes are approaching the predicted adaptive capability limits to be self-sustaining.
Terrestrial Biology	Vegetation Species at Risk, Species of Special Concern and Provincially Rare Species	There is no measurable residual effect to the abundance and distribution of plant populations and communities.	The residual effect to the abundance and distribution of plant populations or communities is measurable, but the changes are well within the predicted adaptive capability to be self-sustaining.	The residual effect to the abundance and distribution of plant populations or communities is expected to be large enough that the changes are approaching the predicted adaptive capability limits to be self-sustaining.
Terrestrial Biology	Ungulates	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology	Furbearers	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.

Discipline	Indicator	Level I	Level II	Level III
Terrestrial Biology	Migratory Birds	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology	Wildlife Species at Risk	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology - TL	Vegetation Communities	There is no measurable residual effect to the abundance and distribution of plant populations and communities.	The residual effect to the abundance and distribution of plant populations or communities is measurable, but the changes are well within the predicted adaptive capability to be self-sustaining.	The residual effect to the abundance and distribution of plant populations or communities is expected to be large enough that the changes are approaching the predicted adaptive capability limits to be self-sustaining.

Discipline	Indicator	Level I	Level II	Level III
Terrestrial Biology - TL	Ungulates - Moose	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology - TL	Furbearers - Wolves	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology - TL	Furbearers - American Marten	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology - TL	Furbearers - Black Bear	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.

Discipline	Indicator	Level I	Level II	Level III
Terrestrial Biology - TL	Bats	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology - TL	Migratory Birds	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology - TL	Raptors	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.
Terrestrial Biology - TL	Species at Risk, Species of Special Concern and Provincially Rare Species	There is no measurable residual effect to population abundance and distribution.	The residual effect to population abundance and distribution is measurable, but the changes are well within the predicted adaptive capability and resilience limits of the effects assessment indicator.	The residual effect to population abundance and distribution is large enough that the changes are near or exceeding the predicted adaptive capability and resilience limits of the effects assessment indicator.

Discipline	Indicator	Level I	Level II	Level III
Land Use	Land Use Plans and Policies	The Project does not overlap incompatible areas with approved land use plans and policies.	The Project overlaps very small portions of land use areas that may be incompatible with mining activities but will not impede the designated land use.	The Project overlaps with land use areas that may be incompatible with mining activities and may impede the designated land use but does not result in a requirement for substantive changes in the land use plan or policy.
Land Use	Mineral Exploration	The Project does not overlap other claim areas.	The Project overlaps or changes access to other mining claims but does not limit the ability to exercise exploration activities.	The Project overlaps or changes access to other mining claims and limits the ability to exercise exploration activities.
Land Use	Forestry	The Project does not overlap with forest management units.	The Project overlaps very small areas of forest management units but does not substantially limit forestry resources or the ability to conduct forestry activities.	The Project overlaps with areas of forest management units and may limit access to forest resources and how forestry activities are managed.
Land Use	Hunting	The Project does not overlap hunting areas.	The Project overlaps with portions of hunting areas but does not limit the ability to carry out hunting activities.	The Project overlaps with several hunting areas and may affect how these hunting areas are accessed but does not substantially limit the ability to carry out hunting activities.
Land Use	Trapping	The Project does not overlap trapline areas.	The Project overlaps with small portions of trapline areas and affects a few individual trappers and/or will not limit the ability to carry out trapping activities.	The Project overlaps with large portions of trapline areas which may limit the ability to carry out trapping activities.
Land Use	Recreational and Commercial Fishing	The Project does not affect waterbodies used for fishing.	The Project may affect a small number of waterbodies used for fishing but does not limit the ability to fish.	The Project may affect several waterbodies used for fishing and limits the ability to fish.

Discipline	Indicator	Level I	Level II	Level III
Land Use	Cottages and Outfitters	The Project is not proximal to cottage areas or areas used by outfitters.	The Project is proximal to cottage areas or areas used by outfitters and may require the removal of a few cottages but will not limit the use of these areas by most cottagers/outfitters.	The The Project is proximal to cottage areas or areas used by outfitters and may change access to or require the removal of multiple cottages which may limit the use of these areas for most cottagers/outfitters.
Land Use	Navigable Waters	The Project is not proximal to navigable waters.	The Project is proximal to canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	The Project overlaps with portions of canoe routes/waterways used for canoeing/portaging and limits the ability to use these navigable waters.
Land Use	Other Recreational Uses	The Project does not overlap areas used for outdoor recreation activities (snowmobile trails, hiking, etc.)	The Project overlaps or changes access to portions of outdoor recreation areas but does not limit the ability to participate in outdoor recreation activities.	The Project overlaps or changes access to portions of outdoor recreation areas and limits the ability to participate in outdoor recreation activities.
Traditional Land Use	Plant Harvesting	The Project does not overlap with areas used for traditional plant harvesting.	The Project overlaps with areas used for traditional plant harvesting but does not limit the ability to harvest plants.	The Project overlaps with areas used for traditional plant harvesting and limits the ability to harvest plants.
Traditional Land Use	Traditional Hunting	The Project does not overlap with areas used for traditional hunting.	The Project overlaps with portions of traditional hunting areas but does not limit the ability to carry out hunting activities.	The Project overlaps with traditional hunting areas and limits the ability to carry out hunting activities.

Discipline	Indicator	Level I	Level II	Level III
Traditional Land Use	Fishing	The Project does not affect waterbodies used for traditional fishing.	The Project may affect a small number of waterbodies used for traditional fishing but does not limit the ability to fish.	The Project may affect several waterbodies used for traditional fishing and limits the ability to fish.
Traditional Land Use	Canoeing	The Project is not proximal to traditional navigable waters.	The Project is proximal to traditional canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	The Project overlaps with portions of traditional canoe routes/waterways used for canoeing/portaging and limits the ability to use these navigable waters.
Traditional Land Use	Cultural, Spiritual and Ceremonial Sites	The Project does not overlap important cultural, spiritual or ceremonial sites.	The Project overlaps or changes access to important cultural, spiritual and ceremonial sites but does not limit the ability to use these sites.	The Project is proximal to important cultural, spiritual and ceremonial sites and limits the ability to use these sites.
Visual Aesthetics	Change in Landscape from Receptor Locations	No perceptible change in landscape.	Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Perceptible change in landscape, which may affect enjoyment of the viewscape.
Visual Aesthetics	Change in Landscape from Non-Receptor Locations	No perceptible change in landscape.	Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Perceptible change in landscape, which may affect enjoyment of the viewscape.

Discipline	Indicator	Level I	Level II	Level III
Visual Aesthetics	Change in Landscape due to the Transmission Line	No perceptible change in landscape.	Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Perceptible change in landscape, which may affect enjoyment of the viewscape.
Archaeology	Effect on Heritage Sites	The Project is not proximal to archaeological sites or the site has been assessed and cleared in accordance with the <i>Heritage Act</i> .	Displacement of small portions of the archaeological site, compaction or changes that result in loss of access to archaeological sites, changes that indirectly affect the integrity of archaeological sites.	The removal of entire or valuable portions of archaeological sites as a result of ground disturbance; major changes to context and accessibility of sites.
Cultural Heritage Landscapes and Built Heritage Resources	Effect on Heritage Resources	The Project is not proximal to cultural heritage resources or changes to viewscape and site context that does not affect the integrity of cultural heritage resources.	Displacement or changes that result in loss of access to cultural heritage landscapes and/or built heritage resources, changes that indirectly affect the integrity of cultural heritage resources.	The removal of entire or valuable portions of cultural heritage resources as a result of ground disturbance; major changes to context and accessibility of sites.
Socio-Economic	Labour Market	Effects are expected to occur and are within the normal range of variability.	Effects may result in a measurable change to the socio-economic indicator outside of the normal range of variability, although the changes are not substantive enough to require or result in a community or government response or investment.	Effects may result in substantive changes to the socio-economic indicator requiring or resulting in a management response or investment by community or government.

Discipline	Indicator	Level I	Level II	Level III
Socio-Economic	Business Opportunities	Effects are within the capabilities of existing businesses.	Effects may require investment or expansions to meet Project needs that are within the capabilities of existing businesses.	Effects may result in a strain on capacity of businesses to make investments required to meet Project demands.
Socio-Economic	Government Finances	Effects are expected to occur and are within the normal range of variability.	Effects are outside of the normal range of variability, although the changes are not substantive enough to result in a community or government response.	Effects may result in substantive changes to the socio-economic indicator resulting in a management response by community or government.
Socio-Economic	Population and Demographics	Effects are within the normal range of variability.	Effects are outside of the normal range of variability, although the changes are not substantive enough to result in a community or government response.	Effects may result in substantive changes to the socio-economic indicator resulting in a management response by community or government.
Socio-Economic	Community Health Conditions	Effects are within the normal range of variability.	Health conditions change from baseline conditions so that some investment in health care services to manage this change may be necessary.	Health conditions change from baseline conditions so that interventions or large and potentially unattainable investment in health care services to manage this change may be necessary.
Socio-Economic	Housing and Temporary Accommodation	Effects are manageable within the stock of existing housing and temporary accommodations.	Effects may require investment to meet Project housing needs that are within the capabilities of communities / developers.	Effects may result in a strain on capacity of communities or developers to make investments required to meet Project demands.
Socio-Economic	Public Utilities	Effects are manageable within the existing capacities of public utilities.	Effects may require investment to meet Project needs that are within the capabilities of communities or governments.	Effects may result in a strain on capacity of communities or governments to make investments required to meet Project demands.

Discipline	Indicator	Level I	Level II	Level III
Socio-Economic	Education	Effects are manageable within the existing capacities of schools and/or education institutions.	Effects may require investment to meet Project needs that are within the capabilities of schools and/or education institutions.	Effects may result in a strain on capacity of schools and/or education institutions to make investments required to meet Project demands.
Socio-Economic	Emergency Services	Effects are manageable within the existing capacities of emergency service providers.	Effects may require investment to meet Project needs that are within the capabilities of emergency service providers.	Effects may result in a strain on capacity of emergency service providers to make investments required to meet Project demands.
Socio-Economic	Other Community Services	Effects are manageable within the existing capacities of community service providers.	Effects may require investment to meet Project needs that are within the capabilities of community service providers.	Effects may result in a strain on capacity of community service providers to make investments required to meet Project demands.
Socio-Economic	Transportation	Effects are manageable within the existing capacities of highway service levels.	Traffic may increase but does not require investment in roadway infrastructure to accommodate Project demands.	Traffic may increase and results in government investment in roadway infrastructure to accommodate Project demands.

11.1.2 Geographic Extent

The assessment of effects on the environment takes into consideration the geographic extent. Three levels have been defined: the Project footprint, the local study area and the regional study area. Definition of these areas for each discipline is described in Chapter 9. The physical, biological and human environment disciplines will use these set spatial boundaries to describe how far each effect is expected to happen. No effects are expected beyond the regional study area.

11.1.3 Duration

The levels of the duration assessment criterion were established in relation to the Project life. Effects to indicators will be assessment separately for the different phases of the Project. The Project phases and duration are as follows:

- Construction phase: 2 years
- Operations phase: 15 years
- Closure phase: 2 years
- Post-Closure phase

11.1.4 Determination of Significance

The significance of the residual adverse effects, or impacts, is determined through the integration of the five assessment criteria previously described and defined. The significance is then defined as either *significant* or *not significant*.

Significance has been assigned through the application of a decision tree which reflects the nature of and the potential for an environmental impact. The decision tree for the assessment determination is presented in Graphic 11-1.

A decision tree is used as a transparent tool to determine significance. Rather than using a scoring or ranking system for each assessment criterion and then assigning significance based on a certain score, the decision tree clearly shows the level of significance for each combination of the five assessment criteria. In this manner, for each of the effects assessed, a level of significance (i.e., *significant* or *not significant*), based on the logic of the decision tree, is then determined. This allows all interested parties to clearly follow and understand how conclusions on significance have been derived for each of the effects assessed.

The decision tree for the Côté Gold Project was developed by a team of professionals, providing technical expertise and experience as to what combination of assessment criteria should result in a *significant* or *not significant* effect. The general logic is as follows:

- If the magnitude of the effect is comparable to baseline conditions, the effect is not noticeable and the impact is considered *not significant*.
- If the effect is limited to the Project site and it is reversible, the impact is considered *not significant*.
- If the magnitude of the effect is clearly distinguishable but meets guidelines or is within the environment's adaptive capabilities and extends beyond the Project site, the impact is considered *not significant*, if the effect is reversible.

- If the effect extends far beyond the Project site, the effect lasts a long time and is not reversible, the impact is considered *significant*.
- If the magnitude of the effect exceeds guidelines or is beyond the environment's adaptive capability and the effect is such that it is not reversible, the impact is considered *significant*.

The decision tree for this project has been developed based on experience with other comparable projects in Ontario and internationally, and is consistent with the Agency guidance (CEAA, 1994).

11.1.5 Likelihood

After having determined the significance of an impact, each impact has been assigned a level of likelihood. Impacts determined to be *not likely* and *significant* are addressed in Chapter 13.

11.2 Results

Results of the impact assessment are presented below. A summary of benefits is presented in Chapter 15.

11.2.1 Construction Phase

Impact assessment results for the construction phase of the Project are presented in Table 11-3. With the application of mitigation measures, all physical, biological and human environment residual adverse effects, or impacts, have been assessed to be *not significant*.

11.2.2 Operations Phase

Impact assessment results for the operations phase of the Project are presented in Table 11-4. With the application of mitigation measures, all physical, biological and human environment residual adverse effects, or impacts, have been assessed to be *not significant*.

11.2.3 Closure Phase

Impact assessment results for the closure phase of the Project are presented in Table 11-5. With the application of mitigation measures, all physical, biological and human environment residual adverse effects, or impacts, have been assessed to be *not significant*.

11.2.4 Post-Closure Phase

Impact assessment results for the post-closure phase of the Project are presented in Table 11-6. With the application of mitigation measures, all physical, biological and human environment residual adverse effects, or impacts, have been assessed to be *not significant*.

