



APPENDIX O

COMPREHENSIVE ALTERNATIVES ASSESSMENT TABLES

APPENDIX O: COMPARATIVE ALTERNATIVES ANALYSIS

GLOSSARY AND ABBREVIATIONS

ARD	Acid Rock Drainage
EA	Environmental Assessment
EC	Environment Canada
DFO	Fisheries and Oceans Canada
GHG	Greenhouse Gas
HONI	Hydro One Networks Inc.
MMER	Metal Mining Effluent Regulations
MOE	Ontario Ministry of the Environment
MTO	Ontario Ministry of Transportation
NA	Not Applicable
NLSA	Natural Environment Local Study Area
NPAG	Non-potentially Acid Generating
NRSA	Natural Environment Regional Study Area
PAG	Potentially Acid Generating
ROW	Right-of-way
RRP	Rainy River Project
RRR	Rainy River Resources Limited
SAR	Species at Risk
TK	Traditional Knowledge
TLU	Traditional Land Use
TMA	Tailings Management Area

MEASUREMENT UNITS

ha	Hectare
km	Kilometre
km ²	Square Kilometre
kV	Kilovolt
m	Metre
M	Million
m ³	Cubic Metres
Mm ³	Million Cubic Metres
Mt	Million Tonnes
MW	Megawatts

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Cost Effectiveness				
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Investors react to the current and anticipated near term market, and are schedule conscious Lower risk of unforeseen events in either the marketplace or the regulatory climate <u>Disadvantages</u> <ul style="list-style-type: none"> Always possible that the investment climate for gold could improve in the future, making the project more financially attractive at some later date 	<u>Advantages</u> <ul style="list-style-type: none"> Always possible that the investment climate for gold could improve in the future, making the project more financially attractive at some later date (i.e., potential for gold market to improve) <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for gold market to deteriorate in future Investor risk becomes more speculative (i.e., higher risk) if the project timeline is pushed out by a substantial amount (years) Capital for detailed engineering and other functions would be extremely difficult to obtain with a substantively delayed, or uncertain timeline Reduction of current investor value 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Abandonment of the Rainy River Project (RRP) would adversely affect New Gold's current balance sheet, and reduce its overall investor attractiveness and ability to secure financing for other projects in the marketplace
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> New Gold able to realize returns on investments to date employed to bring the RRP to its current state of development regarding resource definition, land title, planning, engineering and approvals <u>Disadvantages</u> <ul style="list-style-type: none"> Always possible that the investment climate for gold could be better in the future, making the project more financially attractive at some later date 	<u>Advantages</u> <ul style="list-style-type: none"> Always possible that the investment climate for gold could be better in the future, possibly generating greater returns over the longer term <u>Disadvantages</u> <ul style="list-style-type: none"> New Gold would suffer carrying costs on its current investment for a prolonged period, placing increased financial burden on the company Increased uncertainty in a project schedule expected to reduce investment potential 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Complete loss of current investment value in the RRP

