

**HARDROCK PROJECT
Final Environmental Impact
Statement / Environmental
Assessment**

*Addendum to Effects of
Changes to the
Environment on Aboriginal
Peoples – In Accordance
with Section 6.3.4 of the EIS
Guidelines issued by the CEA
Agency – February 2018 update
(Appendix O)*

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1.0 SUMMARY OF ENVIRONMENTAL EFFECTS ON SECTION 5(1)(C) FACTORS

This document, an addendum to *Effects of Changes to the Environment on Aboriginal Peoples – In Accordance with Section 6.3.4 of the EIS Guidelines issued by the CEA Agency February 2018 update* (referred to as Appendix O), has been developed in response to questions submitted by the Canadian Environmental Assessment Agency (CEA Agency) to Greenstone Gold Mines GP Inc. (GGM) via email on April 23, 2018. It provides summary discussion of the following topics included in Appendix O and based on the work presented in the Final EIS:

- definitions used in characterizing and determining the significance of residual environmental effects on Section 5(1)(c) Factors (Section 3.1.6 of Appendix O)
- clarification of changes to socio-economic conditions for Aboriginal peoples arising from Project related changes to quality and availability of country foods (Section 7.2.3.5 of Appendix O)
- a summary of Section 5(1)(c) Factors and key topics, mitigation measures, residual effects characterization, significance determinations and prediction confidence (Sections 7.1.3, 7.1.4, 7.2.3, 7.2.4, 7.3.3, 7.3.4, 7.4.3, 7.4.4 of Appendix O).

1.1 APPENDIX O METHODOLOGY

This section clarifies the characterization of residual environmental effects and significance determination which was included in Section 3.1.6 of Appendix O and used in the assessment of Project related changes to the environment on Section 5(1)(c) Factors.

1.1.1 Aboriginal Health Conditions

Table 1-1 summarizes how residual environmental effects on Aboriginal health conditions have been characterized in terms of direction, magnitude, geographic extent, timing, duration, frequency, reversibility and ecological and socio-economic context. Quantitative measures or definitions for qualitative categories are provided. These are generally consistent with the characterizations used throughout the Final EIS/EA upon which the determinations were made in the body of Appendix O in the Final EIS/EA.

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Table 1-1: Characterization of Residual Environmental Effects on Aboriginal Health Conditions

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
Direction	The relative change compared to baseline conditions.	Positive	The Project will have a beneficial effect on Aboriginal health; or there will be an increase in availability of and access to traditional land and resource use (TLRU) relative to baseline conditions; or the Project will not contribute to an increase in sound or vibration levels compared to baseline conditions at any Points of Reception (PoR).
		Adverse	The Project may have a potential detrimental effect on Aboriginal health, or there will be a decrease in availability of and access to TLRU relative to baseline conditions; or the Project will result in an increase in sound or vibration levels compared to baseline conditions at any PoR.
Magnitude	The amount of change in measurable parameters of the component, relative to existing conditions.	Low	Project-related environmental exposures are predicted to be below target benchmarks established by a recognized health organization and/or are unlikely to substantially change Aboriginal health; or residual environmental effect will not reduce the ability to undertake TLRU activities; or Project noise or vibration emissions will not exceed the applicable criteria; or Project-related effects are unlikely to result in a substantial adverse change in well-being.
		Moderate	Project-related environmental exposures are predicted to exceed target benchmarks established by a recognized health organization and/or may result in a long-term, substantive change in change in Aboriginal health; or Residual environmental effect will reduce the ability to undertake TLRU activities; or Project noise or vibration emissions will not exceed the applicable criteria; or May result in a long-term, substantial adverse change in well-being.
		High	Project-related environmental exposures are predicted to substantially exceed the target benchmarks established by a recognized health organization and/or are likely to result in a long-term, substantive change in Aboriginal health; or residual environmental effect will eliminate TLRU

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			activities; or Project noise or vibration emissions will exceed the applicable criteria; or Project effects are likely result in a long-term, adverse substantial change in well-being.
Geographic Extent	The geographic area in which a residual adverse effect occurs	PDA	Residual effects will be restricted to the project development area (PDA).
		LAA	Residual effects are likely to extend into areas covered by the Aboriginal Health Local Assessment Area (LAA) (see Appendix O Section 3.1.3.1).
		RAA	Residual effects are likely to interact with those of other projects and activities in the areas covered by the Aboriginal Health Regional Assessment Area (RAA) (see Appendix O Section 3.1.3.1).
Timing	Considers when the residual environmental effect is expected to occur. Timing considerations are noted in the evaluation of the environmental effect, where applicable or relevant.	Not applicable (N/A)	Seasonal aspects are unlikely to affect the health of Aboriginal people.
		Applicable	Seasonal aspects may affect the health of Aboriginal people.
Frequency	Identifies when a residual adverse effect is predicted to occur.	Single event	Residual environmental effect will occur once.
		Multiple irregular event (no set schedule)	Residual environmental effect will occur sporadically and is not predictable.
		Multiple regular events	Residual environmental effect will occur on a regularly and may be at predictable intervals or specific times.
		Continuous	Residual environmental effect will occur continuously.
Duration	The period of time required until the measurable parameter or the valued component	Short-term	For inhalation-related exposures, residual environmental effect will last less than 24 hours (typically associated with reversible effects). For effects on TLRU activities, the residual environmental effect will be limited to construction or

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Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
	(VC) returns to its existing condition, or the effect can no longer be measured or otherwise perceived		active closure. For acoustics-related effects, the residual environmental effect will be limited to construction or active closure (0-5 years), or for periods of less than one year during operation.
		Medium-term	For effects on TLRU activities, the residual environmental effect will extend throughout construction, operation, and active closure. For acoustics-related effects, the residual environmental effect will extend through the operating life of the Project.
		Long-term	Residual environmental effect may last for construction, operation, or closure phases. For effects on TLRU activities, the residual environmental effect will be limited to construction or active closure. For acoustics-related effects, the residual environmental effect will extend beyond closure.
Reversibility	Whether the residual effect on the measurable parameter or the VC can return to its existing condition once the physical work or activity causing the disturbance ceases	Reversible	Residual environmental effect is likely to be reversed after activity completion as the VC returns to its baseline condition.
		Irreversible	Residual environmental effect is permanent, and the VC is unlikely to return to its baseline condition.
Ecological and Socio-economic context	Existing condition and trends in the area where the residual effects occur.	Typical	The effect occurs to a component that is able to accommodate substantial change, the TLRU activity in question is considered common and/or is considered not important to the community. The existing acoustic conditions of the Acoustic Environment LAA are considered typical as defined by applicable guidance documents.
		Atypical	The effect occurs to a component that is able to accommodate some change, the TLRU activity in question is considered uncommon and/or is considered important to the community. The existing acoustic conditions of the Acoustic Environment LAA are considered atypical as defined by the applicable guidance documents.

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Table 1-1: Characterization of Residual Environmental Effects on Aboriginal Health Conditions

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories
Significance Threshold for Aboriginal Health Conditions	<p>A significant residual adverse environmental effect is one that:</p> <p>(a) results in the Project-related chemical exposures that are predicted to exceed objectives established by the relevant regulatory organization(s), and are likely to result in a long-term, substantive change in the health of Aboriginal people; or</p> <p>(b) results will eliminate TLRU activities through long-term loss of availability of traditional use resources (e.g., harvested fish), long-term loss of access to sites and areas relied on for traditional use practices (e.g., blocking of access to fishing site), or the permanent loss of traditional use sites and areas in the TLRU VC LAA and RAA; or</p> <p>(c) results in Project noise or vibration emissions (in any phase) at identified receptor locations that exceed the quantitative limits of:</p> <ul style="list-style-type: none"> • Ministry of Environment and Climate Change (MOECC) Environmental Noise Guideline (NPC)-300 Guideline for noise (excluding blasting) during construction, operation, and active closure • MOECC NPC-119 Guideline for blasting activities (noise and vibration) during construction and operation • City of Toronto By-law No. 514-2008 for vibration during construction (excluding blasting) • International Organization for Standardization (ISO) 2631-2 Standard for vibration during operation (excluding blasting); or <p>(d) Is likely result in a long-term, adverse substantial change in well-being.</p>	

1.1.2 Aboriginal Socio-Economic Conditions

Table 1-2 summarizes how residual environmental effects on Aboriginal socio-economic conditions are characterized in terms of direction, magnitude, geographic extent, timing, duration, frequency, reversibility and ecological and socio-economic context. Quantitative measures or definitions for qualitative categories are provided. These are generally consistent with the characterizations used throughout the Final EIS/EA upon which the determinations were made in the body of Appendix O in the Final EIS/EA.