Graphic 11-1: Decision Tree to Determine Residual Effect/Impact Significance

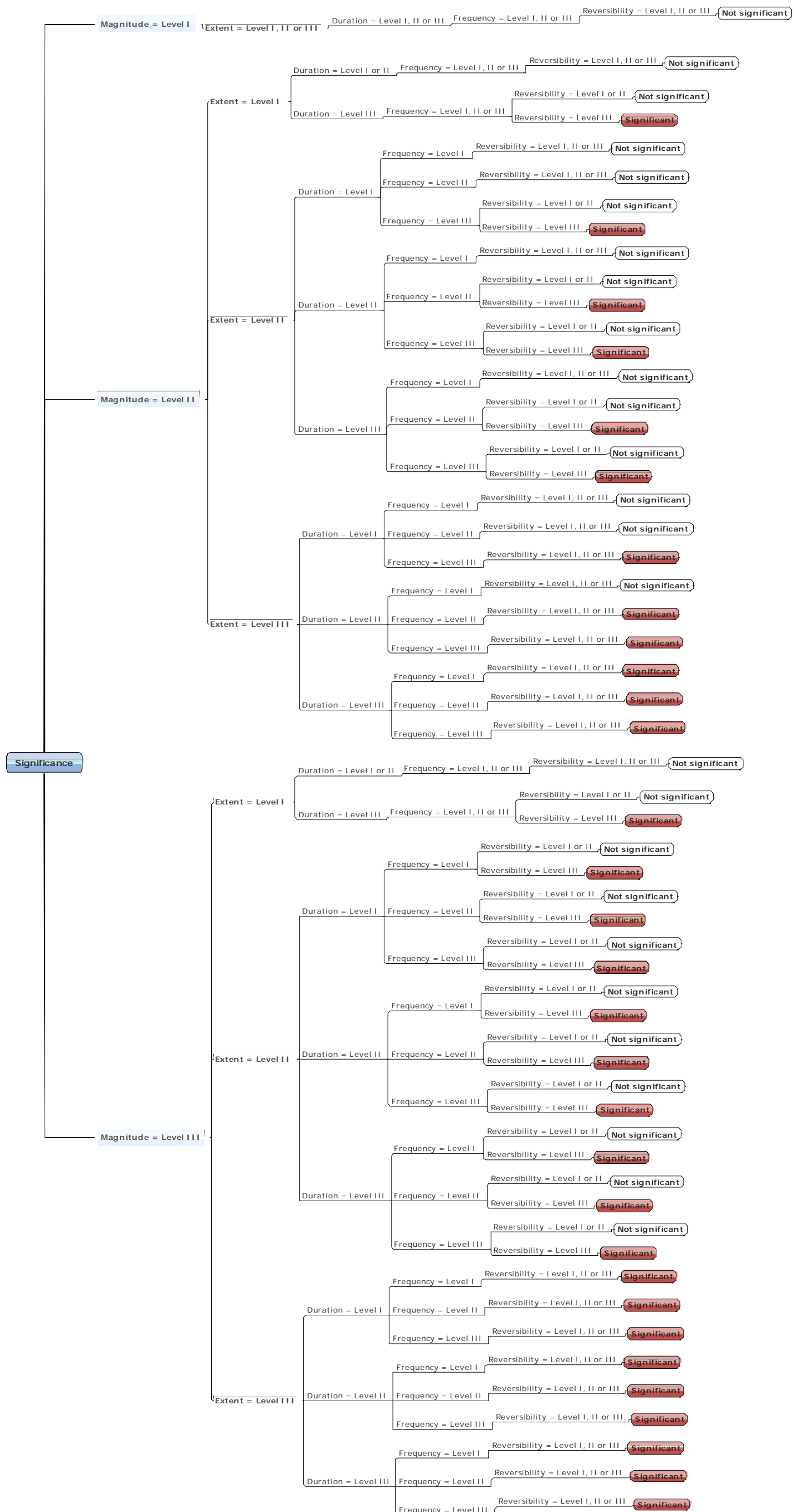


Table 11-3: Impact Assessment Matrix for the Construction Phase

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Suspended Particulate Matter (Dust) as Total Particulate Matter (PM _{tot.})	Changes in air quality due to particulate emissions from construction activities. These activities include site preparation and construction, open pit overburden stripping and stockpiling and onsite road traffic.	<ul style="list-style-type: none"> ▪ Dust Best Management Plan (DBMP) ▪ IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<120 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Particulate Matter (PM ₁₀); 24 Hour Average	Changes in air quality due to particulate emissions from construction activities. These activities include site preparation and construction, open pit overburden stripping and stockpiling and onsite road traffic.	<ul style="list-style-type: none"> ▪ DBMP ▪ IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<50 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); 24 Hour Average	Changes in air quality due to particulate emissions from construction activities. These activities include site preparation and construction, open pit overburden stripping and stockpiling and onsite road traffic.	<ul style="list-style-type: none"> ▪ DBMP ▪ IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<25 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); Annual Average	Changes in air quality due to particulate emissions from construction activities. These activities include site preparation and construction, open pit overburden stripping and stockpiling and onsite road traffic.	<ul style="list-style-type: none"> ▪ DBMP 	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (4.2 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Sulphur Oxides (SO _x), Mainly as Sulphur Dioxide (SO ₂)	Changes in air quality due to gaseous emissions from construction activities, mainly vehicle exhausts.	<ul style="list-style-type: none"> ▪ Engine Maintenance Program ▪ Equipment compliant with Transport Canada vehicle emissions requirements ▪ Use of low sulphur fuel 	Level II	Level I	Level I	Level II	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Air Quality	Nitrogen Dioxide (NO ₂); 24 Hour Average	Changes in air quality due to gaseous emissions from construction activities, mainly vehicle exhausts.	<ul style="list-style-type: none"> ▪ Engine Maintenance Program ▪ Equipment compliant with Transport Canada vehicle emissions requirements 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<200 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Nitrogen Dioxide (NO ₂); 1 Hour Average	Changes in air quality due to gaseous emissions from construction activities, mainly vehicle exhausts.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emissions requirements 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<400 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Arsenic; 24 Hour Average	Changes in air quality due to particulate emissions from construction activities, mainly handling of mine rock. Due to infrequent blasting during the construction phase, emissions of metals are infrequent.	<ul style="list-style-type: none"> DBMP 	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (0.0018 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Lead	Changes in air quality due to particulate emissions from construction activities, mainly handling of mine rock. Due to infrequent blasting during the construction phase, emissions of metals are infrequent.	<ul style="list-style-type: none"> DBMP 	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Manganese; 24 Hour Average	Changes in air quality due to particulate emissions from construction activities, mainly handling of mine rock. Due to infrequent blasting during the construction phase, emissions of metals are infrequent.	<ul style="list-style-type: none"> DBMP 	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (0.0055 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	VOCs	Changes in air quality due to gaseous emissions from construction activities, mainly vehicle exhausts.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emissions requirements 	Level I	Level I	Level I	Level III	Level II	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Air Quality	Other Key Metals	Changes in air quality due to particulate emissions from construction activities, mainly handling of mine rock. Due to infrequent blasting during the construction phase, emissions of metals are infrequent.	<ul style="list-style-type: none"> DBMP 	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Hydrogen Cyanide (HCN); 24 Hour Average	No cyanide is used during the construction phase. Therefore, this effect is not assessed during the construction phase.	Not applicable	—	—	—	—	—	—	—
Noise & Vibration	Daytime Noise Level	Changes in noise levels due to construction activities, including equipment movement, haulage and stockpiling operations.	<ul style="list-style-type: none"> 1 km setback distances to be kept at the Project site between the construction location and the receptors Construction equipment not to exceed noise levels specified in NPC-115 and NPC-118 	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
Noise & Vibration	Nighttime Noise Level	Changes in noise levels due to construction activities, including equipment movement, haulage and stockpiling operations.	<ul style="list-style-type: none"> 1 km setback distances to be kept at the Project site between the construction location and the receptors Construction equipment not to exceed noise levels specified in NPC-115 and NPC-118 	Level III	Level II	Level I	Level III	Level I	Not significant	Likely
Noise & Vibration	Blasting Noise Level	Changes in air vibration levels due to construction activities at the Project site and near watercourse realignments. Blasting is expected to occur infrequently during the construction phase.	<ul style="list-style-type: none"> Charge size of construction blasting outside of the open pit boundary will be such that the objectives of NPC-119 will be achieved Blasting charge size in the open pit is planned to be in compliance with NPC -119 	Level II	Level II	Level I	Level II	Level I	Not significant	Likely
Noise & Vibration	Blasting Vibration Level	Changes in ground vibration levels due to construction activities. Blasting expected to occur infrequently during the construction phase.	<ul style="list-style-type: none"> Charge size of construction blasting outside of the open pit boundary will be such that the objectives of NPC-119 will be achieved Blasting charge size in the open pit is planned to be in compliance with NPC-119 	Level II	Level II	Level I	Level II	Level I	Not significant	Likely
Hydrology	Change in Flow	Streamflow changes due to construction of various Project components, such as watercourse realignments, TMF and MRA.	Not applicable	Level I	Level II	Level I	Level III	Level II	Not significant	Likely

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Water Quality	Change in Water Quality	Changes in water quality due to erosion and runoff which could potentially increase total suspended solids in water courses. Best Management Practices will be used during the construction phase, which will prevent changes in water quality.	<ul style="list-style-type: none"> Best Management Practices (BMPs) and engineering design to limit soil erosion and mobilization/transport of sediments from disturbed areas 	Level II	Level II	Level I	Level II	Level I	Not significant	Not likely
				Concentrations greater than baseline concentrations, but less than water quality guidelines, where applicable.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Hydrogeology	Groundwater Levels (Water Table)	Localized changes in groundwater levels due to construction activities, mainly watercourse realignments.	Not applicable	Level III	Level I	Level I	Level III	Level III	Not significant	Likely
				Change in the water table elevation is predicted to be greater than 5 m.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is not reversible.		
Aquatic Biology	Aquatic Toxicity	Effects on aquatic species due to changes in water quality. Best Management Practices will be used during the construction phase, which will prevent changes in water quality.	<ul style="list-style-type: none"> The use of erosion control measures and timing of construction to avoid spawning and egg incubation periods 	Level I	Level II	Level I	Level II	Level I	Not significant	Not likely
				Median concentrations less than guidelines or less than chronic toxicity thresholds for substances without guidelines.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Aquatic Biology	Commercial, Recreational and Aboriginal Fisheries	Effects on commercial, recreational and Aboriginal fisheries due to site construction, including relocation of fish due to dewatering of Côté Lake, construction of watercourse realignments and overpressure from blasting.	<ul style="list-style-type: none"> Relocate fish (representative numbers of the community) to established habitats. Time relocation relative to life cycle requirements and environmental conditions Removal of terrestrial vegetation and organic soils prior to flooding in order to prevent the potential for methyl mercury production through decaying of terrestrial vegetation 	Level I	Level II	Level I	Level II	Level I	Not significant	Not likely
				There is no measurable residual effect to communities or populations.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Aquatic Biology	Loss of Aquatic Habitat	Loss of aquatic habitat due to construction of Project components. Lotic habitat affected includes Mollie River, Clam Creek and Bagsverd Creek. Lentic habitat affected includes Côté Lake, Beaver Pond, Clam Lake, Little Clam Lake, Unnamed Pond #3, East Beaver Pond and Three Duck Lakes.	<ul style="list-style-type: none"> Spawning habitat within the water bodies affected will be included in the <i>Fisheries Act</i> Authorization for the site as a loss of habitat and will be addressed through the compensation plan (including modifications to ensure flow, fish passage and use of habitats) Design of the realignment channels will incorporate the life cycle requirements of the resident fish species and promote, where possible, an increase in habitat 	Level I	Level II	Level I	Level III	Level II	Not significant	Not likely