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> Project economics are defined in the context of the current market and associated conditions and therefore a known risk <u>Disadvantages</u> <ul style="list-style-type: none"> Always possible that the investment climate for gold could be better in the future, making the project more financially attractive at some later date 	<u>Advantages</u> <ul style="list-style-type: none"> Always possible that the investment climate for gold could be better in the future, making the project more financially attractive at some later date <u>Disadvantages</u> <ul style="list-style-type: none"> Financial risks associated with a long-term project delay are highly uncertain, and not reasonably foreseeable 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Abandonment of the RRP would place a severe financial stress on New Gold, reducing the company's overall attractiveness in the financial markets
Summary evaluation and rating		Investors react to current and anticipated near-term market conditions, and are schedule conscious. Proceeding with the RRP in the near term provides New Gold with the best opportunity to realize returns on investments to date. Summary Rating: Preferred	Investor risk becomes more speculative if the project timeline is pushed out by a substantial amount (years), and capital for detailed engineering and other functions would be extremely difficult to obtain with a substantively delayed, or uncertain timeline. The only advantage to this alternative would be if the investment climate for gold was to substantively improve in the future, which is currently not definable with any measure of certainty. Summary Rating: Acceptable	Abandonment of the RRP would result in a complete loss of current investment value in the RRP, and would adversely affect New Gold's overall investor attractiveness and ability to secure financing for other projects in the marketplace Summary Rating: Unacceptable
Technical Applicability and/or System Integrity and Reliability				
Available technology	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA
Ability to Service the Site Effectively				
Service	All indicators	NA	NA	NA
Accessibility	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Effects to the Natural Environment				
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Modeling predicts that project air emissions expected to be consistent with Ministry of the Environment (MOE) point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Air emissions would occur 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative, except that air emissions release would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to air quality <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Emission rates of GHGs	<u>Advantages</u> <ul style="list-style-type: none"> GHG emissions projected at 0.05 to 0.145 Mt/a CO₂ equivalent, or 0.02 to 0.06% of Canada's 240 Mt/a emission reduction target (Section 7.3.2.1) <u>Disadvantages</u> <ul style="list-style-type: none"> GHG emissions would occur 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that GHG emissions release would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No increased release of GHG emissions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Predicted that Provincial water quality guidelines for the protection of aquatic life, or other scientifically defensible alternatives, would be maintained in the receiver (i.e., the Pinewood River), as per Section 7.6.1.2) <u>Disadvantages</u> <ul style="list-style-type: none"> Some increased loading of parameters would occur 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that treated effluent release to the Pinewood River would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No increased parameter loading to the Pinewood River <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
	Maintenance or provision of fish habitat	<p><u>Advantages</u></p> <ul style="list-style-type: none"> The upper reaches of Clark Creek, and the lower reaches of West Creek will be diverted to maintain and protect fish habitat Compensation will be provided, under the <i>Fisheries Act</i>, for habitat losses to Clark, Marr and Loslo Creeks <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Habitat disruptions will occur to Clark, West, Marr and Loslo Creeks 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that fish habitat alterations would be delayed 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> No adverse effects to fish habitat <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent
	Maintenance of water flows or conditions suitable for fish passage	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Flows within the Pinewood River would be maintained at a sufficient level to provide for continued fish passage; less than 15% flow reduction from the Loslo Creek outflow, and for further downstream (Section 7.6.1.1; Appendices W and X) <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Some reduction in Pinewood River flows would occur The area of greatest flow reduction would occur between the present outfall of West Creek to a point just upstream of the Loslo Creek outflow (maximum approximate 30% flow reduction), due mainly to the re-alignment of West Creek (Appendices W and X). 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that flow alterations to the Pinewood River, affecting fish passage, would be delayed 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> No adverse effects to Pinewood River flows and associated fish passage <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
	Maintenance of groundwater flows, levels and quality	<u>Advantages</u> <ul style="list-style-type: none"> Adverse groundwater drawdown effects to area resident wells is not expected to occur Adverse parameter seepage loadings to the Pinewood River (and to area well water supplies) are not anticipated (Appendix W) <u>Disadvantages</u> <ul style="list-style-type: none"> Localized depressurization of the groundwater aquifer would occur in the general vicinity of the open pit Some parameter loading is expected to the groundwater regime 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that groundwater effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to the groundwater regime <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> The overall footprint of the RRP has been reduced to minimize overall adverse effects to the environment, including effects to wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the tailings management area and the mineral stockpiles would displace areas of Beaver meadow wetlands 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that effects to wetlands would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to area wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance of wetland connectivity	NA	NA	NA