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Table 1-2: Characterization of Residual Environmental Effects on Aboriginal Socio-Economic Conditions

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
Direction	The relative change compared to baseline conditions.	Positive	Labour and economic conditions will improve or become more desirable compared to baseline conditions; an increase in capacity of community services and infrastructure is predicted; or an increase in the number or extent (ha) of the areas associated with land and resource use (e.g., navigable waters, forestry and logging, commercial fishing, recreation) is predicted.
		Advers	Labour and economic conditions will worsen or become less desirable compared to baseline conditions; or a decrease in capacity of community services and infrastructure is predicted; or a decrease in the number or extent (ha) of the areas associated with the given land and resource use (e.g., navigable waters, forestry and logging, commercial fishing, recreation) is predicted.
Magnitude	The amount of change in measurable parameters or the component, relative to existing conditions	Low	Labour and economic conditions will be at or near baseline labour and economic conditions; or a change in capacity of community services and infrastructure will be at or near baseline conditions; or the residual environmental effect will not reduce the ability to undertake the land and resource use activities in question (e.g., navigable waters, forestry and logging, commercial fishing, recreation).
		Moderate	The change is unlikely to pose a serious risk or benefit to the local Aboriginal labour and economic conditions, or if adverse, to represent a management challenge; or a change in capacity of community services and infrastructure that approaches current capacity, standard or threshold but will not result in a reduction in standards of service; or the residual environmental effect will reduce the ability to undertake the land and resource use activities (e.g., navigable waters, forestry and logging, commercial fishing, recreation).
		High	A change that is likely to pose a serious risk or benefit to local Aboriginal labour and economic conditions, and if adverse, represents a management challenge; or

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Table 1-2: Characterization of Residual Environmental Effects on Aboriginal Socio-Economic Conditions

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
			<p>a change in capacity of community services and infrastructure exceeding current capacity, standard or thresholds that result in a reduction in standards of service; or</p> <p>the residual environmental effect will eliminate the ability to undertake the land and resource use activities. (e.g., navigable waters, forestry and logging, commercial fishing, recreation).</p>
Geographic extent	The geographic area in which the residual environmental effect occurs.	PDA	Residual environmental effect is restricted to the PDA.
		LAA	Residual effects extend into areas covered by the Aboriginal socio-economic conditions LAA (see Appendix O Section 3.1.3.1).
		RAA	Residual environmental effect extends into the Aboriginal socio-economic conditions RAA (see Appendix O Section 3.1.3.1).
Timing	Considers when the residual environmental effect is expected to occur. Timing considerations are noted in the evaluation of the residual environmental effect, where applicable or relevant.	Not Applicable (N/A)	<p>Seasonal aspects are unlikely to affect economic conditions or capacity of community services and infrastructure.</p> <p>Seasonal aspects are unlikely to affect land and resource use.</p>
		Applicable	<p>Seasonal aspects may affect economic conditions or capacity of community services and infrastructure.</p> <p>Seasonal aspects may affect land and resource use.</p>
Frequency		Single event	Residual environmental effect will occur once.
		Multiple irregular events (no set schedule)	Residual environmental effect will occur sporadically, at an irregular interval, and is not predictable.
		Multiple regular events	Residual environmental effect will occur regularly and may be at predictable intervals or specific times.
		Continuous	Residual effect will occur continuously.
Duration	The length of time required until the	Short-term	Residual environmental effect will be limited to construction or active closure (0-5 years).

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Table 1-2: Characterization of Residual Environmental Effects on Aboriginal Socio-Economic Conditions

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
	residual environmental effect can no longer be measured or otherwise perceived.	Medium-term	Residual environmental effect will extend throughout construction, operations, and active closure.
		Long-term	Residual effect will extend beyond closure.
Reversibility	Pertains to whether a measurable parameter or the VC can return to its existing condition after the Project activity ceases.	Reversible	The residual environmental effect is likely to be reversed after activity completion.
		Irreversible	The residual environmental effect is permanent and is unlikely to return to its existing condition.
Ecological and Socio-Economic context	Considers uncommon characteristics of the area and/or a community and/or ecosystems that may be affected by the Project and/or whether the VC is important to the functioning of an ecosystem or community of people.	Low diversity/ capacity/ availability	An economy where the labour force has limited diversity, has been declining in size, and has limited capacity to accommodate the demands of a new large project; or infrastructure and services have limited capacity to accommodate increased demand; or land and resource use features and areas are uncommon, rare, or potentially unique.
		Moderate diversity/ capacity/ availability	A stable economy where the labour force has moderate diversity, has been slowly increasing or decreasing in size, and can accommodate many of the demands of a new large project; or infrastructure and services can accommodate some levels of increased demand; or land and resource use areas and features are typical for the local area and similar features and areas are somewhat available.
		High diversity /capacity/ availability	A diverse, dynamic, and growing economy where the labour force has capacity to accommodate all demands of a new large project; or infrastructure and services have capacity to accommodate increased demand; or land and resource use areas and features are typical for the local area and similar features and areas are widely available.
Significance Threshold for Aboriginal Socio-Economic Conditions	Significance thresholds for this assessment are defined as follows: (a) economic effects that are distinguishable from current conditions and trends and cannot be managed or mitigated through adjustments to programs, policies, plans, or through other mitigation; or (b) a residual environmental effect on community services and infrastructure that results in		

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Table 1-2: Characterization of Residual Environmental Effects on Aboriginal Socio-Economic Conditions

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories
	demands on services or infrastructure above current capacity, such that standards of service would be routinely and persistently reduced below current levels for an extended period and are unlikely to recover to existing conditions; or (c) a residual environmental effect on commercial land and resource use by Aboriginal people that threatens the long-term viability of those activities.	

1.1.3 Aboriginal Physical and Cultural Heritage

Table 1-3 summarizes how residual environmental effects on Aboriginal physical and cultural heritage are characterized in terms of direction, magnitude, geographic extent, timing, duration, frequency, reversibility and ecological and socio-economic context. Quantitative measures or definitions for qualitative categories are provided. These are generally consistent with the characterizations used throughout the Final EIS/EA upon which the determinations were made in the body of Appendix O in the Final EIS/EA.

Table 1-3: Characterization of Residual Environmental Effects on Aboriginal Physical and Cultural Heritage

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
Direction	The relative change compared to baseline conditions.	Positive	An increase in the number of heritage resources that have been inventoried, documented, and retained in place; or an increase in availability of and access to current use resources, sites and areas relative to baseline conditions; or a decrease in air parameters of potential concern (PoPCs) concentrations or lighting levels compared to baseline conditions; or the Project will not contribute to an increase in sound or vibration levels compared to baseline conditions at any PoR.
		Adverse	A loss of, change in access to, or change in cultural heritage value or interest (CHVI) of heritage resources before they have been appropriately documented or inventoried; or a decrease in availability of and access to current use resources, sites and areas relative to baseline conditions; or an increase in air PoPCs concentrations or lighting levels compared to baseline conditions; or predicted levels of a measurable parameter

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Table 1-3: Characterization of Residual Environmental Effects on Aboriginal Physical and Cultural Heritage

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
			contribute to an increase in sound or vibration levels compared to baseline conditions at any PoR.
Magnitude	The amount of change in either the measurable parameters or the VC relative to baseline conditions.	Low	A change in access to or change in CHVI of a heritage resource but with full retrieval of the resource and associated information with all necessary regulatory approvals in place; or the residual environmental effect will not reduce the ability to undertake the current use activities; or a measurable change in atmospheric conditions is expected but of comparable magnitude to baseline conditions; or Project noise or vibration emissions will not exceed the applicable criteria.
		Moderate	A loss of, change in access to, or change in CHVI of a heritage resource with retrieval of a portion of the heritage resource and associated information; or the residual environmental effect will reduce the ability to undertake current use activities; or a measurable change or effect on atmospheric conditions is expected but less than regulatory limits or standards.
		High	A loss of, change in access to, or change in CHVI of a heritage resource with no retrieval of resource and associated information; or the residual environmental effect will eliminate current use activities; or a measurable change that causes exceedance of objectives or standards beyond the Project boundaries; or Project noise or vibration emissions will exceed the applicable criteria.
Geographic Extent	The geographic area in which the residual environmental effect occurs.	PDA	Residual effects will be restricted to the PDA.
		LAA	Residual effects are likely to extend into areas covered by the Aboriginal Physical and Cultural Heritage LAA (see Appendix O Section 3.1.3.1).
		RAA	Residual effects are likely to interact with those of other projects and activities in the Aboriginal Physical and Cultural Heritage RAA (see Appendix O Section 3.1.3.1).