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology	Upland Plant Community Types	Vegetation loss due to site clearing. The Project is predicted to alter approximately 1,800 ha of the land cover.	<ul style="list-style-type: none"> Limit the area of Project footprint and disturbance from employees and mining activities Construct the 230 kV transmission line to minimize potential for ground disturbance and soil erosion, and use existing roads and rails as practicable Rehabilitate habitat for plants as practicable Limit / prevent the transfer of invasive plant species from equipment and imported soil 	Level I	Level I	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Wetlands	Loss of wetland areas due to site clearing. The Project is predicted to alter approximately 185 ha of wetlands.	<ul style="list-style-type: none"> Where practical, avoid placement of structures in waterbodies along the transmission line ROW, and to the extent practicable, in low-lying areas 	Level I	Level I	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Vegetation Species at Risk, Species of Special Concern and Provincially Rare Species	No predicted effect on Species at Risk, Species of Special Concern and Provincially Rare Species as none were identified during baseline data collection. Therefore, this effect is not assessed.	Not applicable	—	—	—	—	—	—	—
Terrestrial Biology	Ungulates	Potential change in ungulates population abundance and distribution due to habitat removal during the construction phase. Site construction will remove an estimated 1,106 ha of suitable moose winter habitat and 1,074 ha of suitable moose summer habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Reduce risk of mortality to wildlife Minimize construction of new roads No hunting by Project personnel Enforce speed limits on Project roads Awareness trainings for employees 	Level I	Level III	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology	Furbearers	Potential change in furbearers population abundance and distribution due to habitat removal during the construction phase. Site construction will remove an estimated 355 ha of suitable beaver habitat. Between 1,074 and 1,266 ha of suitable black bear, eastern wolf, and American marten habitat will be removed from construction of the Project. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Reduce risk of mortality to wildlife Minimize construction of new roads No hunting by Project personnel Enforce speed limits on Project roads Awareness trainings for employees 	Level I	Level III	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Migratory Birds	Potential change in migratory birds population abundance and distribution due to habitat removal during the construction phase. Site construction will remove 99 and 216 ha of suitable nightjar, olive-sided flycatcher, rusty blackbird, and waterbird habitat. The Project is predicted to remove 1,203 and 1,233 ha of suitable Canada warbler and tree-nesting raptor habitat, respectively. The Project is not anticipated to remove any suitable short-eared owl habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Limit risk of nest destruction and mortality of migratory birds Construct the transmission line ROW outside of the migratory bird breeding season Install conductor wires at a sufficient distance apart to prevent accidental electrocution of birds Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife 	Level I	Level II	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Wildlife Species at Risk	Potential change in wildlife species at risk population abundance and distribution due to habitat removal during the construction phase. Site construction will remove an estimated 1,233 ha of suitable bat habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Reduce the risk of mortality to birds and bats Reduce risk of mortality to wildlife Include Common Nighthawk and Bank Swallow identification as part of site induction to improve success of wildlife reporting programs Contact the Ministry of Natural Resources and Forestry (MNRF) and Environment Canada within 24 hours if Common Nighthawk or Bank Swallow are recorded nesting on site 	Level I	Level II	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Vegetation Communities	Vegetation loss due to transmission line ROW clearing. The Project is predicted to result in the removal of 549.2 ha of forested communities including 146 ha of coniferous swamp.	<ul style="list-style-type: none"> Construct the 230 kV transmission line to minimize potential for ground disturbance and soil erosion, and use existing roads and rails as practicable Retain existing low-lying vegetation along the transmission line ROW 	Level I	Level I	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Ungulates - Moose	Potential change in moose population abundance and distribution due to the construction of the transmission line alignment. This will result in the removal of 549.2 ha of habitat including areas with high potential Moose aquatic carrying capacities as well as 24 ha of identified over-wintering areas and portions of areas with the potential to support moderate to high densities of Moose in the dormant season. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Reduce risk of mortality to wildlife Minimize construction of new roads No hunting by Project personnel Enforce speed limits on Project roads Awareness trainings for employees 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - Wolves	Potential change in wolves population abundance and distribution due to the construction of the transmission line alignment. This will result in the removal of 549.2 ha of habitat. Noise from construction activities may temporarily displace local wolves and/or local Moose that wolves depend on for food. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Reduce risk of mortality to wildlife Minimize construction of new roads No hunting by Project personnel Enforce speed limits on Project roads Awareness trainings for employees 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - American Marten	Potential change in American marten population abundance and distribution due to the construction of the transmission line alignment. This will result in the removal of 549.2 ha of habitat including 127 ha of identified core marten habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Reduce risk of mortality to wildlife Minimize construction of new roads No hunting by Project personnel Enforce speed limits on Project roads Awareness trainings for employees 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Furbearers - Black Bear	Potential change in black bear population abundance and distribution due to the construction of the transmission line alignment. This will result in the removal of 549.2 ha of habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Reduce risk of mortality to wildlife ▪ Minimize construction of new roads ▪ No hunting by Project personnel ▪ Enforce speed limits on Project roads ▪ Awareness trainings for employees 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Bats	Potential change in bats population abundance and distribution due to the construction of the transmission line. A total of 130 ha of suitable vegetation community types for bat roosting habitat will be cleared for Project development. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Enforce speed limits along Project roads ▪ Reduce the risk of mortality to birds and bats 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Migratory Birds	Potential change in migratory birds population abundance and distribution due to the construction of the transmission line alignment. This will result in the removal of 549.2 ha of habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Limit risk of nest destruction and mortality of migratory birds ▪ Construct the transmission line ROW outside of the migratory bird breeding season ▪ Install conductor wires at a sufficient distance apart to prevent accidental electrocution of birds ▪ Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist ▪ No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife ▪ Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Raptors	Potential change in raptors population abundance and distribution due to the construction of the transmission line. Vegetation clearing for construction of the transmission line alignment is anticipated to remove 403.2 ha of forested land capable of providing woodland raptors nesting habitat. No raptor nests are located within the proposed transmission line alignment footprint and it is not expected that habitat removal will affect known raptor nests through habitat removal. Effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Limit risk of nest destruction and mortality of migratory birds ▪ Construct the transmission line ROW outside of the migratory bird breeding season ▪ Install conductor wires at a sufficient distance apart to prevent accidental electrocution of birds ▪ Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist ▪ No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife ▪ Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife ▪ Minimize the level of potentially disturbing activities near any known or subsequently discovered active raptor nest sites during the raptor breeding season until nests are vacated ▪ Remove carcasses of road-killed animals or any other carcasses found onsite in a timely manner to limit the attraction of wildlife 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Species at Risk, Species of Special Concern and Provincially Rare Species	Potential change in population abundance and distribution for species at risk, species of special concern and provincially rare species due to the construction of the transmission line. Overall, construction of the transmission line alignment will result in the clearing and temporary removal of 232.9 ha of deciduous mixed woodland habitat which may be used as nesting habitat by Canada Warbler; 403.2 ha of forest habitat which may be used as nesting habitat for Common Nighthawk; 22.9 ha of wetland habitat and 146 ha of coniferous forest habitat suitable for Olive-sided Flycatcher and Rusty Blackbird; 22.6 ha of wetland habitat and 3.8 ha of open water habitats which may provide potential habitat to Snapping Turtles. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist ▪ No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife ▪ Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife ▪ Include Common Nighthawk and Bank Swallow identification as part of site induction to improve success of wildlife reporting programs ▪ Contact the MNRF and Environment Canada within 24 hours if Common Nighthawk or Bank Swallow are recorded nesting on site 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
Land Use	Land Use Plans and Policies	Potential effects on land use planning areas during the construction phase of the Project may include overlapping of land use policy area where the use would not be allowed and creating land use conflicts.	<ul style="list-style-type: none"> ▪ Incorporate the Ministry of the Environment and Climate Change (MOECC) D-series guidelines 	Level II	Level I	Level I	Level III	Level III	Not significant	Likely
Land Use	Mineral Exploration	Changes in access to other claim areas or effects on the ability to exercise exploration activities within these claim areas during the construction phase.	<ul style="list-style-type: none"> ▪ Work with claim holders to identify access changes and negotiate access agreements if there is any requirement to use or cross IAMGOLD properties 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Forestry	The potential effects on forestry due to the construction phase of the Project include overlapping, and therefore, loss of Forest Management Units (FMUs) area, long-term removal of forest resources (at the Project site footprint and along transmission line alignment) and changes to access along the Cross-Country TLA and at the Project site.	<ul style="list-style-type: none"> Re-route the Chester Access Road south of the Project site 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps very small areas of forest management units but does not substantially limit forestry resources or the ability to conduct forestry activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Hunting	Potential effects on hunting during the construction phase of the Project include overlapping of, and therefore, limiting use of or access to WMUs, overlapping of, and therefore, limiting use of or access to BMAs, increased access to BMAs along the TLA alternatives and changes to the abundance and distribution of wildlife that could affect hunting success rates due to construction activities.	<ul style="list-style-type: none"> The MNRF has advised that the affected BMA holder can apply to obtain licenses to additional BMAs in the Timmins District to augment the loss of access to the northern portion of the affected BMA Enforce speed limits and warn IAMGOLD personnel of areas of high wildlife activity and crossings Prohibit hunting on IAMGOLD property Food wastes generated on-site will be appropriately disposed of to reduce the attraction of wildlife 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Trapping	A number of trapline areas overlap with the Project site and TLA alternatives. Potential effects on trapping during the construction phase of the Project include loss of trapline areas or trap cabins, changes to access to trapline areas or trap cabins and changes to the abundance and distribution of furbearers that could affect trapping success rates, and therefore, trapping income due to changes in biophysical or anthropogenic conditions.	<ul style="list-style-type: none"> Based on discussion with the MNRF no compensation is required for trap line losses 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps with small portions of trapline areas and affects a few individual trappers and/or will not limit the ability to carry out trapping activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Recreational and Commercial Fishing	The Project site and TLAs overlap with Fisheries Management Zone (FMZ) 8 and several bait harvest areas. Potential effects on fishing during the construction phase of the Project include loss of bait harvest areas or recreational fishing areas, changes to access to fishing areas and changes to the abundance and distribution of fish that could affect fishing success rates, and therefore, any commercial fishing income (such as for bait fish harvesters) due to changes in biophysical or anthropogenic conditions.	Not applicable	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project may affect a small number of waterbodies used for fishing but does not limit the ability to fish.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Cottages and Outfitters	Numerous cottages and outfitters are located near the Project site. Potential effects on the cottagers may include decreased enjoyment and leisure lifestyle associated with cottaging due to construction noise and dust; perceived effects to water quality, quantity and area aesthetics) and increased vehicle traffic. The potential effects of the Project on the outfitters may include decrease in areas recommended by outfitters to clientele (related to effects on BMAs), perception that the area is not pristine or natural which could detract clientele and increased local clientele due to increased workforce in area (staying or hunting, etc).	<ul style="list-style-type: none"> Limit recreational boating for workers while they are staying at the work camp on-site Potential purchase of cottages 	Level II	Level I	Level I	Level III	Level I	Not significant	Likely
				The Project is proximal to cottage areas or areas used by outfitters and may require the removal of a few cottages but will not limit the use of these areas by most cottagers/outfitters.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Navigable Waters	Due to the construction of the watercourse realignments and retention dams, canoe routes will need to be modified during the construction phase.	<ul style="list-style-type: none"> To be determined through consultation with any potential canoe route users to facilitate navigation during construction and operations 	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project is proximal to canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Other Recreational Uses	The potential effects on other recreational uses include temporary disruption of the snowmobile Trunk Trail due to construction of the Project transmission alignment, changes to access to the Project area that may have previously been used for other recreation uses and changes in the natural aesthetic of the area which may detract some recreational users to avoid the Project area.	<ul style="list-style-type: none"> Consult with local snowmobile clubs and organizations, particularly when construction timing and transmission line engineering / pole placement is better known, to minimize potential conflicts 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps or changes access to portions of outdoor recreation areas but does not limit the ability to participate in outdoor recreation activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Plant Harvesting	There is a potential for blueberry harvesting to be affected during the construction phase of the transmission line due to clearing of vegetation.	Not applicable	Level II	Level I	Level I	Level III	Level I	Not significant	Likely
				The Project overlaps with areas used for traditional plant harvesting but does not limit the ability to harvest plants.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Traditional Land Use	Traditional Hunting	Potential effects on traditional hunting during the construction phase include changes in access to and overlapping of the waterfowl hunting site and waterfowl hunting route and therefore limiting its use, enhanced access to hunting areas and travel corridor resulting from transmission line ROW clearing and changes to the abundance and distribution of wildlife due to construction activities that have the potential to affect hunting.	<ul style="list-style-type: none"> Prohibit hunting on IAMGOLD property to provide safety for both hunters and workers 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of traditional hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Fishing	Potential effects on fishing during the construction phase of the Project include loss of traditional fishing areas, changes to access to fishing areas and changes to the abundance and distribution of fish due to construction activities.	<ul style="list-style-type: none"> Design or time construction activities so there are limited or no in-water works required No fishing by Project personnel will be permitted while working or residing on-site 	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project may affect a small number of waterbodies used for traditional fishing but does not limit the ability to fish.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Traditional Land Use	Canoeing	Due to the construction of the watercourse realignments and retention dams, canoe routes will need to be modified during the construction phase.	<ul style="list-style-type: none"> To be determined through consultation with any potential canoe route users to facilitate navigation during construction and operations 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project is proximal to traditional canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Cultural, Spiritual and Ceremonial Sites	Changes in ability of Aboriginal people to access sites that may be of cultural, spiritual, ceremonial value or may increase or decrease intrinsic values such as privacy, in using sites.	<ul style="list-style-type: none"> Inform workers of locally nesting raptors Consult with Mattagami First Nation and Flying Post First Nation on how the removal of an eagles nest can be conducted in a culturally sensitive manner, and be open to hosting a traditional ceremony (ies) on site should one be requested 	Level I	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project does not overlap important cultural, spiritual or ceremonial sites.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Visual Aesthetics	Change in Landscape from Receptor Locations	Changes in landscape due to construction of Project components that could potentially be seen from nearby water bodies and land.	<ul style="list-style-type: none"> Limit the design height of the MRA to 150 meters Purchase and remove the trapper's cabin on Three Duck Lakes 	Level I	Level II	Level I	Level III	Level II	Not significant	Not likely
				No perceptible change in landscape.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape from Non-Receptor Locations	Changes in landscape due to construction of Project components that could potentially be seen from nearby bodies of water.	<ul style="list-style-type: none"> Limit the design height of the MRA to 150 meters 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape due to the Transmission Line	Changes in landscape due to construction of the transmission line that could potentially be seen from nearby receptors.	Not applicable	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Archaeology	Effect on Heritage Sites	Changes to physical or cultural heritage resources including structures, sites or things of historical, archaeological, paleontological or architectural importance that may be overprinted by Project components.	<ul style="list-style-type: none"> Completed mitigation - archaeological assessments Stages 1, 2, 3 and 4, as required Buffer zones are established, as required 	Level I	Level II	Level I	Level III	Level III	Not significant	Not likely
				The Project is not proximal to archaeological sites or the site has been assessed and cleared in accordance with the <i>Heritage Act</i> .	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is not reversible.		
Cultural Heritage Landscapes and Built Heritage Resources	Effect on Heritage Resources	Changes to cultural heritage resources including built heritage and/or cultural heritage landscapes, as regulated by the Ontario Heritage Act. Heritage resources could potentially be affected by the Project.	Not applicable	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				The Project is not proximal to cultural heritage resources or changes to viewscape and site context that does not affect the integrity of cultural heritage resources.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Socio-Economic	Labour Market	Direct, indirect and induced employment levels are expected to increase due to Project construction activities. The effect on employment is therefore positive and highly distinguishable in the regional study area and lasts for the life of the Project.	<ul style="list-style-type: none"> Support employment of local community members where possible Implement a procurement process that encourages Aboriginal and local suppliers Cultural awareness training Provide on-the-job Common Core training to workers Provide training and education in local communities 	—	—	—	—	—	—	—

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Business opportunities	The construction of the Project is expected to result in increased business opportunities. There will be a positive highly distinguishable effect in the regional study area and will last for the life of the Project.	<ul style="list-style-type: none"> ▪ Implement a procurement process that encourages Aboriginal and local suppliers ▪ Implement a procurement policy that structures opportunities in terms of package size and bid evaluation to reflect Aboriginal and local capabilities ▪ Establish a system to monitor and report on local and regional content with mechanisms to adapt procurement policies where required ▪ Support capacity building for local businesses 	—	—	—	—	—	—	—
Socio-Economic	Government Finances	The Project is expected to produce substantial revenues for Federal and Provincial governments through corporate taxes and royalties, indirect taxes on products, indirect taxes on production and direct taxes on income earned from economic activity. The residual effect is considered positive effect that lasts for the life of the Project and is expected to result in a measurable change in revenues outside of the normal range of variability for the Provincial and Federal governments.	Not applicable	—	—	—	—	—	—	—
Socio-Economic	Population and Demographics	<p>The Project will create employment during the construction, operation and closure phases. This has the potential to positively affect, directly and indirectly, the population and demographics of regional study area communities.</p> <p>Regionally: Residual positive (growth) effects but not likely to be noticeable are expected in Timmins and Sudbury when construction begins.</p> <p>Locally: positive, highly distinguishable effect and may result in the need for investment by the community or government that lasts for the construction phase.</p>	<ul style="list-style-type: none"> ▪ Support employment of local community members where possible ▪ Implement a procurement process that encourages Aboriginal and local suppliers ▪ Cultural awareness training ▪ Provide on-the-job Common Core training to workers ▪ Provide training and education in local communities 	—	—	—	—	—	—	—