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> The overall footprint of the RRP has been reduced to minimize overall adverse effects to the environment, including effects to terrestrial habitat Most of the habitats that would be displaced are second growth forest or other previously disturbed habitats Habitats will be restored to the extent reasonably practicable following mine closure <u>Disadvantages</u> <ul style="list-style-type: none"> Long term displacement of approximately 14.9 km² of forested habitat would occur, together with displacement of 4.0 km² of natural and manmade open habitat 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that effects to terrestrial habitats would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to area terrestrial habitats <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> The overall footprint of the RRP has been reduced to minimize overall adverse effects to the environment, including effects to terrestrial habitat Applicable MOE guidelines for noise emissions would be met <u>Disadvantages</u> <ul style="list-style-type: none"> Sound from mine construction and operation may disturb some wildlife species in the immediate vicinity of the mine 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential noise effects to wildlife would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to area wildlife <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that any potential effects (if any) would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for an adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Effect on Species at Risk (SAR)	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> The overall footprint of the RRP has been reduced and optimized to minimize overall adverse effects to SAR territories and habitat Most of the habitats that would be displaced are second growth forest or other previously disturbed habitats Net benefit packages being developed for <i>Endangered Species Act</i> SAR Habitats will be restored following mine closure <u>Disadvantages</u> <ul style="list-style-type: none"> Various local SAR species will be displaced by mine development including Whip-poor-will 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that effects to SAR territories and habitats would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to SAR territories and habitats <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for noise (or other harm and harassment) related disturbance	Same as for effect on terrestrial species and habitat	Same as for effect on terrestrial species and habitat	Same as for effect on terrestrial species and habitat
	Maintenance or provision of wildlife movement corridors	Same as for effect on maintenance or provision of plant dispersion and wildlife movement corridors	Same as for effect on maintenance or provision of plant dispersion and wildlife movement corridors	Same as for effect on maintenance or provision of plant dispersion and wildlife movement corridors

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Summary evaluation and rating		<p>Proceeding with the RRP as planned will displace local creek systems, as well as wetland and terrestrial habitat, and associated fish, plant and wildlife species. Mitigation measures have been developed to minimize adverse effects to the extent reasonably practicable, including compensation offsets, and habitat restoration at closure.</p> <p>This option is considered acceptable since effects on flora and fauna would be localized, and are not expected to affect habitat integrity and migration patterns on a larger scale.</p> <p>Summary Rating: Acceptable</p>	<p>Natural environment effects would be the same as those described for the RRP as planned, except that effects would be delayed</p> <p>Summary Rating: Acceptable</p>	<p>Abandonment of the RRP would result in no adverse environmental effects to the natural environment, beyond those very limited effects that have already occurred as part of project exploration activities</p> <p>Summary Rating: Preferred</p>
Effects to the Human Environment				
Effect on local residents	Maintenance of property values	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Property values were temporarily inflated during the RRP land acquisition phase, which has been essentially completed <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Sound and visual disturbances associated with mine development and operation could detract from local property values 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that effects to local residents would be delayed 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> No adverse effects to local residents <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Development of the RRP as planned will generate considerable regional and local, employment and business opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that employment and business opportunities would be delayed; but possibly also not occur at all because of changing business climates and uncertainties 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Employment and business opportunities associated with the RRP would not occur
	Maintenance or provision of local access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requires re-alignment of Highway 600 and development of the East Access Road 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that effects to local access would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to local access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> Modeling indicates that MOE noise guidelines affecting adjacent residences can be met <u>Disadvantages</u> <ul style="list-style-type: none"> Mine development will generate noise emissions that in a worst case could potentially require further mitigation 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse noise effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Non-interference with water well supply systems	Same as for effects relating to maintenance of groundwater flows, levels and quality	Same as for effects relating to maintenance of groundwater flows, levels and quality.	Same as for effects relating to maintenance of groundwater flows, levels and quality.
	Potential for general disturbance and adverse effects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Mine development will be visible for a long time, however, in the longer term, after mine closure, effects on aesthetics will be reduced once area is revegetated and the pit flooded 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse disturbance effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
	Potential for adverse health and safety effects	<u>Advantages</u> <ul style="list-style-type: none"> Air quality and effluent discharge effects are expected to be consistent with applicable health standards Safety risks, including the potential for traffic related accidents and spills, will be carefully managed <u>Disadvantages</u> <ul style="list-style-type: none"> Air, sound and water emissions will occur There is always some potential for safety risks associated with any major industrial operation 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for adverse health and safety effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requires re-alignment of Highway 600 and development of the East Access Road 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that re-alignment of Highway 600 and development of the East Access Road would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for adverse access effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance and reliability of power supply systems	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Air quality emission effects are expected to be consistent with applicable health standards <u>Disadvantages</u> <ul style="list-style-type: none"> Air emissions will occur 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for adverse air emission health effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
	Managing the potential for adverse electromagnetic exposure	<u>Advantages</u> <ul style="list-style-type: none"> Selected 230 kV transmission line route has been positioned well away from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None anticipated 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for adverse electromagnetic exposure <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintaining safe road traffic conditions that are within the domain of Rainy River Resources Ltd. (RRR) control	<u>Advantages</u> <ul style="list-style-type: none"> Management of safety risks, including the potential for traffic related accidents will be carefully managed <u>Disadvantages</u> <ul style="list-style-type: none"> There is always some potential for safety risks associated with road traffic 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for adverse road traffic effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of health services	<u>Advantages</u> <ul style="list-style-type: none"> RRR to provide onsite medical services <u>Disadvantages</u> <ul style="list-style-type: none"> Increased population in the area related to improved economic activity expected to place increased potential demand on some existing local and regional medical services 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for change to availability of health services <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Mine development will enhance local employment and business opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that employment and business opportunities would be delayed; but possibly also not occur at all because of changing business climates and uncertainties 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Employment and business opportunities associated with the RRP would not occur