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Table 1-3: Characterization of Residual Environmental Effects on Aboriginal Physical and Cultural Heritage

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
Timing	Considers when the residual environmental effect is expected to occur. Timing considerations are noted in the evaluation of the environmental effect, where applicable or relevant.	N/A	Seasonal aspects are unlikely to affect heritage resources, current use, air quality or lighting, or affect the acoustic environment or land and resource use.
		Applicable	Seasonal aspects may alter heritage resources, current use, air quality or lighting, or affect the acoustic environment or land and resource use.
Frequency	Identifies how often the residual environmental effect occurs within a given time.	Single event	Residual environmental effect will occur once.
		Multiple irregular event (no set schedule)	Residual environmental effect will occur sporadically and is not predictable.
		Multiple regular event	Residual environmental effect will occur regularly and may be at predictable intervals or specific times.
		Continuous	Residual environmental effect will occur continuously.
Duration	The length of time required until the residual environmental effect can no longer be measured or otherwise perceived.	Short-term	Residual environmental effect will be limited to construction or active closure), or for periods of less than one (1) year during operation.
		Medium-term	Residual environmental effect will extend throughout construction, operation, and active closure.
		Long-term	Residual environmental effect will extend beyond active closure.
Reversibility	Pertains to whether a measurable parameter or the VC can return to its baseline condition after the Project activity ceases	Reversible	Residual environmental effect is likely to be reversed after the activity ceases.
		Irreversible	Residual environmental effect is permanent, and the VC is unlikely to return to baseline conditions after the activity ceases.

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Table 1-3: Characterization of Residual Environmental Effects on Aboriginal Physical and Cultural Heritage

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
Ecological and Socio-economic Context	Considers uncommon characteristics of the area, a community and/or ecosystem that may be affected by the Project and/or whether the VC or measurable parameter is important to the functioning of an ecosystem or community of people.	Typical	<p>The heritage resources, TLRU activities, and land and resource use in question are considered common and/or are considered not important to the community.</p> <p>The airshed is typical of a rural area in northern Ontario.</p> <p>The lighting environment is typical of a rural environment with low nighttime brightness.</p> <p>The existing acoustic conditions of the Acoustic Environment LAA are considered typical as defined by the applicable guidance documents.</p>
		Atypical	<p>The heritage resources, TLRU activities and land and resource use in question are considered uncommon and/or are considered important to the community.</p> <p>The airshed is considered compromised or stressed and is not typical of a rural area in northern Ontario.</p> <p>The lighting environment is not typical of a rural environment with high nighttime brightness.</p> <p>The existing acoustic conditions of the Acoustic Environment LAA are considered atypical as defined by the applicable guidance documents.</p>
Significance Threshold – Aboriginal Physical and Cultural Heritage	<p>Residual environmental effects on Aboriginal Physical and Cultural Heritage would be characterized as significant if one or more of the following is true:</p> <ul style="list-style-type: none"> • residual environmental effect will result in the long-term loss of current use resources, long-term loss of access to sites and areas relied on for current use activities, or the permanent loss of current use sites and areas in the current use LAA or RAA. These changes may take place through direct or indirect pathways or mechanisms; or • Project-related loss of, change in access to, or change in CHVI of, heritage resources where no appropriate retrieval of the resource has been undertaken and no prior approval from the appropriate agency has been sought; or • Project-related degrading of the quality of the ambient air such that the maximum outside modelled property boundary ground-level concentrations of PoPC from the Project (in various phases) frequently exceeds the respective air quality objective, guideline or standard as outlined in Table 7-1 or Table 7-2 of the EIS/Application; or • Project-generated lighting effects that exceed the Commission Internationale de L'Éclairage (CIE 2003) maximum values for light trespass. These maximum values are shown in Table 7-5 of the EIS/Application; or • Project noise or vibration emissions (in any phase) at identified receptor locations exceed the quantitative limits of: <ul style="list-style-type: none"> ○ MOECC NPC-300 Guideline for noise (excluding blasting) during construction, operation, and active closure ○ MOECC NPC-119 Guideline for blasting activities (noise and vibration) during 		

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Table 1-3: Characterization of Residual Environmental Effects on Aboriginal Physical and Cultural Heritage

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories
	<p>construction and operation</p> <ul style="list-style-type: none"> ○ City of Toronto By-law No. 514-2008 for vibration during construction (excluding blasting) ○ ISO 2631-2 Standard for vibration during operation (excluding blasting); or 	<ul style="list-style-type: none"> • an environmental effect on land and resource use threatens the long-term viability of the recreational and commercial land use or navigation.

1.1.4 Current Use of Lands and Resources for Traditional Purposes

Table 1-4 summarizes how residual environmental effects on current use of land and resources for traditional purposes (current use) by Aboriginal people are characterized in terms of direction, magnitude, geographic extent, timing, duration, frequency, reversibility and ecological and socio-economic context. Quantitative measures or definitions for qualitative categories are provided. These are generally consistent with the characterizations used throughout the Final EIS/EA upon which the determinations were made in the body of Appendix O in the Final EIS/EA.

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Table 1-4: Characterization of Residual Environmental Effects on Current Use of Land and Resources for Traditional Purposes

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
Direction	The relative change compared to baseline conditions.	Positive	Predicted increase in availability of and access to current use relative to baseline conditions.
		Adverse	Predicted decrease in availability of and access to current use relative to baseline conditions.
Magnitude	The amount of change in either the measurable parameters or the VC relative to baseline conditions.	Low	Residual environmental effect will not reduce the ability to undertake current use activities
		Moderate	Residual environmental effect will reduce the ability to undertake current use activities.
		High	Residual environmental effect will eliminate current use activities.
Geographic Extent	The geographic area in which the residual environmental effect occurs.	PDA	Residual effects will be restricted to the PDA.
		LAA	Residual effects are likely to extend into the Current Use LAA (see Appendix O Section 3.1.3.1).
		RAA	Residual effects are likely to interact with those of other projects and activities in the Current Use RAA (see Appendix O Section 3.1.3.1).
Timing	Considers when the residual environmental effect is expected to occur. Timing considerations are noted in the evaluation of the environmental effect, where applicable or relevant.	N/A	Seasonal aspects are unlikely to alter the residual environmental effect on current use.
		Applicable	Seasonal aspects may alter the residual environmental effect on current use.
Frequency	Identifies how often the residual environmental effect occurs within a given time.	Single event	Residual environmental effect will occur once.
		Multiple irregular event (no set schedule)	Residual environmental effect will occur sporadically and is not predictable.
		Multiple	Residual environmental effect will occur

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Table 1-4: Characterization of Residual Environmental Effects on Current Use of Land and Resources for Traditional Purposes

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories	
		regular event	regularly and may be at predictable intervals or specific times.
		Continuous	Residual environmental effect will occur continuously.
Duration	The length of time required until the residual environmental effect can no longer be measured or otherwise perceived.	Short-term	Residual environmental effect will be limited to construction or active closure.
		Medium-term	Residual environmental effect will extend throughout construction, operation, and active closure.
		Long-term	Residual environmental effect will extend beyond active closure.
Reversibility	Pertains to whether a measurable parameter or the VC can return to its baseline condition after the Project activity ceases	Reversible	Residual environmental effect is likely to be reversed after the activity ceases.
		Irreversible	Residual environmental effect is permanent and is unlikely to return to its existing condition.
Ecological and Socio-Economic Context	Considers uncommon characteristics of the area, community and/or ecosystems that may be affected by the Project and/or whether the VC or measurable parameter is important to the functioning of an ecosystem or community of people.	Typical	The VC or measurable parameter is considered common and/or is considered not important to the community.
		Atypical	The VC or measurable parameter is considered uncommon and/or is considered important to the community.
Significance Threshold for Current Use	Residual environmental effects on current use of land and resources for traditional purposes would be characterized as significant if the residual environmental effects result in the long-term loss of current use resources, long-term loss of access to sites and areas relied on for current use activities, or the permanent loss of current use sites and areas in the current use LAA or RAA. These changes may take place through direct or indirect pathways or mechanisms.		