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Community Health Conditions	This Project has the potential to affect the existing health of the population in a variety of ways including the interaction of the workers with the local population, increased employment and income. This interaction could result in a more positive or adverse lifestyle depending on individual choices and the on-site work environment.	<ul style="list-style-type: none"> ▪ Provide access to long distance phone service for employees ▪ Provide for basic worker health care ▪ Provide information on health-related issues such as nutrition, sexually transmitted infections, alcohol abuse etc. to workers ▪ Provide worker transportation to and from Project site 	Level I	Level III	Level I	Level III	Level II	Not significant	Likely
				Effects are within the normal range of variability.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Housing and Temporary Accommodation	The Project will interact with permanent and temporary housing through the need to provide housing to the temporary workforce, migrants seeking work and others who are attracted to the region as it becomes a more robust economy. Locally: Residual housing effects in the local study area, while considered positive, are distinguishable and require investment by the community or government to address and be experienced in the construction phase.	<ul style="list-style-type: none"> ▪ Develop on-site camp ▪ Monitor indicators of Project housing effects and adapting management measures 	Level I	Level III	Level I	Level III	Level II	Not significant	Likely
				Effects are manageable within the stock of existing housing and temporary accommodations.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Public Utilities	The Project has the potential to effect demands on public utilities such as water and wastewater, electricity, and solid waste systems because the Project will require them on-site and an increase in population may result in growth in housing and businesses with associated demands for public utilities. Regionally: Population changes in Timmins and Sudbury are low and therefore not expected to result in noticeable increased demands for any public utilities.	<ul style="list-style-type: none"> ▪ Work with Gogama Local Service Board 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Effects may require investment to meet Project needs that are within the capabilities of communities or governments.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Education	The Project could intersect with the education and training sector in a variety of ways including increases in population of school aged children and increased demands for post-secondary school training to access Project employment effects (direct, indirect and induced). The residual effect on primary and secondary education is considered positive since it results in a slight increase in enrolment in elementary schools in the local study area and in enrolment in high schools in the regional study area (Timmins and Sudbury).	<ul style="list-style-type: none"> Support post secondary education of workers 	—	—	—	—	—	—	—
Socio-Economic	Emergency Services	The Project will affect emergency services due to increases in population; increases in disposable income levels due to direct and indirect employment related to the Project; and through increases in Project-related accidents that require medical attention.	<ul style="list-style-type: none"> Maintain open communication with local service providers to monitor existing social issues 	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
Socio-Economic	Other Community Services	The Project could affect community services as a result of population changes and residency decisions, and the extent to which direct or indirect population growth in certain communities may place pressure on their services and infrastructure. Regionally: Residual effects on community services in Timmins and Sudbury are expected to be within the normal range of variability and last throughout the life of the Project. Locally: Positive effects for recreation services and negative due to lack of services in local study area communities (for shelters, victims' services, child care and health care).	<ul style="list-style-type: none"> Implement the Zero Harm policy at the Project site 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely

Table 11-3: Impact Assessment Matrix for the Construction Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Transportation	The effects of the Project on traffic volumes will occur on Highway 144 as vehicular traffic will be the main mode of transportation used to transport goods, services and workers to and from the Project site. Rail may also be used during the construction phase to transport some Project materials to Gogama, to be offloaded there and transported by truck to the Project site.	<ul style="list-style-type: none"> ▪ Road safety awareness training ▪ Schedule major equipment delivery and removal ▪ Schedule shuttle bus travel and shifts ▪ Ensure heavy load sizing and seasonal load restrictions ▪ Transport oversized loads in parts ▪ Report wildlife sightings on highways 	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				Traffic may increase but does not require investment in roadway infrastructure to accommodate Project demands.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Suspended Particulate Matter (Dust) as Total Particulate Matter (PM _{tot.})	Changes in air quality due to particulate emissions from operations activities. These activities include onsite road traffic, mine rock management, primary crushing, drilling, blasting, loading and hauling of ore and mine rock in the open pit.	<ul style="list-style-type: none"> ▪ DBMP ▪ TMF DBMP ▪ Dust collection systems ▪ Control measures provided by equipment supplier for drilling. ▪ Blasting to occur mid-day based on favourable climatic conditions. ▪ Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. ▪ IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level II	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<120 µg/m ³).	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Particulate Matter (PM ₁₀); 24 Hour Average	Changes in air quality due to particulate emissions from operations activities. These activities include onsite road traffic, mine rock management, primary crushing, drilling, blasting, loading and hauling of ore and mine rock in the open pit.	<ul style="list-style-type: none"> ▪ DBMP ▪ TMF DBMP ▪ Dust collection systems ▪ Control measures provided by equipment supplier for drilling. ▪ Blasting to occur mid-day based on favourable climatic conditions. ▪ Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. ▪ IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level II	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<50 µg/m ³).	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); 24 Hour Average	Changes in air quality due to particulate emissions from operations activities. These activities include onsite road traffic, mine rock management, primary crushing, drilling, blasting, loading and hauling of ore and mine rock in the open pit.	<ul style="list-style-type: none"> ▪ DBMP. ▪ TMF DBMP. ▪ Dust collection systems ▪ Control measures provided by equipment supplier for drilling. ▪ Blasting to occur mid-day based on favourable climatic conditions. ▪ Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. ▪ IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level II	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<25 µg/m ³).	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs infrequently.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); Annual Average	Changes in air quality due to particulate emissions from operations activities. These activities include onsite road traffic, mine rock management, primary crushing, drilling, blasting, loading and hauling of ore and mine rock in the open pit.	<ul style="list-style-type: none"> DBMP. TMF DBMP. Dust collection systems Control measures provided by equipment supplier for drilling. Blasting to occur mid-day based on favourable climatic conditions. Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. 	Level I	Level I	Level II	Level III	Level I	Not significant	Likely
Air Quality	Sulphur Oxides (SO _x), Mainly as Sulphur Dioxide (SO ₂)	Changes in air quality due to gaseous emissions from Project site activities, mainly from the cyanide destruction process but also from vehicle exhausts.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emission requirements Use of low sulphur fuel Closed loop delivery of SO₂ gas for cyanide destruction 	Level II	Level I	Level II	Level III	Level I	Not significant	Likely
Air Quality	Nitrogen Dioxide (NO ₂); 24 Hour Average	Changes in air quality due to gaseous emissions from Project site activities, mainly blasting but also vehicle exhausts.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emission requirements Blasting to occur mid-day based on favourable climatic conditions Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage 	Level II	Level II	Level II	Level II	Level I	Not significant	Likely
Air Quality	Nitrogen Dioxide (NO ₂); 1 Hour Average	Changes in air quality due to gaseous emissions from Project site activities, mainly blasting but also vehicle exhausts.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emission requirements Blasting to occur mid-day based on favourable climatic conditions Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage 	Level II	Level III	Level II	Level I	Level I	Not significant	Likely
Air Quality	Arsenic; 24 Hour Average	Changes in air quality due to particulate emissions from Project site activities, mainly handling of ore and mine rock.	<ul style="list-style-type: none"> DBMP. TMF DBMP. Dust collection systems Control measures provided by equipment supplier for drilling. Blasting to occur mid-day based on favourable climatic conditions. Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. 	Level I	Level I	Level II	Level III	Level I	Not significant	Likely

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Lead	Changes in air quality due to particulate emissions from Project site activities, mainly handling of ore and mine rock.	<ul style="list-style-type: none"> ▪ DBMP. ▪ TMF DBMP. ▪ Dust collection systems ▪ Control measures provided by equipment supplier for drilling. ▪ Blasting to occur mid-day based on favourable climatic conditions. ▪ Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. 	Level I	Level I	Level II	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Manganese; 24 Hour Average	Changes in air quality due to particulate emissions from Project site activities, mainly handling of ore and mine rock.	<ul style="list-style-type: none"> ▪ DBMP. ▪ TMF DBMP. ▪ Dust collection systems ▪ Control measures provided by equipment supplier for drilling. ▪ Blasting to occur mid-day based on favourable climatic conditions. ▪ Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. 	Level II	Level II	Level II	Level II	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<0.2 µg/m³).	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Air Quality	VOCs	Changes in air quality due to gaseous emissions from Project site activities, mainly operation of the landfill and vehicle exhausts.	<ul style="list-style-type: none"> ▪ Engine Maintenance Program ▪ Equipment compliant with Transport Canada vehicle emission requirements 	Level II	Level I	Level II	Level III	Level II	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Air Quality	Other Key Metals	Changes in air quality due to particulate emissions from Project site activities, mainly handling of ore and mine rock.	<ul style="list-style-type: none"> ▪ DBMP. ▪ TMF DBMP. ▪ Dust collection systems ▪ Control measures provided by equipment supplier for drilling. ▪ Blasting to occur mid-day based on favourable climatic conditions. ▪ Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage. 	Level II	Level II	Level II	Level II	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Air Quality	Hydrogen Cyanide (HCN); 24 Hour Average	Changes in air quality due to gaseous emissions from Project site activities, mainly operation of outdoors cyanide leach tanks.	<ul style="list-style-type: none"> ▪ Cyanide destruction at the ore processing plant 	Level II	Level III	Level II	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<8 µg/m³).	Effect extends into the regional study area.	The duration of the effect is between 2 and 15 years.	Effect occurs infrequently.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Noise & Vibration	Daytime Noise Level	Changes in noise levels due to activities at the Project site, including open pit operations, mine rock and ore haulage, additional vehicle movements at the site, operation of the ore processing plant.	<ul style="list-style-type: none"> Site equipment will be operated to meet NPC-300 operational noise limits 	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				Noise level above daytime baseline (44 dBA) and below or equal to 45 dBA.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Noise & Vibration	Nighttime Noise Level	Changes in noise levels due to activities at the Project site, including open pit operations, mine rock and ore haulage, additional vehicle movements at the site, operation of the ore processing plant.	<ul style="list-style-type: none"> Site equipment will be operated to meet NPC-300 operational noise limits To meet NPC-300 nighttime criteria, sensitive receptors may be purchased 	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				Noise level above nighttime baseline (34 dBA) and below or equal to 40 dBA.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Noise & Vibration	Blasting Noise Level	Changes in air vibration levels due to Project site activities, i.e., open pit blasting	<ul style="list-style-type: none"> Blasting charge size in the open pit is planned to be in compliance with NPC-119. 	Level II	Level II	Level II	Level II	Level I	Not significant	Likely
				Blasting noise level above the adjusted baseline noise level (39 dBA) but below the regulatory limit of 120 dBL.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Noise & Vibration	Blasting Vibration Level	Changes in ground vibration levels due to Project site activities, i.e., open pit blasting.	<ul style="list-style-type: none"> Blasting charge size in the open pit is planned to be in compliance with NPC-119. 	Level II	Level II	Level II	Level II	Level I	Not significant	Likely
				Blasting vibration level at the receptor is above perceptible vibration level (0.14 mm/s) and below the regulatory limit (10 mm/s).	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Hydrology	Change in Flow	Streamflow changes due to water intake and discharge in addition to continued operation of various Project components, such as watercourse realignments, TMF and MRA.	<ul style="list-style-type: none"> Realignment channels and dams 	Level I	Level II	Level II	Level III	Level II	Not significant	Likely
				<10% or a change in flow which does not affect the hydrological characteristics.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Water Quality	Change in Water Quality	Changes in water quality due to Project discharges and runoff. Parameters potentially exceeding baseline include: ammonia, arsenic, barium, calcium, chloride, cobalt, copper, molybdenum, nickel, nitrate, phosphorus, potassium, sodium, strontium, sulphate, uranium.	<ul style="list-style-type: none"> Best Management Practices (BMPs) and engineering design to limit soil erosion and mobilization/transport of sediments from disturbed areas Treatment of process water; construction and operation of engineered water management systems to collect surface drainage (runoff) and seepage from the operations area and in particular the TMF, MRA, low-grade ore stockpile, overburden stockpiles, plant site area and associated buildings, and explosives manufacturing areas; reclaim water; returned (or recycled) to the process plant; use of liners on starter tailings dams to limit seepage losses during the early years of operations. Management of solid domestic and industrial waste in a permitted landfill, including the use of BMPs Inclusion of PAG rock within the bulk of the MRA BMPs for explosives use Treatment of sewage Monitoring and treatment of effluent, monitoring of groundwater quality and remedial action, as required 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				Concentrations greater than baseline concentrations, but less than water quality guidelines, where applicable.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Hydrogeology	Groundwater Levels (Water Table)	Changes in groundwater levels due to open pit development.	Not applicable	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				Change in the water table elevation is predicted to be between 1 and 5 m.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Aquatic Biology	Aquatic Toxicity	Effects on aquatic species due to changes in water quality, primarily related to Project discharges.	<ul style="list-style-type: none"> Site specific water quality objectives will need to be developed for these substances or effluent treatment will need to be employed such that protection of aquatic life is assured 	Level I	Level II	Level II	Level III	Level I	Not significant	Likely
				Median concentrations less than guidelines or less than chronic toxicity thresholds for substances without guidelines.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Aquatic Biology	Commercial, Recreational and Aboriginal Fisheries	Effects on commercial, recreational and Aboriginal fisheries due to open pit blasting and because newly established watercourse realignments may not be fully established.	<ul style="list-style-type: none"> Relocate fish (representative numbers of the community) to established habitats. Time relocation relative to life cycle requirements and environmental conditions Removal of terrestrial vegetation prior to flooding will reduce the potential for methyl mercury production through decaying of terrestrial vegetation Design water intake structures to meet DFO requirements to prevent/limit fish impingement 	Level I	Level II	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to communities or populations.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Aquatic Biology	Loss of Aquatic Habitat	Continued loss of aquatic habitat due to Project footprint. Lotic habitat affected includes Mollie River, Clam Creek and Bagsverd Creek. Lentic habitat affected includes Côté Lake, Beaver Pond, Clam Lake, Little Clam Lake, Unnamed Pond #3 and East Beaver Pond.	<ul style="list-style-type: none"> Time construction of watercourse realignments to allow for vegetation growth for one season prior to commissioning of watercourse realignments, if possible or conduct planting of aquatic vegetation immediately following commissioning of channel realignments to promote the establishment of vegetation within the newly constructed habitats Use appropriate erosion control methods 	Level I	Level II	Level II	Level III	Level II	Not significant	Not likely
				Less than 10% of lotic habitat (stream length - m) and /or lentic habitat (lake area - m ²) within the local study area.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Upland Plant Community Types	Continued vegetation loss due to site clearing in the construction phase. The Project is predicted to alter approximately 1,800 ha of the land cover.	<ul style="list-style-type: none"> Rehabilitate habitat for plants and wildlife as practicable Limit / prevent the transfer of invasive plant species from equipment and imported soil 	Level I	Level I	Level II	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Wetlands	Continued loss of wetland areas due to site clearing during the construction phase. The Project is predicted to alter approximately 185 ha of wetlands.	Not applicable	Level I	Level I	Level II	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Vegetation Species at Risk, Species of Special Concern and Provincially Rare Species	No predicted effect on Species at Risk, Species of Special Concern and Provincially Rare Species as none were identified during baseline data collection. Therefore, this effect is not assessed.	Not applicable	—	—	—	—	—	—	—