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Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Minor , mainly temporary loss of habitats that might otherwise be available for hunting and general outdoor recreation 	<u>Advantages</u> <ul style="list-style-type: none"> • Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> • Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> • No potential to adversely affect tourism and recreation <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effect on agricultural lands	Potential loss of agricultural lands	<u>Advantages</u> <ul style="list-style-type: none"> • Development of a compact site to reduce overall effects on agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> • Mine development will displace up to 200 ha of active and recently active agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> • Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> • Same as for proceed as planned alternative except that some potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> • Reduced potential to adversely affect agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> • Agricultural lands that would be affected have already been acquired by RRR
	Potential loss of agricultural productivity	<u>Advantages</u> <ul style="list-style-type: none"> • Dust control measures will be implemented to limit the potential for adverse effects to adjacent agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> • Mine development would displace up to 200 ha of active and recently active agricultural lands • Dust emissions from mineral waste stockpiles could adversely affect the quality of adjacent grasslands for grazing 	<u>Advantages</u> <ul style="list-style-type: none"> • Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> • Same as for proceed as planned alternative except that some potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> • Reduced potential to adversely affect agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> • Agricultural lands that would be affected have already been acquired by RRR

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> Mine development and operation will provide local and regional employment and business opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that employment and business opportunities would be delayed; but possibly also not occur at all because of changing business climates and uncertainties 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Employment and business opportunities associated with the RRP would not occur
Effect on government services	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Mine development and operation will provide direct and indirect revenues and demands that will help to support government services <u>Disadvantages</u> <ul style="list-style-type: none"> Increased demands on government services such as those related to environmental assessments and permitting Likely increased demands on social services 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that some potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No increased demands on government services <u>Disadvantages</u> <ul style="list-style-type: none"> No increased direct and indirect revenues to help support government services
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with Ministry of Natural Resources (MNR) Crown land use policies for the area Mineral development is recognized in the Township of Chapple official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that some potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No or limited interference with other potential resource management objectives <u>Disadvantages</u> <ul style="list-style-type: none"> No development of an identified mineral resource