1.2 EFFECTS OF CHANGES TO THE ENVIRONMENT ON SOCIO-ECONOMIC CONDITIONS FOR ABORIGINAL PEOPLES

The discussion below is a summary of the assessment of changes to socio-economic conditions for Aboriginal peoples arising from Project related changes to quality and availability of country foods¹, presented in Section 7.2.3.5 of Appendix O. A summary of the assessment of changes in quality and availability of country foods (Section 7.1.4.2 of Appendix O), and a summary of how residual effects may indirectly change to socio-economic conditions for Aboriginal peoples is presented below.

1.2.1 Summary of Change in Quality and Availability of Country Foods

The changes in total ingestion exposures were found to result in a negligible human health risk. The removal of portions of the historical MacLeod and Hardrock tailings, as part of the Project activities, is predicted to result in a decrease in total ingestion risks for arsenic due to improved surface water quality during operation through post closure. Unacceptable health risks are not expected for the ingestion of country foods.

The Project will result in the loss or removal of approximately 1,133 ha of forest and 810 ha of wetland vegetation communities from the PDA. The removal of habitat that supports plant species of interest to Aboriginal communities from the PDA is not anticipated to affect the viability of populations of these species in the vegetation communities outside of the PDA. Given that the plant species of interest to Aboriginal communities are relatively common in the RAA for vegetation communities, the availability of these species for harvest as country foods is not anticipated to be affected by the Project. As a proposed mitigation measure, where there is interest, GGM will provide opportunities to local Aboriginal communities for harvesting of plants for traditional purposes prior to construction.

Fish habitat that is altered or lost by project activities within the PDA will be offset by creating new habitat within the Goldfield Creek diversion channel. Overall, there will be no net loss of areas for fishing as a result of the Project. The closure of Lahtis Road at Highway 11 will alter access to TLRU areas located adjacent to the PDA along the shoreline of the Southwest Arm of Kenogamisis Lake. GGM is committed to maintaining alternate access within the PDA to the Southwest Arm of Kenogamisis Lake during construction and operation.

Within the PDA, the open pit, Waste Rock Storage Areas, and Tailings Management Facility will result in a loss of habitat availability and connectivity, which may result in changes to localized movements of wildlife. In a limited area outside of the PDA Project related sensory disturbances are predicted to result in a decrease in the local availability of wildlife habitat; however, the abundance of harvested wildlife is not anticipated to change although the local distribution of

¹ Country foods are defined as species harvested through hunting, trapping, gathering or fishing activities for the purpose of consumption.

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wildlife in the immediate vicinity of the PDA may change as large mammals could avoid the PDA, which could result in a localized change in availability.

The assessment of changes in quality and availability of country foods identified that unacceptable health risks are not expected for the ingestion of country foods and the Project is not expected to limit the availability country foods outside of the PDA.

1.2.2 Indirect Effects on Socio-Economic Conditions for Aboriginal Peoples

Changes in the quality or availability of country foods can indirectly affect Aboriginal socio-economic conditions through increased reliance on store-bought foods and/or increased costs associated with travelling to alternative (possibly less accessible) areas where country foods remain available for harvesting.

Residual environmental effects due to the Project are not anticipated to limit the availability of country foods outside of the PDA. Unacceptable health risks are also not expected from the ingestion of country foods outside of the PDA. Project effects on quality and availability of country foods and any indirect effects on socio-economic conditions will be mitigated through the measures identified in Section 6.3 of Appendix O. Socio-economic effects related to increased reliance on purchased foods and additional travel are not anticipated. Residual effects will also be managed through the development and implementation of the environmental management and monitoring plans, creation of Aboriginal Environment Committee(s), and GGM's support of cultural practices, among other commitments listed in Section 6.4 of Appendix O.

1.3 SUMMARY OF CHANGES TO THE ENVIRONMENT ON SECTION 5(1)(C) FACTORS, MITIGATION AND RESIDUAL EFFECTS

Table 1-5 presents a summary of Section 5(1)(c) Factors, associated key topics, mitigation measures, residual effects characterization and significance determinations, see Table 1-1 to 1-4 above for definitions used in these characterizations. Results are provided for each Section 5(1)(c) Factor and the phase of the Project during which the effect is predicted to occur. Where the Project will also result in beneficial effects; these are summarized in the table. These are generally consistent with the characterizations used throughout the Final EIS/EA upon which the determinations were made in the body of Appendix O in the Final EIS/EA.

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		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Section 5(1)(c) Factor: Aboriginal Health Conditions													
Change in Air Quality	Construction, Operation, and Closure: <ul style="list-style-type: none"> A number of mitigation measures have already been incorporated in the Project to eliminate or reduce environmental effects of the Project which also serve to address human health effects. These mitigation measures include, but are not limited to, the use of dust suppressants, dust collectors and protective covers, a Water Management and Monitoring Plan (Section 9 of Appendix O), Soil Management Plan and progressive rehabilitation. <p>The mitigation measures to reduce air emissions and dust deposition are described in detail under the atmospheric environment section of Appendix O Table 6-1.</p>	✓	✓	✓	Adverse	Low	LAA	N/A	Multiple irregular event - Continuous	Long-Term	Reversible	Atypical	Not significant
					Change in Air Quality The Project's contributions to the concentrations of PoPC at locations used by Aboriginal people for TLRU are predicted to result in concentrations below the criteria set by the federal and provincial governments. Yearly frequencies of exceedance will result in potential health risks that are negligible. Changes in air quality will occur as irregular events depending on the scheduling of construction/active closure activities and take place continuously during operations.								
Change in Quality and Availability of Country Foods	Construction, Operation and Closure: <ul style="list-style-type: none"> Mitigation measures to control discharges into both surface water and groundwater are described in detail under the surface water section of Appendix O Table 6-1. Mitigation measures related to vegetation, fish and fish habitat including the Offsetting Plan, wildlife habitat, mortality risk, and movement of wildlife. A number of mitigation measures have already been incorporated in the Project to eliminate or reduce environmental effects of the Project which also serve to address human 	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Long-Term	Reversible to Irreversible	Atypical	Not significant
					Change in Quality and Availability of Country Foods Changes in total ingestion exposures were found to represent a negligible human health risk, and unacceptable health risks are not expected for the ingestion of country foods. The effect has been characterized as irreversible as change in quality of country foods (i.e., exposures to Project-related chemicals) are unlikely to return to baseline conditions. For example, once metals are deposited to soil they will not be removed, making the increase in metal concentration permanent. Residual effects on quality of country foods has been characterized as low magnitude and limited to the LAA. It is anticipated that large mammals could avoid the PDA. This may affect the local distribution of wildlife within the LAA, including hunted species. This change may reduce the ability to undertake some TLRU activities within a limited portion of the LAA. Effects on availability of country foods are anticipated to be reversible following project closure. As a result, this residual effect on availability of country foods has been characterized as moderate in magnitude and limited to the LAA. The Project is not expected to limit the abundance of country foods for Aboriginal harvesters within most of the LAA and the wider RAA.								

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	<p>health effects.</p> <ul style="list-style-type: none"> These mitigation measures include, but are not limited to, the use of dust suppressants, dust collectors and protective covers, a Water Management and Monitoring Plan, Soil Management Plan and progressive rehabilitation (Section 9 of Appendix O). The mitigation measures to reduce air emissions and dust deposition are described in detail under the atmospheric environment section of Appendix O Table 6-1. Mitigation measures to control discharges into both surface water and groundwater are described in detail under the surface water section of Appendix O Table 6-1. <p>Construction:</p> <ul style="list-style-type: none"> Where there is interest, provide opportunities to local communities for harvesting of plants for traditional purposes prior to construction. Avoid the use of chemical herbicides. <p>Operation:</p> <ul style="list-style-type: none"> Avoid the use of chemical herbicides. <p>Closure:</p> <p>Incorporate plant species of interest to Aboriginal communities into the Closure Plan as feasible.</p>												