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology	Ungulates	Continued potential for change in ungulates population abundance and distribution due to habitat removal during the construction phase. Site construction will remove an estimated 1,106 ha of suitable moose winter habitat and 1,074 ha of suitable moose summer habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level II	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Furbearers	Continued potential for change in furbearers population abundance and distribution due to habitat removal during the construction phase. Site construction will remove an estimated 355 ha of suitable beaver habitat. Between 1,074 and 1,266 ha of suitable black bear, eastern wolf, and American marten habitat will be removed from construction of the Project. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level II	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology	Migratory Birds	Continued potential for change in migratory birds population abundance and distribution due to habitat removal during the construction phase. Site construction will remove between 99 and 216 ha of suitable nightjar, olive-sided flycatcher, rusty blackbird, and waterbird habitat. The Project is predicted to remove 1,203 and 1,233 ha of suitable Canada warbler and tree-nesting raptor habitat, respectively. The Project is not anticipated to remove any suitable short-eared owl habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Limit risk of nest destruction and mortality of migratory birds Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife 	Level I	Level II	Level II	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Wildlife Species at Risk	Continued potential for change in wildlife species at risk population abundance and distribution due to habitat removal during the construction phase. Site construction will remove an estimated 1,233 ha of suitable bat habitat. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> Reduce the risk of mortality to birds and bats Reduce risk of mortality to wildlife Include Common Nighthawk and Bank Swallow identification as part of site induction to improve success of wildlife reporting programs Contact the MNRF and Environment Canada within 24 hours if Common Nighthawk or Bank Swallow are recorded nesting on site 	Level I	Level II	Level II	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology - TL	Vegetation Communities	Continued vegetation loss due to transmission line ROW clearing during the construction phase. The Project is predicted to result in the removal of 549.2 ha of forested communities including 146 ha of coniferous swamp.	<ul style="list-style-type: none"> Vehicles to drive slowly along the transmission line ROW Ensure that ongoing clearing is constrained to the necessary area of clearance (the ROW) Use mechanical brushing 	Level I	Level I	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Ungulates - Moose	Continued potential for change in moose population abundance and distribution due to habitat removal during the construction phase.	<ul style="list-style-type: none"> ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence. ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - Wolves	Continued potential for change in wolves population abundance and distribution due to habitat removal during the construction phase. Increased levels of trapping or hunting can negatively affect local wolf population through increased mortality rates and increased noise from recreational use can displace wolves as well as their prey.	<ul style="list-style-type: none"> ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Furbearers - American Marten	Continued potential for change in American marten population abundance and distribution due to habitat removal during the construction phase. Increased levels of trapping have the potential to negatively affect local marten populations.	<ul style="list-style-type: none"> Include wildlife awareness information in regular safety and environmental inductions Project personnel will be advised not to interfere or harass or feed wildlife Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence Project personnel will be required to handle food and food wastes in a responsible manner No hunting by Project personnel will be permitted while working or residing on-site Enforce speed limits along Project roads to reduce the potential for collisions with wildlife Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - Black Bear	Continued potential for change in black bear population abundance and distribution due to habitat removal during the construction phase. Increased levels of trapping or hunting can negatively affect local populations.	<ul style="list-style-type: none"> Include wildlife awareness information in regular safety and environmental inductions Project personnel will be advised not to interfere or harass or feed wildlife Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence Project personnel will be required to handle food and food wastes in a responsible manner No hunting by Project personnel will be permitted while working or residing on-site Enforce speed limits along Project roads to reduce the potential for collisions with wildlife Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Bats	Continued potential for change in bats population abundance and distribution due to habitat removal during the construction phase.	<ul style="list-style-type: none"> Enforce speed limits along Project roads Reduce the risk of mortality to birds and bats 	Level I	Level II	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Migratory Birds	Continued potential for change in migratory birds population abundance and distribution due to habitat removal during the construction phase. Additional potential effects include collisions with power lines and electrocutions.	<ul style="list-style-type: none"> ▪ Limit risk of nest destruction and mortality of migratory birds ▪ Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable ▪ No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife ▪ Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife 	Level I	Level II	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Raptors	Continued potential for change in raptors population abundance and distribution due to habitat removal during the construction phase. Additional potential effects include collisions with power lines and electrocutions.	<ul style="list-style-type: none"> ▪ Limit risk of nest destruction and mortality of migratory birds ▪ Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable ▪ No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife ▪ Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife ▪ Minimize the level of potentially disturbing activities near any known or subsequently discovered active raptor nest sites during the raptor breeding season until nests are vacated ▪ Remove carcasses of road-killed animals or any other carcasses found onsite in a timely manner to limit the attraction of wildlife 	Level I	Level II	Level II	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Species at Risk, Species of Special Concern and Provincially Rare Species	Continued potential for change in population abundance and distribution for species at risk, species of concern and provincially rare species due to habitat removal during the construction phase. Additional potential effects include collisions with power lines and electrocutions.	<ul style="list-style-type: none"> No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife Include Common Nighthawk and Bank Swallow identification as part of site induction to improve success of wildlife reporting programs Contact the MNRF and Environment Canada within 24 hours if Common Nighthawk or Bank Swallow are recorded nesting on site 	Level I	Level II	Level II	Level III	Level I	Not significant	Not likely
Land Use	Land Use Plans and Policies	Potential effects on land use planning areas during the operations phase of the Project may include overlapping of land use policy area where the use would not be allowed and creating land use conflicts.	<ul style="list-style-type: none"> Incorporate the MOECC D-series guidelines 	Level II	Level I	Level II	Level III	Level II	Not significant	Likely
Land Use	Mineral Exploration	Changes in access to other claim areas or effects on the ability to exercise exploration activities within these claim areas during the operations phase.	<ul style="list-style-type: none"> Work with claim holders to identify access changes and negotiate access agreements if there is any requirement to use or cross IAMGOLD properties 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
Land Use	Forestry	The potential effects on forestry due to the operations phase of the Project include overlapping, and therefore, loss of Forest Management Units (FMUs) area, long-term removal of forest resources (at the Project site footprint and along transmission line alignment) and changes to access along the Cross-Country TLA and at the Project site.	<ul style="list-style-type: none"> Re-route the Chester Access Road south of the Project site 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Hunting	Potential effects on hunting during the operations phase of the Project include overlapping of, and therefore, limiting use of or access to WMUs, overlapping of, and therefore, limiting use of or access to BMAs, increased access to BMAs along the TLA alternatives and changes to the abundance and distribution of wildlife that could affect hunting success rates due to operations activities.	<ul style="list-style-type: none"> ▪ The MNRF has advised that the affected BMA holder can apply to obtain licenses to additional BMAs in the Timmins District to augment the loss of access to the northern portion of the affected BMA ▪ Enforce speed limits and warn IAMGOLD personnel of areas of high wildlife activity and crossings ▪ Prohibit hunting on IAMGOLD property ▪ Food wastes generated on-site will be appropriately disposed of to reduce the attraction of wildlife 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Trapping	A number of trapline areas overlap with the Project site and TLA alternatives. Potential effects on trapping during the operations phase of the Project include loss of trapline areas or trap cabins, changes to access to trapline areas or trap cabins and changes to the abundance and distribution of furbearers that could affect trapping success rates, and therefore, trapping income due to changes in biophysical or anthropogenic conditions.	<ul style="list-style-type: none"> ▪ Based on discussion with the MNRF no compensation is required for trap line losses 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				The Project overlaps with small portions of trapline areas and affects a few individual trappers and/or will not limit the ability to carry out trapping activities.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Recreational and Commercial Fishing	The Project site and TLAs overlap with Fisheries Management Zone (FMZ) 8 and several bait harvest areas. Potential effects on fishing during the operations phase of the Project include loss of bait harvest areas or recreational fishing areas, changes to access to fishing areas and changes to the abundance and distribution of fish that could affect fishing success rates, and therefore, any commercial fishing income (such as for bait fish harvesters) due to changes in biophysical or anthropogenic conditions.	Not applicable	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				The Project may affect a small number of waterbodies used for fishing but does not limit the ability to fish.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Cottages and Outfitters	Numerous cottages and outfitters are located near the Project site. Potential effects on the cottagers may include decreased enjoyment and leisure lifestyle associated with cottaging due to operation noise and dust; perceived effects to water quality, quantity and area aesthetics and increased vehicle traffic. The potential effects of the Project on the outfitters may include decrease in areas recommended by outfitters to clientele (related to effects on BMAs), perception that the area is not pristine or natural which could detract clientele and increased local clientele due to increased workforce in area (staying or hunting, etc).	<ul style="list-style-type: none"> Limit recreational boating for workers while they are staying at the work camp on-site Potential purchase of cottage. 	Level II	Level I	Level II	Level III	Level I	Not significant	Likely
				The Project is proximal to cottage areas or areas used by outfitters and may require the removal of a few cottages but will not limit the use of these areas by most cottagers/outfitters.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Navigable Waters	Due to the continued presence of the watercourse realignments and retention dams during the operations phase, use of canoe routes may be disturbed during the operations phase.	<ul style="list-style-type: none"> To be determined through consultation with any potential canoe route users to facilitate navigation during construction and operations 	Level II	Level I	Level II	Level III	Level I	Not significant	Likely
				The Project is proximal to canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Other Recreational Uses	The potential effects on other recreational uses include changes to access to areas that may have previously been used for other recreational uses and changes in the natural aesthetic of the area which may detract some recreational users.	Not applicable	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				The Project overlaps or changes access to portions of outdoor recreation areas but does not limit the ability to participate in outdoor recreation activities.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Plant Harvesting	There is a potential for blueberry harvesting to be affected during the operations phase of the transmission line due to periodic clearing of vegetation.	<ul style="list-style-type: none"> Vegetation clearing will avoid the use of chemical agent 	Level II	Level I	Level II	Level III	Level I	Not significant	Likely
				The Project overlaps with areas used for traditional plant harvesting but does not limit the ability to harvest plants.	Effect is restricted to the Project footprint.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Traditional Land Use	Traditional Hunting	Potential effects on traditional hunting during the operations phase include changes in access to and overlapping of the waterfowl hunting site and waterfowl hunting route and therefore limiting its use, enhanced access to hunting areas and travel corridor resulting from transmission line ROW clearing and changes to the abundance and distribution of wildlife due to operations activities that have the potential to affect hunting. Additionally, the transmission line corridor may attract non-traditional hunters to hunt in the area that is currently principally used for hunting by the Mattagami First Nation.	<ul style="list-style-type: none"> Prohibit hunting on IAMGOLD property to provide safety for both hunters and workers 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of traditional hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Fishing	Potential effects on fishing during the operations phase of the Project include loss of traditional fishing areas, changes to access to fishing areas and changes to the abundance and distribution of fish due to operations activities.	No fishing by Project personnel will be permitted while working or residing on-site	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				The Project may affect a small number of waterbodies used for traditional fishing but does not limit the ability to fish.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Traditional Land Use	Canoeing	Due to the continued presence of the watercourse realignments and retention dams during the operations phase, use of canoe routes may be disturbed during the operations phase.	<ul style="list-style-type: none"> To be determined through consultation with any potential canoe route users to facilitate navigation during construction and operations 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				The Project is proximal to traditional canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Cultural, Spiritual and Ceremonial Sites	Changes in ability of Aboriginal people to access sites that may be of cultural, spiritual, ceremonial value or may increase or decrease intrinsic values such as privacy, in using sites.	<ul style="list-style-type: none"> Inform workers of locally nesting raptors 	Level I	Level II	Level II	Level III	Level I	Not significant	Likely
				The Project does not overlap important cultural, spiritual or ceremonial sites.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Visual Aesthetics	Change in Landscape from Receptor Locations	Changes in landscape due to the development of Project components (TMF, MRA and low-grade ore stockpile) that could potentially be seen from receptor locations.	<ul style="list-style-type: none"> Limit the design height of the MRA to 150 meters. Purchase and remove the trapper's cabin on Three Duck Lakes. 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				Perceptible change in landscape which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape from Non-Receptor Locations	Changes in landscape due to the development of Project components (TMF, MRA and low-grade ore stockpile) that could potentially be seen from nearby waterbodies.	<ul style="list-style-type: none"> Limit the design height of the MRA to 150 meters 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape due to the Transmission Line	Changes in landscape due to the presence of the transmission line that could potentially be seen from receptor locations.	Not applicable	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Archaeology	Effect on Heritage Sites	Changes to physical or cultural heritage resources including structures, sites or things of historical, archaeological, paleontological or architectural importance that may be overprinted by Project components.	<ul style="list-style-type: none"> Completed mitigation - archaeological assessments Stages 1, 2, 3 and 4, as required Buffer zones are established, as required 	Level I	Level II	Level II	Level III	Level III	Not significant	Not likely
				The Project is not proximal to archaeological sites or the site has been assessed and cleared in accordance with the <i>Heritage Act</i> .	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is not reversible.		
Cultural Heritage Landscapes and Built Heritage Resources	Effect on Heritage Resources	Changes to cultural heritage resources including built heritage and/or cultural heritage landscapes, as regulated by the Ontario Heritage Act. Heritage resources could potentially be affected by the Project.	Not applicable	Level I	Level II	Level II	Level III	Level I	Not significant	Not likely
				The Project is not proximal to cultural heritage resources or changes to viewscape and site context that does not affect the integrity of cultural heritage resources.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Labour Market	Direct, indirect and induced employment levels are expected to increase due to Project operations activities. The effect on employment is positive and highly distinguishable in the regional study area and lasts for the life of the Project.	<ul style="list-style-type: none"> ▪ Support employment of local community members where possible ▪ Implement a procurement process that encourages Aboriginal and local suppliers ▪ Cultural awareness training ▪ Provide on-the-job Common Core training to workers ▪ Provide training and education in local communities. ▪ Identify and implement basic skills and technical training for Aboriginal and local community members to upgrade marketable skills and increase capacity. 	—	—	—	—	—	—	—
Socio-Economic	Business opportunities	The operation of the Project is expected to result in increased business opportunities. There will be a positive highly distinguishable effect in the regional study area and will last for the life of the Project.	<ul style="list-style-type: none"> ▪ Implement a procurement process that encourages Aboriginal and local suppliers ▪ Implement a procurement policy that structures opportunities in terms of package size and bid evaluation to reflect Aboriginal and local capabilities ▪ Establish a system to monitor and report on local and regional content with mechanisms to adapt procurement policies where required ▪ Support capacity building for local businesses 	—	—	—	—	—	—	—
Socio-Economic	Government Finances	The Project is expected to produce substantial revenues for Federal and Provincial governments through corporate taxes and royalties, indirect taxes on products, indirect taxes on production and direct taxes on income earned from economic activity. The residual effect is considered positive effect that lasts for the life of the Project and is expected to result in a measurable change in revenues outside of the normal range of variability for the Provincial and Federal governments.	Not applicable	—	—	—	—	—	—	—