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Excessive waste materials	Limiting the generation of unnecessary waste materials	<u>Advantages</u> <ul style="list-style-type: none"> Waste materials will be carefully managed, especially for acid rock drainage (ARD) <u>Disadvantages</u> <ul style="list-style-type: none"> Generation of large quantities of waste overburden and mine rock, which require stockpiling and remediation Portions of the mine rock are expected to be ARD and may require long term management and treatment 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that some potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No production of excessive waste materials <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damage or relocation cannot reasonably be achieved	<u>Advantages</u> <ul style="list-style-type: none"> Built heritage and cultural heritage landscapes are typical of the region and have not been afforded any form of protective status <u>Disadvantages</u> <ul style="list-style-type: none"> Will adversely affect some built heritage and cultural heritage landscapes 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that some potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No or very limited interference with built heritage and cultural landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject to the limitations of Company capacity and community members' personal choice)	<u>Advantages</u> <ul style="list-style-type: none"> Provision of employment, training and business opportunities for First Nation members <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent, except possibly through personal choices related to income use and disposal 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that some potential effects would be delayed Potential training, employment and business benefits might never occur due to changing business and investment climates 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for project-related personal choice considerations <u>Disadvantages</u> <ul style="list-style-type: none"> Potential training, employment and business benefits will not occur

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms protection / preservation supported by local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Limited displacement or disruption to currently known or suspected spiritual, ceremonial, cultural heritage and archaeological sites Where avoidance is not possible, site excavation will occur in accordance with Ministry of Tourism, Culture and Sport requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Potential to unearth currently unknown spiritual, ceremonial, cultural heritage and archaeological sites 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that some potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely affect spiritual, ceremonial, cultural heritage and archaeological sites <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on traditional land use (TLU)	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Available Traditional Knowledge (TK) / TLU data suggests very limited, if any, ongoing traditional land use, with the possible exception of opportunistic hunting along existing road systems <u>Disadvantages</u> <ul style="list-style-type: none"> Disruption of habitats and hunting potential will occur 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely affect traditional land use <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Available TK / TLU data suggests very limited, if any, ongoing traditional land use, with the possible exception of opportunistic hunting along existing road systems <u>Disadvantages</u> <ul style="list-style-type: none"> Disruption of habitats and hunting potential will occur 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely affect traditional land use <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Summary evaluation and rating		<p>Project development has some potential to cause disturbance to local residents, but measures have been taken to mitigate disturbance effects to within applicable guidelines. Some displacement of agricultural, hunting and other local recreational activities will also occur. Northwestern Ontario is economically depressed; and hence there is considerable support for the economic opportunities that will be generated by the project, which on balance are considered to outweigh potential adverse effects. Where adverse effects are expected, many such effects have been or will be compensated, such as through the purchase of private lands, providing alternate access, and through agreements with Aboriginal peoples.</p> <p>Summary Rating: Preferred</p>	<p>Same as for proceed as planned alternative except that potential effects would be delayed, and more importantly that potential training, employment and business opportunities might never occur because of changing business and investment climates.</p> <p>Summary Rating: Acceptable</p>	<p>Not proceeding with the project would preserve the current human environment status quo, which would involve reduced disturbance compared with proceeding with the project; but economic opportunities associated with the project would not be realized.</p> <p>Summary Rating: Acceptable</p>
Amenability to Reclamation				
Effect on public safety and security	Avoidance of safety and security risks to the general public	<p><u>Advantages</u></p> <ul style="list-style-type: none"> The project site would be closed out in accordance with Ontario regulations and industry best practices so as to avoid adverse safety and security risks to the general public <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Some residual measure of safety and security risk might still be present, despite best planning and implementation efforts 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> No potential to adversely affect public safety and security <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Closure of the site would remove air emission source contributions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely affect air quality <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Site discharges and runoff following mine closure would be consistent with protection of aquatic life guidelines, or equivalent, in the local receiving waters <u>Disadvantages</u> <ul style="list-style-type: none"> Some parameter loading would occur to local receiving waters 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely affect receiving waters <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Restoration of passive drainage systems	<u>Advantages</u> <ul style="list-style-type: none"> Passive drainage will be restored at closure <u>Disadvantages</u> <ul style="list-style-type: none"> Drainage patterns at closure will remain altered as a result of open pit and mineral waste stockpile development 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely affect passive drainage systems <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> Active habitat restoration will occur at closure, including the development of habitats targeted for SAR as applicable <u>Disadvantages</u> <ul style="list-style-type: none"> Project development will generate habitat alterations compared with the baseline condition 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely affect habitats <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-0: Project Alternatives