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		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Change in Drinking Water Quality or Quantity	<ul style="list-style-type: none"> A number of mitigation measures have already been incorporated in the Project to eliminate or reduce environmental effects of the Project which also serve to address human health effects. Mitigation measures to control discharges into both surface water and groundwater are described in detail under the surface water section of Appendix O Table 6-1. 	✓	✓	✓	Adverse	Low	LAA	N/A	Continuous	Long-Term	Irreversible	Atypical	Not significant
					Change in drinking water quality or quantity In the HHERA, Aboriginal/High Use Receptors were assumed to obtain their drinking water from Kenogamisis Lake three days a week. The assessment analyzed potential human health risks associated with exposures to metals in drinking water. Project-related rehabilitation measures, such as relocating a portion of the historical MacLeod and Hardrock tailings to the new TMF, implementing enhanced cover, stability measures, and seepage collection for the remaining historical MacLeod tailings to reduce seepage are expected to improve overall water quality in Kenogamisis Lake compared to existing conditions, in particular for arsenic. Overall exposures to metals through the consumption of water from Kenogamisis Lake is predicted to represent a negligible human health risk for Aboriginal people.								
Change in Noise of Vibration Exposure	Construction, Operation, and Closure: <ul style="list-style-type: none"> Noise mitigation measures (e.g., muffler systems) will be installed on construction and other mobile equipment and equipment will be properly maintained. Operation: <ul style="list-style-type: none"> Select equipment and/or design acoustical enclosures to limit overall noise emissions. Limits on the overall noise emissions transferring through doors for building enclosures. Air inlet and discharge silencers for exhaust stacks associated with diesel or natural gas-fueled generators. Construction and Operation: <ul style="list-style-type: none"> Preliminary blast design meets the MOECC's criteria and all blasting will occur during the daytime as required by MOECC Guideline NPC 119. 	✓	✓	✓	Adverse	Low	LAA	N/A	Continuous	Medium-term	Reversible	Typical	Not significant
					Change in noise or vibration exposure The noise and vibration levels at points of interest (i.e., special receptors representing areas where Aboriginal TLRU takes place) are anticipated to be within applicable guidelines. No residual effects on health conditions for Aboriginal people are anticipated due to exposure to noise or vibration releases from the Project.								

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		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Change in Wellbeing (Indirect Effects on Aboriginal Health Conditions)	Construction, Operation, and Closure: <ul style="list-style-type: none"> The possibility of encountering residual Project effects that would change well-being will be reduced through careful Project design and application of mitigation measures presented in Section 6 of Appendix O. <p>As tangible and intangible values are often connected, mitigation measures aimed at avoiding or reducing effects to tangible values could also help to avoid or reduce effects to intangible values related to well-being.</p>	✓	✓	✓	Adverse	Low	RAA	N/A	Continuous	Long-term	Reversible to Irreversible	Atypical	Not Significant
					Change in Well-being Given the predicted magnitude, duration and significance of residual effects on related tangible values associated with well-being (including changes in land-based activities and the quality and quantity of water, traditional foods and medicines the assessment has concluded that the Project may result in a long-term, adverse change although it would be low in magnitude and not significant and does not account for certain water quality improvements related to historical tailings and measures implemented by GGM to support cultural initiatives. Well-being includes multiple components, effects relate to air quality, noise or vibration exposure, and availability of country foods are characterized as reversible whereas effects to water quality and quality of country foods are characterized as irreversible.								
Section 5(1)(c) Factor: Aboriginal Socio-Economic Conditions													
Change in Use of Navigable Waters	Construction, Operation and Closure: <ul style="list-style-type: none"> Use established watercourse crossings and avoid obstructions to navigation. Implementation of mitigation outlined for surface water (Appendix O Table 6-1), specifically those related to surface water quantity. Construction: Construction activities will be undertaken in a way to prevent debris from flowing into a navigable waterbody.	✓	✓	✓	Adverse	Low	LAA	Applicable	Continuous	Long-term	Irreversible	Moderate diversity/capacity/availability	Not significant
					Change in Use of Navigable Waters No information exists to suggest that watercourses within the PDA are currently being used by Aboriginal peoples for navigation and most areas are associated with golf course drainage and ephemeral areas. However, for the purpose of the assessment, use of the watercourses within the PDA has been assumed. Based on this conservative assumption, Aboriginal peoples may be inconvenienced by the change in the navigation route between Goldfield Lake and the Southwest Arm of Kenogamisis Lake. Residual effects are characterized as irreversible as the change to the navigation route will be permanent.								
Changes in Forestry and Logging Operations	Construction, Operation, and Closure: <ul style="list-style-type: none"> Implementation of mitigation outlined for fish and fish habitat (Section 5.5 of Appendix O) and wildlife and wildlife habitat (Section 5.7 of Appendix O). Initiate revegetation as soon as practical after Project components are no longer needed. 	✓	✓	✓	Adverse	Low	PDA	N/A	Single Event	Long-Term	Irreversible	High diversity/capacity/availability	Not significant
					Change in Forestry and Logging Operations Harvested timber will be utilized by consumers with allocations of wood from the PDA. The loss of timber harvesting land base of the PDA is a small portion of the forested land within the Kenogamisis FMU. Through discussions with Ne-Daa-Kii-Me-Naan Inc. (a First Nation-owned forest management company that is operated by a Board of Directors which includes GFN, LLFN, AFN, CLFN, PPFN and AZA) GGM will enter into an Overlapping Agreement to allow GGM to manage harvesting in the overlapping area between the Kenogamisis FMU and the PDA. Residual effects are characterized as irreversible as the removal of timber where the PDA and Kenogamisis FMU overlap will be permanent.								

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		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context
	<p>Construction:</p> <ul style="list-style-type: none"> GGM has consulted with the MNRF and the enhanced Forest Resource Licence holder to address, to the extent possible, access to the PDA and the Crown timber allocated within the Forestry Management Unit(FMU) that will be removed as part of site preparation, and long-term changes in the forest land base. GGM will continue discussions with Ne-Daa-Kii-Me-Naan Inc. to obtain an Overlapping Agreement and to harvest the trees under their pulp mill license. Where possible in accessible areas (e.g., along cleared right-of-ways), leave trees and other vegetation in place to buffer the view of Project components, reducing the change in viewshed and muffling nuisance noise. Site the majority of Project components so as to achieve a 120 m setback for the surface rights reservation area on claim to lease lands and a 30 m high water mark setback for patent lands; existing vegetation will remain in these areas. <p>Operation:</p> <ul style="list-style-type: none"> Where possible in accessible areas (e.g., along cleared right-of-ways), leave trees and other vegetation in place to buffer the view of Project components, reducing the change in viewshed and muffling nuisance noise. <p>Closure:</p> <p>Rehabilitation will be designed to meet desired end land uses, end land uses will be identified in the Closure Plan, in</p>											

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		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
	consultation with agencies, stakeholders and Aboriginal communities, as the Project progresses.												
Change in Commercial Fishing, Hunting, Trapping, Gathering and Guide Outfitting Activities	<p>Construction, Operation, and Closure:</p> <ul style="list-style-type: none"> Implementation of mitigation outlined for atmospheric environment, acoustic environment, fish and fish habitat, and wildlife and wildlife habitat as identified in Table 6-1 of Appendix O. Initiate revegetation as soon as practical after Project components are no longer needed. Maintain access to mining claims located on the peninsula east of the PDA. GGM will continue discussions regarding accommodation for the lost trapping area associated with GE021 and trapping on GGM's patented lands prior to the start of construction and where there is currently little activity. <p>Construction:</p> <ul style="list-style-type: none"> Where possible in accessible areas (e.g., along cleared right-of-ways), leave trees and other vegetation in place to buffer the view of Project components, reducing the change in viewshed and muffling nuisance noise. Remove construction-related buildings, access roads and laydown areas following construction. <p>Operation:</p> <ul style="list-style-type: none"> Where possible in accessible areas (e.g., along cleared right-of-ways), leave trees and other vegetation in 	✓	✓	✓	Adverse	Moderate	LAA	Applicable	Continuous	Long-term	Reversible	Moderate diversity/capacity/availability	Not significant
<p>Change in Commercial Fishing, Hunting, Trapping, Gathering and Guide Outfitting Activities</p> <p>The removal of wildlife habitat and the imposition of access restrictions at the start of construction will result in the loss of areas for trapline areas GE021 which is held by a member of AZA, however GGM has worked with this trapper on accommodation. The construction, operation and active closure of the Project may cause sensory disturbance and disruption of local wildlife movement patterns thereby reducing the availability of wildlife resources within trapline areas GE021 (AZA) and traplines GE009, GE023 and GE034 (LLFN).</p> <p>Restricted access to or loss of 141 ha of bait harvesting area NI5035 are anticipated (the Aboriginal communities with which the tenure holder is affiliated was not disclosed). Given the level of fishing activity carried out in the PDA and the other potential fishing areas within NI5035, this loss of access is not expected to substantially reduce the area available for commercial bait harvesting.</p>													