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Population and Demographics	The Project has the potential to affect the population of the local and regional study area communities through the employment which would provide reason for people to remain in the region or by causing migrants to move to the area for jobs that cannot be filled locally. Regionally: Residual positive (growth) effects but not likely to be noticeable are expected in Timmins and Sudbury Locally: positive, highly distinguishable effect and may result in the need for investment by the community or government.	<ul style="list-style-type: none"> Support employment of local community members where possible Implement a procurement process that encourages Aboriginal and local suppliers Cultural awareness training Provide on-the-job Common Core training to workers. Provide training and education in local communities. Identify and implement basic skills and technical training for Aboriginal and local community members to upgrade marketable skills and increase capacity 	—	—	—	—	—	—	—
Socio-Economic	Community Health Conditions	The Project is likely to interact with community health through the provision of long-term employment and a stable income which could positively or negatively affect an individual's health depending on life style choices.	<ul style="list-style-type: none"> Provide access to long distance phone service for employees Provide for basic worker health care Provide information on health-related issues such as nutrition, sexually transmitted infections, alcohol abuse etc. to workers Provide worker transportation to and from Project site 	Level I	Level III	Level II	Level III	Level II	Not significant	Likely
Socio-Economic	Housing and Temporary Accommodation	The Project will interact with permanent and temporary housing through the need to provide housing to the temporary workforce, migrants seeking work and others who are attracted to the region as it becomes a more robust economy. Locally: Residual housing effects in the local study area, while considered positive, are distinguishable and require investment by the community or government to address.	<ul style="list-style-type: none"> Maintain on-site camp during operations Monitor indicators of Project housing effects and consider adapting management measures 	Level I	Level III	Level II	Level III	Level II	Not significant	Likely
Socio-Economic	Public Utilities	The Project has the potential to create additional demands on water and wastewater treatment facilities, solid waste facilities and power supplies from population increases in local and regional study area communities. Regionally: Population changes in Timmins and Sudbury are low and therefore not expected to result in noticeable increased demands for any public utilities.	<ul style="list-style-type: none"> Work with Gogama Local Service Board 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely