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	<p>place to buffer the view of Project components, reducing the change in viewshed and muffling nuisance noise.</p> <ul style="list-style-type: none"> Implement progressive rehabilitation works, including stabilization and rehabilitation of aggregate source areas, the north cell of the TMF, plateaus and benches of WRSAs A, B, and C and the overburden storage areas. <p>Closure: Rehabilitation will be designed to meet desired end land uses, end land uses will be identified in the Closure Plan, in consultation with agencies, stakeholders and Aboriginal communities, as the Project progresses.</p>												
Change in Recreation	<p>Construction, Operation, and Closure:</p> <ul style="list-style-type: none"> GGM is committed to maintaining alternate access within the PDA to the Southwest Arm of Kenogamisis Lake during construction and operation. Implementation of mitigation outlined for fish and fish habitat (Section 5.5 of Appendix O) and wildlife and wildlife habitat (Section 5.7 of Appendix O). The mitigation measures to reduce changes to recreational land and resource use are described in detail under the Land and Resource section of Appendix O Table 6-1 Initiate revegetation as soon as practical after Project components are no longer needed. <p>Construction:</p> <ul style="list-style-type: none"> Where possible in accessible areas 	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Long-term	Reversible	Moderate diversity/capacity/availability	Not significant
					<p>Change in Recreation</p> <p>Lahtis Road will be closed during construction and operation due to safety reasons and this will prevent access to areas southwest of the PDA via this route. Crown land recreational areas, including the campsite and two access points to Kenogamisis Lake will also be inaccessible. At closure, Lahtis Road is anticipated to be re-opened to the Goldfield Creek diversion. GGM will maintain alternate access to the Southwest Arm of Kenogamisis Lake.</p>								

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	<p>(e.g., along cleared rights-of-way), leave trees and other vegetation in place to buffer the view of Project components, reducing the change in viewshed and muffling nuisance noise.</p> <ul style="list-style-type: none"> Site the majority of Project components so as to achieve a 120 m setback for the surface rights reservation area on claim to lease lands and a 30 m high water mark setback for patent lands; existing vegetation will remain in these areas. Remove construction-related buildings, access roads and laydown areas following construction. <p>Operation:</p> <ul style="list-style-type: none"> Where possible in accessible areas (e.g., along cleared right-of-ways), leave trees and other vegetation in place to buffer the view of Project components, reducing the change in viewshed and muffling nuisance noise. <p>Closure:</p> <p>Rehabilitation will be designed to meet desired end land uses, end land uses will be identified in the Closure Plan, in consultation with agencies, stakeholders and Aboriginal communities, as the Project progresses.</p>												

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Change in Labour and Economy	<p>Construction and Operation:</p> <ul style="list-style-type: none"> Posting job qualifications and identifying available training programs and providers so that local and Aboriginal residents can acquire the necessary skills and qualify for potential employment. Working with local and Aboriginal businesses to enhance the opportunity to participate in the supply of goods and services for construction and operation. Working with local communities to develop training programs oriented to operational needs. Implement the Project's labour and training framework, which includes partnerships with Aboriginal communities and education institutes, information sharing (e.g., skills databases) and employment preparation and training. GGM will continue discussions with Ne-Daa-Kii-Me-Naan Inc. to obtain an Overlapping Agreement and to harvest the trees under their pulp mill license. <p>Closure:</p> <ul style="list-style-type: none"> GGM will work with the affected Aboriginal communities to develop a strategy for addressing economic implications of Project closure. This will inform local and regional businesses about the Project's final closure in a timely manner that enable them to respond appropriately to reduce potential adverse effects. 	✓	✓	✓	Positive	Moderate	LAA / RAA	N/A	Continuous	Long term	Irreversible to Reversible	Moderate diversity/capacity/availability	Not Significant
		<p>Change in Labour and Economy</p> <p>The overall residual effects are positive given the effects of Project expenditures, and the consequent increases in the size of the labour force, household incomes and reductions in the unemployment rate. While Project closure will result in adverse effects on labour and businesses, the skills acquired through training and employment during Project operation are highly transferable and GGM will work with affected Aboriginal communities to develop a strategy for addressing economic implications of Project closure. Effects associated with employment and Project expenditures will be reversible while effects associated with the loss of employment and expenditures at the end of operations will be irreversible.</p>											

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	<ul style="list-style-type: none"> Establish a skills inventory that should be retained for active closure. Support re-training to establish transferable skills. Provide opportunities for voluntary redundancies during ramp-down. Provide redundancy payments. Provide job search assistance. 												
Change in Community Services	<p>Construction:</p> <ul style="list-style-type: none"> A temporary camp will be in place for construction, and potentially early operation, when some construction activities may be ongoing. <p>Construction, Operation, Closure:</p> <ul style="list-style-type: none"> GGM will maintain communication with relevant agencies and organizations, including municipal authorities, health agencies and school boards, to provide Project information, to identify and address potential Project-related implications for services and infrastructure, and to support responsible organizations in planning for, adapting to, or benefitting from changing demand as a result of the Project. GGM will offer its employees an Employee Assistance Program, and require pre-employment physicals. Workforce education to encourage healthy lifestyle choices, sensitivity training and strict enforcement of GGM's health and safety policies will also help mitigate adverse social effects. For example, sensitivity training will raise the level of awareness about 	✓	✓	✓	Adverse	Low	LAA/RAA	N/A	Continuous	Medium-term	Reversible	Moderate diversity/capacity/availability	Not significant
<p>Change in Community Services</p> <p>The residual effects are anticipated to be at - or near to - baseline conditions following implementation of proposed mitigation measures . The construction and operation workers (and their family members) will place additional demands on the recreation services such as the Kenogamisis Golf Course and the Geraldton Community Center as well as health services such as the Geraldton District Hospital, which also services surrounding Aboriginal communities.</p> <p>Project-related effects are not expected to interact with on-reserve services such as housing, police services, and schools.</p> <p>The Municipality of Greenstone has confirmed their support for Greenstone Gold Mines - Hardrock Project, letters dated October 3, 2017, January 11, 2018 and April 19,2018 noting that predicted increases in the tax base may result in improvements to community services and infrastructure.</p>													

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	<p>the potential effects that workers can have on the community and their families through drug and alcohol use or other social concerns.</p> <ul style="list-style-type: none"> • Demands on emergency response services will be managed by having Project rescue vehicles and trained First Responders at the worksite. • Demands on police services due to Project activities will be managed by controlling access to the mine site through the use of a security gate and guard house, and by employing onsite security staff. • Safety orientations will be mandatory and provided for new employees. Fire prevention and suppression systems will be maintained onsite. Flammable material (such as fuels and explosives) will be carefully controlled within the PDA. • GGM will consult with local emergency providers so that roles and responsibilities are understood, and the necessary resources are in place. • Project planning and management strategies, including in-design mitigation measures and environmental protection measures, will reduce the likelihood of accidents and potential fires to as low a level as is reasonably practical. • GGM will provide Project information to the Municipality and local service providers to prepare for increased waste, water, or sewer infrastructure demand. • Implementation of a Waste 												