Table 11-4: Impact Assessment Matrix for the Operations Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Education	The residual effect on primary and secondary education is considered positive since it results in a slight increase in enrolment in elementary schools in the local study area and in enrolment in high schools in the regional study area (Timmins and Sudbury).	<ul style="list-style-type: none"> Support post-secondary education of workers 	—	—	—	—	—	—	—
Socio-Economic	Emergency Services	The Project will affect emergency services due to increases in population; increases in disposable income levels due to direct and indirect employment related to the Project; and through increases in Project-related accidents that require medical attention.	<ul style="list-style-type: none"> Maintain open communication with local service providers to monitor existing social issues 	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				Effects may require investment to meet Project needs that are within the capabilities of emergency service providers.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Socio-Economic	Other Community Services	During operations, the Project is expected to result in population changes which, in turn, could affect the delivery of community services such as employment assistance, shelters and victims, child care, recreation, and health care services. Regionally: Residual effects on community services in Timmins and Sudbury are expected to be within the normal range of variability and last throughout the life of the Project. Locally: Positive effects for recreation services and negative due to lack of services in local study area communities (for shelters, victims' services, child care and health care).	<ul style="list-style-type: none"> Implement the Zero Harm policy at the Project site 	Level II	Level II	Level II	Level III	Level II	Not significant	Likely
				Effects may require investment to meet Project needs that are within the capabilities of community service providers.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Transportation	During operations, the Project is likely to affect the transportation system within the local and regional study area through the transport of products, general goods and workers.	<ul style="list-style-type: none"> Road safety awareness training Schedule major equipment delivery and removal Schedule shuttle bus travel and shifts Ensure heavy load sizing and seasonal load restrictions Transport oversized loads in parts Report wildlife sightings on highways 	Level II	Level II	Level II	Level III	Level I	Not significant	Likely
				Traffic may increase but does not require investment in roadway infrastructure to accommodate Project demands.	Effect extends into the local study area.	The duration of the effect is between 2 and 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Suspended Particulate Matter (Dust) as Total Particulate Matter (PM _{tot.})	Changes in air quality due to particulate emissions from closure activities. These activities include site demolition and rehabilitation and onsite road traffic.	<ul style="list-style-type: none"> DBMP IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<120 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Particulate Matter (PM ₁₀); 24 Hour Average	Changes in air quality due to particulate emissions from closure activities. These activities include site demolition and rehabilitation and onsite road traffic.	<ul style="list-style-type: none"> DBMP IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<50 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); 24 Hour Average	Changes in air quality due to particulate emissions from closure activities. These activities include site demolition and rehabilitation and onsite road traffic.	<ul style="list-style-type: none"> DBMP IAMGOLD is committing to meeting Federal and/or Provincial criteria at the property boundary 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<25 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); Annual Average	Changes in air quality due to particulate emissions from closure activities. These activities include site demolition and rehabilitation and onsite road traffic.	<ul style="list-style-type: none"> DBMP 	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (4.2 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Sulphur Oxides (SO _x), Mainly as Sulphur Dioxide (SO ₂)	Changes in air quality due to gaseous emissions from closure activities, mainly vehicle exhausts. Very limited emission of sulphur oxides due to the fact that the cyanide destruction will be decommissioned.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emissions requirements Use of low sulphur fuel 	Level II	Level I	Level I	Level II	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs intermittently or with a certain degree of regularity.	Effect is fully reversible.		
Air Quality	Nitrogen Dioxide (NO ₂); 24 Hour Average	Changes in air quality due to gaseous emissions from closure activities, mainly vehicle exhausts.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emissions requirements 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<200 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		
Air Quality	Nitrogen Dioxide (NO ₂); 1 Hour Average	Changes in air quality due to gaseous emissions from closure activities, mainly vehicle exhausts.	<ul style="list-style-type: none"> Engine Maintenance Program Equipment compliant with Transport Canada vehicle emissions requirements 	Level II	Level II	Level I	Level I	Level I	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria (<400 µg/m ³).	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs infrequently.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Arsenic; 24 Hour Average	Changes in air quality due to particulate emissions from closure activities. No blasting is planned during the closure phase, emissions of metals are limited.	▪DBMP	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (0.0018 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Lead	Changes in air quality due to particulate emissions from closure activities.No blasting is planned during the closure phase, emissions of metals are limited.	▪DBMP	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Manganese; 24 Hour Average	Changes in air quality due to particulate emissions from closure activities. No blasting is planned during the closure phase, emissions of metals are limited.	▪DBMP	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (0.0055 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	VOCs	Changes in air quality due to gaseous emissions from closure activities, mainly operation of the landfill and vehicle exhausts.	▪Engine Maintenance Program ▪Equipment compliant with Transport Canada vehicle emissions requirements	Level II	Level I	Level I	Level III	Level II	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Air Quality	Other Key Metals	Changes in air quality due to particulate emissions from closure activities. No blasting is planned during the closure phase, emissions of metals are limited.	▪DBMP	Level I	Level I	Level I	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Hydrogen Cyanide (HCN); 24 Hour Average	No cyanide is used during the closure phase. Therefore, this effect is not assessed during the closure phase.	Not applicable	—	—	—	—	—	—	—
Noise & Vibration	Daytime Noise Level	Changes in noise levels due to closure activities. These activities include site demolition and rehabilitation and onsite road traffic.	Not applicable	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				Noise level above daytime baseline (44 dBA) and below or equal to 45 dBA.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Noise & Vibration	Nighttime Noise Level	No nighttime activities are planned during the closure phase. Therefore, this effect is not assessed during the closure phase.	Not applicable	—	—	—	—	—	—	—
Noise & Vibration	Blasting Noise Level	No blasting is planned during the closure phase. Therefore, this effect is not assessed during the closure phase.	Not applicable	—	—	—	—	—	—	—
Noise & Vibration	Blasting Vibration Level	No blasting is planned during the closure phase. Therefore, this effect is not assessed during the closure phase.	Not applicable	—	—	—	—	—	—	—
Hydrology	Change in Flow	Streamflow changes due to various Project components, such as watercourse realignments, TMF and MRA.	<ul style="list-style-type: none"> Realignment channels and dams 	Level I	Level II	Level I	Level III	Level II	Not significant	Likely
				<10% or a change in flow which does not affect the hydrological characteristics.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Water Quality	Change in Water Quality	Changes in water quality due to erosion and runoff which could potentially increase total suspended solids in water courses. Best Management Practices will be used during the closure phase, which will prevent changes in water quality.	<ul style="list-style-type: none"> Best Management Practices (BMPs) and engineering design to limit soil erosion and mobilization/transport of sediments from disturbed areas Management of solid domestic and industrial waste in a permitted landfill, including the use of BMPs Inclusion of PAG rock within the bulk of the MRA Construction and operation of engineered water management systems to collect runoff and seepage; monitoring and treatment of effluent, as required 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Concentrations greater than baseline concentrations, but less than water quality guidelines, where applicable.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Hydrogeology	Groundwater Levels (Water Table)	Changes in groundwater levels due to lowered groundwater levels in the open pit. Pumping activities will be terminated and the water level in the open pit will begin to rise in response to direct precipitation inputs and groundwater inflow	Not applicable	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				Change in the water table elevation is predicted to be between 1 and 5 m.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Aquatic Biology	Aquatic Toxicity	Effects on aquatic species due to changes in water quality. Best Management Practices will be used during the closure phase, which will prevent changes in water quality. No planned discharge.	Not applicable	Level I	Level II	Level I	Level III	Level I	Not significant	Likely
				Median concentrations less than guidelines or less than chronic toxicity thresholds for substances without guidelines.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Aquatic Biology	Commercial, Recreational and Aboriginal Fisheries	Effects on sport fish due to site runoff during closure. Best Management Practices will be used during the closure phase, which will prevent changes in water quality. No planned discharge.	Not applicable	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to communities or populations.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Aquatic Biology	Loss of Aquatic Habitat	Continued loss of aquatic habitat due to Project footprint. Lotic habitat affected includes Mollie River, Clam Creek and Bagsverd Creek. Lentic habitat affected includes Côté Lake, Beaver Pond, Clam Lake, Little Clam Lake, Unnamed Pond #3 and East Beaver Pond.	Not applicable	Level I	Level II	Level I	Level III	Level II	Not significant	Not likely
				Less than 10% of lotic habitat (stream length - m) and /or lentic habitat (lake area - m ²) within the local study area.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Upland Plant Community Types	Continued vegetation loss due to site clearing in the construction phase. The Project is predicted to alter approximately 1,800 ha of the land cover. However, once closure activities are completed, vegetation will be allowed to re-establish itself.	<ul style="list-style-type: none"> ▪ Rehabilitate habitat for plants and wildlife as practicable ▪ Limit / prevent the transfer of invasive plant species from equipment and imported soil 	Level I	Level I	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology	Wetlands	Continued loss of wetland areas due to site clearing during the construction phase. The Project is predicted to alter approximately 185 ha of wetlands. However, once closure activities are completed, vegetation will be allowed to re-establish itself.	Not applicable	Level I	Level I	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Vegetation Species at Risk, Species of Special Concern and Provincially Rare Species	No predicted effect on Species at Risk, Species of Special Concern and Provincially Rare Species as none were identified during baseline data collection. Therefore, this effect is not assessed.	Not applicable	—	—	—	—	—	—	—
Terrestrial Biology	Ungulates	Continued potential for change in ungulates population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology	Furbearers	Continued potential for change in furbearers population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence. ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Migratory Birds	Continued potential for change in migratory birds population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Limit risk of nest destruction and mortality of migratory birds ▪ Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable ▪ No hunting by Project personnel will be permitted while working or residing on site, and advised not to interfere/harass wildlife ▪ Project personnel will be educated to handle food and food wastes responsibly and enforce policies of no feeding of wildlife 	Level I	Level II	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Wildlife Species at Risk	Continued potential for change in wildlife species at risk population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Reduce the risk of mortality to birds and bats ▪ Reduce risk of mortality to wildlife ▪ Include Common Nighthawk and Bank Swallow identification as part of site induction to improve success of wildlife reporting programs ▪ Contact the MNRF and Environment Canada within 24 hours if Common Nighthawk or Bank Swallow are recorded nesting on site 	Level I	Level II	Level I	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Vegetation Communities	Continued vegetation loss due to transmission line ROW clearing during the construction phase. The Project is predicted to result in the removal of 549.2 ha of forested communities including 146 ha of coniferous swamp. However, once closure activities are completed, vegetation will be allowed to re-establish itself.	<ul style="list-style-type: none"> ▪ Time removal of transmission line infrastructure to minimize the potential for ground disturbance and soil erosion by equipment and vehicles ▪ Retain existing low-lying vegetation ground cover thereby minimizing vegetation clearing ▪ Minimize the speed of service vehicles along Project roads and along the transmission line ROW ▪ Encourage natural revegetation and recolonization of the ROW as part of the reclamation process 	Level I	Level I	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Ungulates - Moose	Continued potential for change in moose population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where other alternatives exist ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along proposed access roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Furbearers - Wolves	Continued potential for change in wolves population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where other alternatives exist ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along proposed access roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - American Marten	Continued potential for change in american marten population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where other alternatives exist ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along proposed access roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Furbearers - Black Bear	Continued potential for change in black bear population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where other alternatives exist ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along proposed access roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level III	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Bats	Continued potential for change in bats population abundance and distribution due to habitat removal during the construction phase.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist ▪ Project personnel will be advised not to interfere or harass wildlife 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Migratory Birds	Continued potential for change in migratory birds population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife. ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Raptors	Continued potential for change in raptors population abundance and distribution due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife. ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Species at Risk, Species of Special Concern and Provincially Rare Species	Continued potential for change in population abundance and distribution for species at risk, species of special concern and provincially rare species due to habitat removal during the construction phase. Additional effects are potentially associated with general disturbance and vehicular collisions.	<ul style="list-style-type: none"> ▪ Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist ▪ Include wildlife awareness information in regular safety and environmental inductions ▪ Project personnel will be advised not to interfere or harass or feed wildlife. ▪ Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence ▪ Project personnel will be required to handle food and food wastes in a responsible manner ▪ No hunting by Project personnel will be permitted while working or residing on-site ▪ Enforce speed limits along Project roads to reduce the potential for collisions with wildlife ▪ Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity ▪ Include Common Nighthawk and Bank Swallow identification as part of site induction to improve success of wildlife reporting programs ▪ Contact the MNRF and Environment Canada within 24 hours if Common Nighthawk or Bank Swallow are recorded nesting on site 	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Land Use Plans and Policies	Potential effects on land use planning areas during the closure phase of the Project may include overlapping of land use policy area where the use would not be allowed and creating land use conflicts.	<ul style="list-style-type: none"> ▪ Incorporate the MOECC D-series guidelines 	Level II	Level I	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps very small portions of land use areas that may be incompatible with mining activities but will not impede the designated land use.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Mineral Exploration	Changes in access to other claim areas or effects on the ability to exercise exploration activities within these claim areas during the closure phase.	<ul style="list-style-type: none"> Work with claim holders to identify access changes and negotiate access agreements if there is any requirement to use or cross IAMGOLD properties 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps or changes access to other mining claims but does not limit the ability to exercise exploration activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Forestry	The potential effects on forestry due to the closure phase of the Project include overlapping, and therefore, loss of Forest Management Units (FMUs) area, long-term removal of forest resources (at the Project site footprint and along transmission line alignment) and changes to access along the Cross-Country TLA and at the Project site.	<ul style="list-style-type: none"> Re-route the Chester Access Road south of the Project site 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps very small areas of forest management units but does not substantially limit forestry resources or the ability to conduct forestry activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Hunting	Potential effects on hunting during the closure phase of the Project include overlapping of, and therefore, limiting use of or access to WMUs, overlapping of, and therefore, limiting use of or access to BMAs, increased access to BMAs along the TLA alternatives and changes to the abundance and distribution of wildlife that could affect hunting success rates due to closure activities.	<ul style="list-style-type: none"> The MNRF has advised that the affected BMA holder can apply to obtain licenses to additional BMAs in the Timmins District to augment the loss of access to the northern portion of the affected BMA Enforce speed limits and warn IAMGOLD personnel of areas of high wildlife activity and crossings Prohibit hunting on IAMGOLD property Food wastes generated on-site will be appropriately disposed of to reduce the attraction of wildlife 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Trapping	A number of trapline areas overlap with the Project site and TLA alternatives. Potential effects on trapping during the closure phase of the Project include loss of trapline areas or trap cabins, changes to access to trapline areas or trap cabins and changes to the abundance and distribution of furbearers that could affect trapping success rates, and therefore, trapping income due to changes in biophysical or anthropogenic conditions.	<ul style="list-style-type: none"> Based on discussion with the MNRF no compensation is required for trap line losses 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps with small portions of trapline areas and affects a few individual trappers and/or will not limit the ability to carry out trapping activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Recreational and Commercial Fishing	The Project site and TLAs overlap with Fisheries Management Zone (FMZ) 8 and several bait harvest areas. Potential effects on fishing during the closure phase of the Project include loss of bait harvest areas or recreational fishing areas, changes to access to fishing areas and changes to the abundance and distribution of fish that could affect fishing success rates, and therefore, any commercial fishing income (such as for bait fish harvesters) due to changes in biophysical or anthropogenic conditions.	Not applicable	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project may affect a small number of waterbodies used for fishing but does not limit the ability to fish.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Cottages and Outfitters	Numerous cottages and outfitters are located near the Project site. Potential effects on the cottagers may include decreased enjoyment and leisure lifestyle associated with cottaging due to closure activities noise and dust; perceived effects to water quality, quantity and area aesthetics) and vehicle traffic. The potential effects of the Project on the outfitters may include decrease in areas recommended by outfitters to clientele (related to effects on BMAs), perception that the area is not pristine or natural which could detract clientele and increased local clientele due to increased workforce in area (staying or hunting, etc).	<ul style="list-style-type: none"> ▪ Limit recreational boating for workers while they are staying at the work camp on-site ▪ Potential purchase of cottages 	Level II	Level I	Level I	Level III	Level I	Not significant	Likely
				The Project is proximal to cottage areas or areas used by outfitters and may require the removal of a few cottages but will not limit the use of these areas by most cottagers/outfitters.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Navigable Waters	Due to the continued presence of the watercourse realignments and retention dams during the closure phase, use of canoe routes may be disturbed during the closure phase.	Not applicable	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project is proximal to canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Other Recreational Uses	The potential effects on other recreational uses include changes to access to areas that may have previously been used for other recreational uses and changes in the natural aesthetic of the area which may detract some recreational users.	Not applicable	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps or changes access to portions of outdoor recreation areas but does not limit the ability to participate in outdoor recreation activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Plant Harvesting	There is a potential for blueberry harvesting to be affected during the closure phase of the transmission line due to closure activities.	Not applicable	Level II	Level I	Level I	Level III	Level I	Not significant	Likely
				The Project overlaps with areas used for traditional plant harvesting but does not limit the ability to harvest plants.	Effect is restricted to the Project footprint.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Traditional Land Use	Traditional Hunting	Potential effects on traditional hunting during the closure phase include changes in access to and overlapping of the waterfowl hunting site and waterfowl hunting route and therefore limiting its use, enhanced access to hunting areas and travel corridor resulting from transmission line ROW clearing and changes to the abundance and distribution of wildlife due to operations activities that have the potential to affect hunting. Additionally, the transmission line corridor may attract non-traditional hunters to hunt in the area that is currently principally used for hunting by the Mattagami First Nation.	No hunting by Project personnel will be permitted while working or residing on-site	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of traditional hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Fishing	Potential effects on fishing during the closure phase of the Project include loss of traditional fishing areas, changes to access to fishing areas and changes to the abundance and distribution of fish due to closure activities.	No fishing by Project personnel will be permitted while working or residing on-site	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project may affect a small number of waterbodies used for traditional fishing but does not limit the ability to fish.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Traditional Land Use	Canoeing	Due to the continued presence of the watercourse realignments and retention dams during the closure phase, use of canoe routes may be disturbed during the closure phase.	Not applicable	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				The Project is proximal to traditional canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Cultural, Spiritual and Ceremonial Sites	Changes in ability of Aboriginal people to access sites that may be of cultural, spiritual, ceremonial value or may increase or decrease intrinsic values such as privacy, in using sites.	Not applicable	Level I	Level II	Level I	Level III	Level I	Not significant	Likely
				The Project does not overlap important cultural, spiritual or ceremonial sites.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Visual Aesthetics	Change in Landscape from Receptor Locations	Changes in landscape due to the continued presence of Project components (TMF and MRA) that could potentially be seen from receptor locations.	▪ Carry out the revegetation program on the MRA and TMF	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Perceptible change in landscape which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape from Non-Receptor Locations	Changes in landscape due to the continued presence of Project components (TMF and MRA) that could potentially be seen from nearby waterbodies.	▪ Carry out the revegetation program on the MRA and TMF	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape due to the Transmission Line	Changes in landscape due to the activities surrounding the removal of the transmission line that could potentially be seen from receptor locations.	Not applicable	Level II	Level II	Level I	Level III	Level I	Not significant	Likely
				Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Archaeology	Effect on Heritage Sites	Changes to physical or cultural heritage resources including structures, sites or things of historical, archaeological, paleontological or architectural importance that may be overprinted by Project components.	<ul style="list-style-type: none"> Completed mitigation - archaeological assessments Stages 1, 2, 3 and 4, as required Buffer zones are established, as required 	Level I	Level II	Level I	Level III	Level III	Not significant	Not likely
				The Project is not proximal to archaeological sites or the site has been assessed and cleared in accordance with the <i>Heritage Act</i> .	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is not reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Cultural Heritage Landscapes and Built Heritage Resources	Effect on Heritage Resources	Changes to cultural heritage resources including built heritage and/or cultural heritage landscapes, as regulated by the Ontario Heritage Act. Heritage resources could potentially be affected by the Project.	Not applicable	Level I	Level II	Level I	Level III	Level I	Not significant	Not likely
				The Project is not proximal to cultural heritage resources or changes to viewscape and site context that does not affect the integrity of cultural heritage resources.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Socio-Economic	Labour Market	Direct, indirect and induced employment levels are expected to remain increased compared to baseline levels but reduced compared to operations phase levels.	<ul style="list-style-type: none"> ▪ Implement a procurement process that encourages Aboriginal and local suppliers ▪ Offer company services linking workers with local social services that provide job placement assistance ▪ Develop an employment community relations program ▪ Identify and implement basic skills and technical training for Aboriginal and local community members to upgrade marketable skills and increase capacity ▪ Work with local communities to develop a Project closure strategy that will minimize potential adverse effects of Project closure on regional communities ▪ Engage and support local and regional communities and stakeholders in planning decisions relating to future use of the Project site ▪ Support the establishment of local/regional job opportunities roster/forum accessible for workers ▪ Post information on site for workers about other services agencies in the region that support small business ventures and planning 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Effects may result in a measurable change to the socio-economic indicator outside of the normal range of variability, although the changes are not substantive enough to require or result in a community or government response or investment.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Business opportunities	During closure, the Project's contribution to the economy will gradually lessen, eventually returning the regional economy to pre-Project, baseline conditions.	<ul style="list-style-type: none"> ▪ Implement a procurement process that encourages Aboriginal and local suppliers ▪ Implement a procurement policy that structures opportunities in terms of package size and bid evaluation to reflect Aboriginal and local capabilities ▪ Support capacity building for local businesses ▪ Support local entrepreneurial development ▪ Communicate with affected businesses to prepare for the effects of contract termination 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Effects may require investment or expansions to meet Project needs that are within the capabilities of existing businesses.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Government Finances	During closure, the Project's contribution to the economy will gradually lessen, eventually returning the regional economy to pre-Project, baseline conditions.	Not applicable	Level I	Level III	Level I	Level III	Level II	Not significant	Likely
				Effects are expected to occur and are within the normal range of variability.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Population and Demographics	Workforce required for the closure phase is less than during the operations phase, forcing some of the population to look for jobs elsewhere. As a consequence, the population is forecasted to decrease.	<ul style="list-style-type: none"> ▪ Implement a procurement process that encourages Aboriginal and local suppliers ▪ Offer company services linking workers with local social services that provide job placement assistance ▪ Develop an employment community relations program ▪ Identify and implement basic skills and technical training for Aboriginal and local community members to upgrade marketable skills and increase capacity ▪ Work with local communities to develop a Project closure strategy that will minimize potential adverse effects of Project closure on regional communities ▪ Engage and support local and regional communities and stakeholders in planning decisions relating to future use of the Project site ▪ Support the establishment of local/regional job opportunities roster/forum accessible for workers ▪ Post information on site for workers about other services agencies in the region that support small business ventures and planning 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Community Health Conditions	During Project closure, the direct employment from the Project will decline. The associated decrease in employment may negatively affect how people perceive their health due to diminished financial security and challenges associated to finding employment. Terminated employees may have to move or commute outside of the regional study area to find work which may increase stress on family and friend relations.	<ul style="list-style-type: none"> Provide access to long distance phone service for employees Provide for basic worker health care Provide information on health-related issues such as nutrition, sexually transmitted infections, alcohol abuse etc. to workers Provide worker transportation to and from Project site 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Health conditions change from baseline conditions so that some investment in health care services to manage this change may be necessary.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Housing and Temporary Accommodation	With closure, the Project's contribution to the economy will gradually lessen, eventually returning the regional economy to pre-Project, baseline conditions. This would cause a negative effect on housing demand as workers leaving the area sell their homes, although some workers may choose to commute to a different mine from the same home community, or may retire in the same home community, or may migrate to a new community in search of employment.	<ul style="list-style-type: none"> Maintain on-site camp during closure Monitor indicators of Project housing effects and consider adapting management measures Support local economic diversification programs that could facilitate resident retention after Project closure 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Effects may require investment to meet Project housing needs that are within the capabilities of communities / developers.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Public Utilities	During the two year closure phase direct employment from the Project will diminish. Population trends indicate a decline in Timmins, Gogama and Mattagami First Nation reserve and relatively steady state for Sudbury. Reduced population size will decrease demands on public utilities as use decreases.	Not applicable	Level I	Level II	Level I	Level III	Level II	Not significant	Likely
				Effects are manageable within the existing capacities of public utilities.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Education	It is expected that there will be a decline in primary school enrolment, and an increase in demands for post-secondary training to transition workers to other employment.	<ul style="list-style-type: none"> Support post-secondary education of workers 	Level I	Level III	Level I	Level III	Level II	Not significant	Likely
				Effects are manageable within the existing capacities of schools and/or education institutions.	Effect extends into the regional study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Emergency Services	A decrease in employment and potential out-migration of workers to seek other job opportunities has the potential to create adverse social effects such as depression, substance abuse, and domestic violence that would require emergency and/or police response.	<ul style="list-style-type: none"> Maintain open communication with local service providers to monitor existing social issues 	Level I	Level II	Level I	Level III	Level I	Not significant	Likely
				Effects are manageable within the existing capacities of emergency service providers.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-5: Impact Assessment Matrix for the Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Other Community Services	During closure, direct employment from the Project is expected to decline. As a result of this and other factors included in population projections for the regional study area, populations are expected to continue to decline resulting in corresponding declines or, in some cases increases, in demands for other community services and infrastructure to pre-Project levels.	<ul style="list-style-type: none"> ▪ Implement the Zero Harm policy at the Project site ▪ Inform and/or provide employees with access to resources to support transition to other employment 	Level II	Level II	Level I	Level III	Level II	Not significant	Likely
				Effects may require investment to meet Project needs that are within the capabilities of community service providers.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Transportation	During the closure phase of the Project, Highway 144 will be used to transport material and equipment from the Project site decommissioning.	<ul style="list-style-type: none"> ▪ Road safety awareness training ▪ Schedule major equipment delivery and removal ▪ Schedule shuttle bus travel and shifts ▪ Ensure heavy load sizing and seasonal load restrictions ▪ Transport oversized loads in parts ▪ Report wildlife sightings on highways 	Level I	Level II	Level I	Level III	Level I	Not significant	Likely
				Effects are manageable within the existing capacities of highway service levels.	Effect extends into the local study area.	The duration of the effect is less than or equal to 2 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Suspended Particulate Matter (Dust) as Total Particulate Matter (PM _{tot.})	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (21.4 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Particulate Matter (PM ₁₀); 24 Hour Average	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (13.9 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); 24 Hour Average	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (9.8 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Suspended Particulate Matter (Dust) as Fine Particulate Matter (PM _{2.5}); Annual Average	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (4.2 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Sulphur Oxides (SO _x), Mainly as Sulphur Dioxide (SO ₂)	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Nitrogen Dioxide (NO ₂); 24 Hour Average	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (24.6 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Nitrogen Dioxide (NO ₂); 1 Hour Average	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (24.6 µg/m ³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Air Quality	Arsenic; 24 Hour Average	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (0.0018 µg/m³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Lead	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Manganese; 24 Hour Average	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels (0.0055 µg/m³).	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	VOCs	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level II	Level I	Level III	Level III	Level II	Not significant	Likely
				Concentrations are below Federal and/or Provincial criteria.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Air Quality	Other Key Metals	Once closure activities are completed, there will be very limited onsite staff and activities. Therefore the potential for changes in air quality due to post-closure activities is greatly reduced.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Likely
				Concentrations are comparable to baseline levels.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Air Quality	Hydrogen Cyanide (HCN); 24 Hour Average	No cyanide is used during the post-closure phase. Therefore, this effect is not assessed during the post-closure phase.	Not applicable	—	—	—	—	—	—	—
Noise & Vibration	Daytime Noise Level	Changes in noise levels due to post-closure activities, including water management around the MRA and the flooding open pit. Site activities during the post-closure phase will be very limited.	Not applicable	Level II	Level I	Level III	Level I	Level I	Not significant	Likely
				Noise level above daytime baseline (44 dBA) and below or equal to 45 dBA.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs infrequently.	Effect is fully reversible.		
Noise & Vibration	Nighttime Noise Level	No nighttime activities are planned during the post-closure phase. Therefore, this effect is not assessed during the post-closure phase.	Not applicable	—	—	—	—	—	—	—