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		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
	Management Plan and a third-party contractor will be used for sewage disposal until the sewage discharge line is active. <ul style="list-style-type: none"> Implement a Traffic Management Plan 												
Section 5(1)(c) Factor: Aboriginal Physical and Cultural Heritage													
Changes to Archaeological Resources	Construction and Operation: The mitigation measures to reduce changes to Archaeological Resources are described in detail under Heritage Resources section of Appendix O Table 6-1	✓			Adverse	Moderate	LAA	N/A	Continuous	Medium-term	Reversible	Atypical	Not significant
					Changes to Archaeological Resources With the proposed mitigation measures, no residual effects on archaeological resources for all phases of the Project are anticipated.								
Changes to Cultural and Spiritual Use Locations	Construction, Operation and Closure: <ul style="list-style-type: none"> Detailed recording and mapping of spiritual or cultural sites in partnership with Aboriginal community representatives, a decision is then made about the relative importance of the site and, if warranted, how to maintain and control access. Construction: <ul style="list-style-type: none"> Where there is interest, provide opportunities to local communities for harvesting of plants for traditional purposes prior to construction. Through Project design the length and location of roads have been considered in order to reduce potential access restrictions. A Pipe Ceremony will be held prior to commencement of construction under the direction of local Aboriginal communities. 	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Medium-term	Reversible	Atypical	Not significant
					Change in availability of or access to cultural or spiritual practices, sites, or areas The development in the PDA and access restrictions during construction, operation and active closure will result in a decrease in areas for cultural practices relative to baseline conditions. Patterns of access to cultural practice areas in the LAA may be altered by access restrictions to the PDA. GGM will maintain alternate access to the Southwest Arm of Kenogamisis Lake. Residual effects are characterized as reversible as access restrictions to the PDA will be removed following project closure. The residual environmental effect will alter but not eliminate the ability to use the LAA for cultural practices, sites and areas and as a result have been characterized as moderate in magnitude. The ecological and socio-economic context is atypical as cultural or spiritual sites or areas are valued and important to Aboriginal communities.								
					Removal of cultural practice sites Within the PDA, some cultural practice sites, consisting of hunting, trapping, camping or plant picking harvesting will be removed. This change can be mitigated by the measures proposed by GGM; for example, GGM and LLFN have agreed upon a plan to address concerns related to the four LLFN sites which will be affected by the PDA. MNO reported cultural practice sites located near Mosher Lake, which GGM has conservatively assumed may be located within the PDA. Based on the layout of the PDA, Mosher Lake will remain accessible during all phases of the Project. Effects were characterized in Chapter 18 Traditional Land and Resource Use of the Final EIS; the information presented in this Addendum is aligned with the findings of the Final EIS. These effects have been characterized as high in magnitude, however it is important to note that effects will not extend to sites located outside the PDA (i.e., into the LAA or RAA). The not significant finding is appropriate in this circumstance as the residual effects will be limited geographically to the PDA. Hunting, trapping, camping or plant harvesting locations are available in other areas outside the PDA. The not significant finding is appropriate in this circumstance as the residual effects do not extend to the LAA or RAA.								

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Table 1-5: Summary of Section 5(1)(c) Factors and Key Topics, Mitigation Measures, Residual Effects and Significance

Section 5(1)(c) Factors and Key Topics	Mitigation Measures	Activity			Residual Effect								
		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Sensory Disturbance	<p>Construction, Operation, Closure:</p> <ul style="list-style-type: none"> Mitigation for potential effects from lighting in Section 7.3.3.3 in Appendix O Mitigation for potential effects from noise and vibration described in Section 5.2 and 7.3.3.3 of Appendix O. Construction: <ul style="list-style-type: none"> Where possible in accessible areas (e.g., along cleared right-of-ways), leave trees and other vegetation in place to buffer the view of Project components, reducing the change in viewshed and muffling nuisance noise. Remove construction-related buildings, access roads and laydown areas following construction Mitigation for potential effects from lighting in Section 7.3.3.3 in Appendix O 	✓	✓	✓	Adverse	Low	LAA	N/A	Continuous	Long-term	Irreversible	Typical	Not significant
<p>Sensory Disturbance</p> <p>While sensory disturbance due to changes in air quality, ambient lighting, acoustics and vibration and changes in visual setting is predicted, disturbance will be limited primarily in areas located very near to the PDA and will decrease substantially or be eliminated entirely as distance from the PDA boundary increases. Progressive rehabilitation works will be implemented to mitigate effects on the WRSAs and the TMF. Residual effects are characterized as reversible to irreversible. The visual setting in the LAA will be permanently altered to varying degrees due to the WRSAs and TMF, however changes to air quality, ambient lighting, acoustics and vibration will be reversible post closure.</p>													
Change in Cultural Value or Importance Associated with Aboriginal Physical and Cultural Heritage (Indirect Effects on Physical and Cultural Heritage)	<p>Construction, Operation, and Closure:</p> <ul style="list-style-type: none"> The possibility of encountering residual Project effects that would change cultural value or importance associated with cultural value or importance associated with Aboriginal physical and cultural heritage will be reduced through careful Project design and application of mitigation measures presented in Section 6 of Appendix O. <p>As tangible and intangible values are often connected, mitigation measures aimed at avoiding or reducing effects to tangible values could also help to avoid or reduce effects to intangible values related to well-being.</p>	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Long-term	Reversible to Irreversible	Atypical	Not Significant
<p>Change in Cultural Value or Importance Associated with Aboriginal Physical and Cultural Heritage</p> <p>While sensory disturbance due to changes in air quality, ambient lighting, acoustics and vibration and changes in visual setting is predicted, disturbance will be limited primarily in areas located very near to the PDA and will decrease substantially or be eliminated entirely as distance from the PDA boundary increases. Residual effects are characterized as irreversible as the visual setting in the LAA will be permanently altered to varying degrees due to the WRSAs and TMF. Cultural Value or Importance associated with aboriginal physical and cultural heritage includes multiple components, effects on the availability of or access to cultural or spiritual practices, sites or areas are reversible and effects on removal of cultural practice sites and sensory disturbances are irreversible</p>													

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Section 5(1)(c) Factors and Key Topics	Mitigation Measures	Activity			Residual Effect								
		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Section 5(1)(c) Factor: Current Use													
Change to Availability of Plant Species and Access to Plant Harvesting Sites and Activities	<p>Construction:</p> <ul style="list-style-type: none"> Mitigation for the potential effects from dust as identified in the atmospheric environment portion of Appendix O Table 6-1. Where there is interest, provide opportunities to local communities for harvesting of plants for traditional purposes prior to construction. Avoid the use of chemical herbicides. <p>Construction and Operation:</p> <ul style="list-style-type: none"> Mitigation for potential effects on groundwater, surface water, vegetation, land and resource use portions of Appendix O Table 6-1. Avoid the use of chemical herbicides. <p>Closure:</p> <p>Incorporate plant species of interest to Aboriginal communities into the Closure Plan as feasible.</p>	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Long-term	Irreversible	Typical	Not significant
		<p>Change to availability of plant species and access to plant harvesting sites and activities</p> <p>The removal of plant species of interest to Aboriginal communities and plant harvesting sites within the PDA, and changes in patterns of access to harvesting sites are predicted to alter plant harvesting activities in the LAA without threatening the long-term viability of vegetation communities. Effects are characterized as irreversible as during post-closure access to the PDA will be partially restored with the open pit, WRSA and TMF remaining inaccessible. Please see below for characterization of effects on intangible values related to change to availability of plant species and access to plant harvesting sites and activities.</p>											
Change to Adaptability of Fish Species and Access to Fishing Areas and Activities	<p>Construction, Operation and Closure:</p> <ul style="list-style-type: none"> Mitigation for potential effects on fish and fish habitat as identified in portion of Appendix O Table 6-1 and the Offsetting Plan (Section 9 of Appendix O). Mitigation measures related to land and resource use described in the surface water section of Appendix O Table 6-1. 	✓	✓	✓	Adverse	Low	LAA	N/A	Continuous	Medium-term	Reversible	Typical	Not significant
		<p>Change to availability of fish species and access to fishing areas and activities</p> <p>The removal of limited areas with fishing potential in the PDA and reduced access to areas for fishing beyond the PDA is not predicted to reduce the ability to fish since overall, there will be no net loss of areas for fishing as a result of the Project, and more than half of the fish habitat that will be altered or lost is comprised of golf course pond and poor quality habitat such as roadside ditches and ephemeral drainage areas. Please see below for characterization of effects on intangible values related to change to availability of fish species and access to fishing areas and activities</p>											

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Section 5(1)(c) Factors and Key Topics	Mitigation Measures	Activity			Residual Effect								
		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Change to Availability of Hunted and Trapped Species and Access to Hunting and Trapping Areas and Activities	Construction, Operation and Closure: <ul style="list-style-type: none"> Mitigation for potential effects on habitat, mortality risk, and movement of wildlife as identified in the wildlife portion of Appendix O Table 6-1. Mitigation measures related to land and resource use described in the surface water section of Appendix O Table 6-1. Implementation of EMMPs and Conceptual Closure Plan (Section 9 of Appendix O).	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Medium-term	Irreversible	Typical	Not significant
		Change to availability of hunted and trapped species and access to hunting and trapping areas and activities The removal of wildlife habitat, including hunting and trapping areas identified by Aboriginal communities within the PDA, and alteration of patterns of access, is predicted to reduce but not eliminate opportunities for hunting and trapping relative to baseline conditions. The loss of habitat is not predicted to affect the long-term persistence or viability of wildlife in the RAA or the LAA. Effects on availability of hunted and trapped species are characterized as irreversible as the loss within the PDA is anticipated to be permanent, and this may irreversibly change the distribution of local hunted and trapped species. Please see below for characterization of effects on intangible values related to change to availability of hunted and trapped species and access to hunting and trapping areas and activities.											
Change to Cultural or Spiritual Practices, Sites or Areas	Construction, Operation and Closure: <ul style="list-style-type: none"> Detailed recording and mapping of spiritual or cultural sites in partnership with Aboriginal community representatives, a decision is then made about the relative importance of the site and, if warranted, how to maintain and control access. Construction: <ul style="list-style-type: none"> Where there is interest, provide opportunities to local communities for harvesting of plants for traditional purposes prior to construction. Through Project design the length and location of roads have been considered in order to reduce potential access restrictions. A Pipe Ceremony will be held prior to commencement of construction under the direction of local Aboriginal communities. 	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Medium-term	Reversible	Atypical	Not significant
		Change in availability of or access to cultural or spiritual practices, sites or areas The development in the PDA and access restrictions during construction, operation and active closure will result in a decrease in areas for cultural practices relative to baseline conditions. Patterns of access to cultural or spiritual sites, or areas in the LAA may be altered by access restrictions to the PDA. Residual effects are characterized as reversible as access restrictions to the PDA will be removed following project closure. The residual environmental effect will alter but not eliminate the ability to use the LAA for cultural and spiritual practices, sites and areas and as a result have been characterized as moderate in magnitude. The ecological and socio-economic context is atypical as cultural or spiritual sites or areas are valued and important to Aboriginal communities.											
		✓	✓	✓	Adverse	High	PDA	N/A	Single event	Long-term	Irreversible	Atypical	Not significant
Removal of cultural practice sites Within the PDA, some cultural practice sites, consisting of hunting, trapping, camping or plant picking harvesting will be removed. This change can be mitigated by the measures proposed by GGM; for example, GGM and LLFN have agreed upon a plan to address concerns related to the four LLFN sites which will be affected by the PDA. MNO reported cultural practice sites located near Mosher Lake, which GGM has conservatively assumed may be located within the PDA. Based on the layout of the PDA, Mosher Lake will remain accessible during all phases of the Project. Effects were characterized in Chapter 18 Traditional Land and Resource Use of the Final EIS; the information presented in this Addendum is aligned with the findings of the Final EIS. These effects have been characterized as high in magnitude, however it is important to note that effects will not extend to sites located outside the PDA (i.e., into the LAA or RAA). The not significant finding is appropriate in this circumstance as the residual effects will be limited geographically to the PDA. Hunting, trapping, camping or plant harvesting locations are available in other areas outside the PDA. The not significant finding is appropriate in this circumstance as the residual effects do not to extend to the LAA or RAA.													

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Section 5(1)(c) Factors and Key Topics	Mitigation Measures	Activity			Residual Effect								
		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Competition for Resources Due to In-migration of Workers (Indirect Effect on Current Use)	Construction, Operation and Closure: Additional pressure on existing numbers of harvested species will be managed to a great extent through existing provincial catch and bag limits and tag and seal requirements for valued species.	✓	✓	✓	-	-	-	-	-	-	-	-	N/A
Increased Competition for Resources Due to In-migration of Workers					No residual effect anticipated. Given the abundance of undisturbed areas outside of the PDA, it is likely increased competition for resources due to in-migration of workers would not be a major issue. Therefore, no potential effects on fish and wildlife resources as a result of increased competition are anticipated for the Project area.								
Changes in the Quality of the Experience of Current Use (Indirect Effect on Current Use)	Construction, Operation and Closure: <ul style="list-style-type: none"> GGM has developed several commitments to local Aboriginal communities that serve to reduce or eliminate effects to the quality of the experience of current use. These include: <ul style="list-style-type: none"> Addressing existing effects from historical tailings in the PDA, Avoiding effects on Goldfield Lake and Goldfield road which provides access the TLRU sites west and south of the PDA, Providing opportunities to local Aboriginal communities to be consulted on the Closure Plan, Environmental Management and Monitoring Plans Supporting the use of local Aboriginal environmental monitors and advisory committees. Supporting local Aboriginal cultural practices through community driven initiatives.	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Long-term	Reversible to Irreversible	Atypical	Not Significant
Changes in the Quality of the Experience of Current Use					Given the predicted magnitude, duration and significance of residual effects on related tangible values associated with current use (availability of resources, access to current use areas and locations and current use sites or areas) the assessment has conservatively concluded that the Project may result in a long-term, adverse change in quality of experience of current use and would therefore be moderate in magnitude and not significant. Project-related rehabilitation measures are expected to improve overall water quality in Kenogamisis Lake. Changes in quality of the experience of current use includes multiple components changes in air quality, lighting, noise and vibration are reversible changes in visual setting from certain vantage points will be irreversibly changed.								

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Section 5(1)(c) Factors and Key Topics	Mitigation Measures	Activity			Residual Effect								
		Construction	Operation	Closure	Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-Economic Context	Significance
Change to Cultural Value or Importance Associated with Current Use (Indirect Effect on Current Use)	Construction, Operation, and Closure: The possibility of encountering residual Project effects that would change cultural value or importance associated with current use will be reduced through careful Project design and application of mitigation measures presented in Section 6 of Appendix O. As tangible and intangible values are often connected, mitigation measures aimed at avoiding or reducing effects to tangible values could also help to avoid or reduce effects to intangible values related to well-being.	✓	✓	✓	Adverse	Moderate	LAA	N/A	Continuous	Long-term	Reversible to Irreversible	Atypical	Not Significant
		Change to Cultural Value or Importance Associated with Current Use Given the predicted magnitude, duration and significance of residual effects on related tangible values associated with current use (availability of resources, access to current use areas and locations and current use sites or areas) the assessment has conservatively concluded that the Project may result in a long-term, adverse change to the cultural value or importance of current use and would therefore be moderate in magnitude and not significant. Change to cultural value or importance associated with current use includes multiple components, the following effects are characterised as reversible changes in; availability of plant species and access to plant harvesting sites and activities, availability of fish species and access to fishing areas and activities, availability of hunted and trapped species and access to hunting and trapping areas and activities, and availability of or access to cultural or spiritual practices, sites or areas.											

NOTES:

- ✓ Residual effect anticipated.
- No residual effect anticipated

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1.4 CONCLUSION

As discussed in Section 1.2 of the Final EIS/EA for the Project, the Project presents a number of benefits and opportunities, including.

- Reducing current environmental effects from historical mining activities through rehabilitation measures to address the historical MacLeod and Hardrock tailings, including: relocating a portion of the historical MacLeod and Hardrock tailings to the new TMF; and implementing an enhanced cover, stability measures and seepage collection for the remaining historical MacLeod tailings to reduce seepage, provide safety and long-term stability of structures. These rehabilitation measures will improve water quality in Kenogamisis Lake compared to existing conditions.
- Establishment of productive local partnerships that contribute to achieving development goals identified by the community, to address local priorities and concerns, and to have communities derive benefits from the Project, including increased labour force capacity, reduced unemployment, increased personal and family income, and increased income for regional businesses.
- Specifically, GGM will also promote the involvement of local Aboriginal communities in the Project and cultural initiatives including:
 - working to support the capacity of Aboriginal business to participate in mine procurement, as well as supporting training of Aboriginal people through agreements with communities, seeking joint funding of programming, preparedness training, and providing on-the-job training.
 - maximizing hiring of local and Aboriginal people.
 - supporting the use of local Aboriginal environmental monitors and/or technicians.
 - providing opportunities to local Aboriginal communities to review and comment on permits, the Closure Plan, Environmental Management Plans, and monitoring.
 - consulting with local Aboriginal communities prior to engaging an archaeologist for any further archaeology work that may be required, as well as regarding disposition and treatment of any heritage resources that may be found.
 - meeting regularly (or at least annually) with local Aboriginal communities to share information about the Project.
 - supporting local Aboriginal cultural practices through community driven initiatives.

In consideration of the effects of changes to the environment, the identified mitigation, information provided by Aboriginal communities, and specific consideration of how the effects of those changes to the environment might affect Aboriginal persons, the residual effects on Section 5(1)(c) Factors (including Aboriginal health conditions, Aboriginal socio-economic

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conditions, Aboriginal socio-economic conditions, and current use) are characterized as not significant for all Project phases. Based on this assessment of effects on current land use and consultation with Aboriginal communities, it is anticipated that Aboriginal communities will continue to have the ability to exercise Aboriginal and treaty rights outside of the PDA.

GGM will continue to engage affected Aboriginal communities through the life of the Project and will consider, and strive to adapt to and address, new information in relation to the Section 5(1)(c) Factors that may arise from Aboriginal communities as part of such engagement.