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Noise & Vibration	Blasting Noise Level	No blasting is planned during the post-closure phase. Therefore, this effect is not assessed during the post-closure phase.	Not applicable	—	—	—	—	—	—	—
Noise & Vibration	Blasting Vibration Level	No blasting is planned during the post-closure phase. Therefore, this effect is not assessed during the post-closure phase.	Not applicable	—	—	—	—	—	—	—
Hydrology	Change in Flow	Streamflow changes due to various Project components, such as watercourse realignments, TMF and MRA. In post-closure stage II the reconfiguration of the realignments will result in watersheds that more closely resemble baseline conditions.	<ul style="list-style-type: none"> Realignment channels and dams 	Level I	Level II	Level III	Level III	Level II	Not significant	Likely
				<10% or a change in flow which does not affect the hydrological characteristics.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Water Quality	Change in Water Quality	Changes in water quality due to site runoff and, eventually, overflow from the flooded open pit.	<ul style="list-style-type: none"> Best Management Practices (BMPs) and engineering design to limit soil erosion and mobilization/transport of sediments from disturbed areas Management of solid domestic and industrial waste in a permitted landfill, including the use of BMPs Inclusion of PAG rock within the bulk of the MRA Monitoring and water collection and treatment as required 	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				Concentrations greater than baseline concentrations, but less than water quality guidelines, where applicable.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Hydrogeology	Groundwater Levels (Water Table)	Groundwater levels will continue to rise and over time, will approximate pre-mining conditions except in the immediate vicinity of water realignment structures where these are to remain in place.	Not applicable	Level II	Level II	Level III	Level III	Level I	Not significant	Likely
				Change in the water table elevation is predicted to be between 1 and 5 m.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Aquatic Biology	Aquatic Toxicity	Effects on aquatic species due to site runoff and, eventually, overflow from the flooded open pit.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Likely
				Median concentrations less than guidelines or less than chronic toxicity thresholds for substances without guidelines.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Aquatic Biology	Commercial, Recreational and Aboriginal Fisheries	Effects on sport fish due to site runoff and, eventually, overflow from the flooded open pit.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to communities or populations.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Aquatic Biology	Loss of Aquatic Habitat	In post-closure stage II the reconfiguration of the realignments will result in watersheds that more closely resemble baseline conditions, which will provide additional habitat. This phase will result in substantial increase in fish habitat.	<ul style="list-style-type: none"> Time construction of water realignments to allow for vegetation growth for one or more growing seasons prior to commissioning of watercourse realignments or conduct planting of aquatic vegetation immediately following commissioning of channel realignments to promote the establishment of vegetation within the newly constructed habitats Open pit edge will be sloped to support the development of productive habitat 	—	—	—	—	—	—	—
Terrestrial Biology	Upland Plant Community Types	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site. No activities during the post-closure phase will further disrupt vegetation.	Not applicable	Level I	Level I	Level III	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Wetlands	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site. No activities during the post-closure phase will further disrupt vegetation.	Not applicable	Level I	Level I	Level III	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Vegetation Species at Risk, Species of Special Concern and Provincially Rare Species	No predicted effect on Species at Risk, Species of Special Concern and Provincially Rare Species as none were identified during baseline data collection. Therefore, this effect is not assessed.	Not applicable	—	—	—	—	—	—	—

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology	Ungulates	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to ungulates population abundance and distribution.	Not applicable	Level I	Level III	Level III	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Furbearers	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to furbearers population abundance and distribution.	Not applicable	Level I	Level III	Level III	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Migratory Birds	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to migratory birds population abundance and distribution.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology	Wildlife Species at Risk	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to wildlife species at risk population abundance and distribution.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Terrestrial Biology - TL	Vegetation Communities	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. No activities during the post-closure phase will further disrupt vegetation.	Not applicable	Level I	Level I	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to the abundance and distribution of plant populations and communities.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Ungulates - Moose	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to moose population abundance and distribution.	Not applicable	Level I	Level III	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - Wolves	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to wolves population abundance and distribution.	Not applicable	Level I	Level III	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - American Marten	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to American marten population abundance and distribution.	Not applicable	Level I	Level III	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Furbearers - Black Bear	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to black bear population abundance and distribution.	Not applicable	Level I	Level III	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Bats	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to bats population abundance and distribution.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Terrestrial Biology - TL	Migratory Birds	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to migratory birds population abundance and distribution.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Raptors	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to raptors population abundance and distribution.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Terrestrial Biology - TL	Species at Risk, Species of Special Concern and Provincially Rare Species	During the post-closure phase, vegetation will be allowed to re-establish itself at the Project site, thereby allowing wildlife species to return to this area. Activities during the post-closure phase are not anticipated to further result in effects to species at risk, species of special concern and provincially rare species population abundance and distribution.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Not likely
				There is no measurable residual effect to population abundance and distribution.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Land Use Plans and Policies	Once closure activities are completed, no more effects on land use plans and policies are expected.	Not applicable	—	—	—	—	—	—	—
Land Use	Mineral Exploration	Changes in access to other claim areas or effects on the ability to exercise exploration activities within these claim areas during the post-closure phase.	Not applicable	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				The Project overlaps or changes access to other mining claims but does not limit the ability to exercise exploration activities.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Forestry	During the post-closure phase, vegetation and therefore habitat will re-establish itself with time. As habitat re-establishes, effects on forestry are expected to cease.	Not applicable	Level II	Level I	Level III	Level III	Level II	Not significant	Likely
				The Project overlaps very small areas of forest management units but does not substantially limit forestry resources or the ability to conduct forestry activities.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Hunting	During the post-closure phase, vegetation and therefore habitat will re-establish itself with time. As habitat re-establishes, effects on hunting are expected to cease.	Not applicable	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Trapping	During the post-closure phase, vegetation and therefore habitat will re-establish itself with time. As habitat re-establishes, effects on trapping are expected to cease.	Not applicable	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				The Project overlaps with small portions of trapline areas and affects a few individual trappers and/or will not limit the ability to carry out trapping activities.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Land Use	Recreational and Commercial Fishing	Once closure activities are completed, no more effects on recreational and commercial fishing are expected.	Not applicable	—	—	—	—	—	—	—
Land Use	Cottages and Outfitters	Once closure activities are completed, no more effects on cottages and outfitters are expected.	Not applicable	—	—	—	—	—	—	—

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Land Use	Navigable Waters	Due to the continued presence of the watercourse realignments and retention dams during post-closure phase I, use of canoe routes may be disturbed. Following the removal of retention dams and decommissioning of watercourse realignments, the effects on canoeing are expected to cease.	Not applicable	Level II	Level I	Level III	Level III	Level I	Not significant	Likely
				The Project is proximal to canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect is restricted to the Project footprint.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Land Use	Other Recreational Uses	Once closure activities are completed, no more effects on other recreational uses are expected.	Not applicable	—	—	—	—	—	—	—
Traditional Land Use	Plant Harvesting	Once closure activities are completed, no more effects on plant harvesting are expected.	Not applicable	—	—	—	—	—	—	—
Traditional Land Use	Traditional Hunting	During the post-closure phase, vegetation and therefore habitat will re-establish itself with time. As habitat re-establishes, effects on traditional hunting are expected to cease.	Not applicable	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				The Project overlaps with portions of traditional hunting areas but does not limit the ability to carry out hunting activities.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Fishing	Once closure activities are completed, no more effects on fishing are expected.	Not applicable	—	—	—	—	—	—	—

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Traditional Land Use	Canoeing	Due to the continued presence of the watercourse realignments and retention dams during post-closure phase I, use of canoe routes may be disturbed. Following the removal of retention dams and decommissioning of watercourse realignments, the effects on canoeing are expected to cease.	Not applicable	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				The Project is proximal to traditional canoe routes/waterways used for canoeing/portaging and does not limit the ability to use these navigable waters.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Traditional Land Use	Cultural, Spiritual and Ceremonial Sites	Changes in ability of Aboriginal people to access sites that may be of cultural, spiritual, ceremonial value or may increase or decrease intrinsic values such as privacy, in using sites.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Likely
				The Project does not overlap important cultural, spiritual or ceremonial sites.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape from Receptor Locations	Changes in landscape due to the continued presence of Project components (TMF and MRA) that could potentially be seen from receptor locations.	▪ Continue to maintain the MRA and TMF revegetation program, as required	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				Perceptible change in landscape which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape from Non-Receptor Locations	Changes in landscape due to the continued presence of Project components (TMF and MRA) that could potentially be seen from nearby waterbodies.	▪ Continue to maintain the MRA and TMF revegetation program, as required	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				Perceptible change in landscape, which does not affect enjoyment of the viewscape.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Visual Aesthetics	Change in Landscape due to the Transmission Line	As the transmission line will be removed during the closure phase, no effects are anticipated during the post-closure phase.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Not likely
				No perceptible change in landscape.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Archaeology	Effect on Heritage Sites	Changes to physical or cultural heritage resources including structures, sites or things of historical, archaeological, paleontological or architectural importance that may be overprinted by Project components.	Not applicable	Level I	Level II	Level III	Level III	Level III	Not significant	Not likely
				The Project is not proximal to archaeological sites or the site has been assessed and cleared in accordance with the <i>Heritage Act</i> .	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is not reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Cultural Heritage Landscapes and Built Heritage Resources	Effect on Heritage Resources	Changes to cultural heritage resources including built heritage and/or cultural heritage landscapes, as regulated by the Ontario Heritage Act. Heritage resources could potentially be affected by the Project.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Not likely
				The Project is not proximal to cultural heritage resources or changes to viewscape and site context that does not affect the integrity of cultural heritage resources.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Socio-Economic	Labour Market	Post-closure activities will be very limited, such that Project staffing and expenditures will be close to baseline conditions.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Likely
				Effects are expected to occur and are within the normal range of variability.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Business opportunities	Post-closure activities will be very limited, such that Project staffing and expenditures will be close to baseline conditions.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Likely
				Effects are within the capabilities of existing businesses.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Government Finances	Post-closure Project contributions are not expected to be noticeable since they would only result from direct taxes on post-closure monitoring workers, for example.	Not applicable	Level I	Level III	Level III	Level III	Level II	Not significant	Likely
				Effects are expected to occur and are within the normal range of variability.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Population and Demographics	The population is forecasted to decrease to baseline conditions due to very limited work opportunities during the post-closure phase.	Not applicable	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				Effects are outside of the normal range of variability, although the changes are not substantive enough to result in a community or government response.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Community Health Conditions	During post-closure, the direct employment from the Project will be negligible. The associated decrease in employment may negatively affect how people perceive their health due to diminished financial security and challenges associated to finding employment. Terminated employees may have to move or commute outside of the regional study area to find work which may increase stress on family and friend relations.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Likely
				Effects are within the normal range of variability.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Housing and Temporary Accommodation	With closure, the Project's contribution to the economy will gradually lessen, eventually returning the regional economy to pre-Project, baseline conditions. This would cause a negative effect on housing demand as workers leaving the area sell their homes, although some workers may choose to commute to a different mine from the same home community, or may retire in the same home community, or may migrate to a new community in search of employment.	Not applicable	Level II	Level II	Level III	Level III	Level II	Not significant	Likely
				Effects may require investment to meet Project housing needs that are within the capabilities of communities / developers.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Public Utilities	During the two year closure phase direct employment from the Project will diminish. Population trends indicate a decline in Timmins, Gogama and Mattagami First Nation reserve and relatively steady state for Sudbury. Reduced population size will decrease demands on public utilities as use decreases.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Likely
				Effects are manageable within the existing capacities of public utilities.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		

Table 11-6: Impact Assessment Matrix for the Post-Closure Phase (cont'd)

Discipline	Indicator	Effect	Mitigation/Effects Management Measures	Magnitude	Extent	Duration	Frequency	Reversibility	Residual Impact Significance	Likelihood of the Effect
Socio-Economic	Education	It is expected that there will be a decline in primary school enrolment, and an increase in demands for post-secondary training to transition workers to other employment.	Not applicable	Level I	Level III	Level III	Level III	Level II	Not significant	Likely
				Effects are manageable within the existing capacities of schools and/or education institutions.	Effect extends into the regional study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Emergency Services	A decrease in employment and potential out-migration of workers to seek other job opportunities has the potential to create adverse social effects such as depression, substance abuse, and domestic violence that would require emergency and/or police response.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Likely
				Effects are manageable within the existing capacities of emergency service providers.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		
Socio-Economic	Other Community Services	During post-closure, direct employment from the Project will be negligible. As a result of this and other factors included in population projections for the regional study area, populations are expected to continue to decline resulting in corresponding declines or, in some cases increases, in demands for other community services and infrastructure to pre-Project levels.	Not applicable	Level I	Level II	Level III	Level III	Level II	Not significant	Likely
				Effects are manageable within the existing capacities of community service providers.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is partially reversible.		
Socio-Economic	Transportation	During the post-closure phase, highway traffic volumes are expected to return to pre-Project volumes.	Not applicable	Level I	Level II	Level III	Level III	Level I	Not significant	Likely
				Effects are manageable within the existing capacities of highway service levels.	Effect extends into the local study area.	The duration of the effect is beyond 15 years.	Effect occurs frequently or continuously.	Effect is fully reversible.		