Performance Objective / Criteria	Indicator	Project Alternative		
		Proceed with RRP as Planned	RRP Delayed	Abandon the RRP
Effect on land use	Provide opportunities for productive land uses following the completion of mining activities	<u>Advantages</u> <ul style="list-style-type: none"> Restored lands may be suitable for recreational uses such as hunting, and potentially for agricultural uses such as grazing <u>Disadvantages</u> <ul style="list-style-type: none"> Land available for agricultural uses will be diminished due to topographical changes and permanent ponding (tailings management area and open pit) 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> No potential to adversely the current productive uses of land <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Provide for an aesthetically pleasing site	<u>Advantages</u> <ul style="list-style-type: none"> Site can be rehabilitated to an aesthetically pleasing condition (pit lake and revegetated hill environment) <u>Disadvantages</u> <ul style="list-style-type: none"> Changes to existing conditions 	<u>Advantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for proceed as planned alternative except that potential effects would be delayed 	<u>Advantages</u> <ul style="list-style-type: none"> Existing landscape would not be altered <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		<p>The site will be rehabilitated to Ministry of Northern Development and Mines standards, including restoration to safe, chemically stable, aesthetically pleasing and productive land uses.</p> <p>Summary Rating: Acceptable</p>	<p>Same as for proceed as planned alternative except that potential effects would be delayed.</p> <p>Summary Rating: Acceptable</p>	<p>Not proceeding with the project would preserve the current environment status quo.</p> <p>Summary Rating: Preferred</p>
Overall Summary Rating		Preferred	Acceptable	Unacceptable

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Cost Effectiveness				
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Open pit mining allows for higher production rates, which are necessary to economically mine a near surface, primarily low grade ore body of the type present at the Rainy River Project (RRP) Low risk of unforeseen events or fatal accidents Proven standard mining technique in Ontario <u>Disadvantages</u> <ul style="list-style-type: none"> Larger footprint Pit to remain in perpetuity Need to manage large amounts of mine rock, thereby further increasing the effective footprint 	<u>Advantages</u> <ul style="list-style-type: none"> Very little surface footprint Very little mine rock generated Less environmental impact <u>Disadvantages</u> <ul style="list-style-type: none"> Major portion of the ore body is too low in grade to support underground mining on its own Underground mining could be perceived riskier from a worker health and safety perspective 	<u>Advantages</u> <ul style="list-style-type: none"> Combined open pit and underground mining allows for the entire ore body to be mined and processed at economic rates attractive to the investment community Minimizes overall production risks Underground development cost can be covered with operational revenue Less mine rock than open pit mining all of the ore <u>Disadvantages</u> <ul style="list-style-type: none"> Still requires mine rock management for ore mined with open pit Underground mining could be perceived riskier from a worker health and safety perspective
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Open pit mining allows for higher production rates, which are necessary to economically mine a near surface, primarily low grade ore body of the type present at the RRP <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining at depth leads to excessive mine rock generation, thereby reducing return on investment Higher water management cost compared to underground mining 	<u>Advantages</u> <ul style="list-style-type: none"> Underground mining is the preferred mining method for deeper, higher grade portions of the ore body, which cannot be economically recovered through open pit mining <u>Disadvantages</u> <ul style="list-style-type: none"> Major portion of the ore body is too low in grade to support underground mining on its own High upfront development cost 	<u>Advantages</u> <ul style="list-style-type: none"> Mining techniques have been balanced with the aim of maximizing the return on investment, allowing the entire ore body to be mined and processed at economic rates <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> Minimal financial risk <u>Disadvantages</u> <ul style="list-style-type: none"> Does not allow effective mining of the entire ore body 	<u>Advantages</u> <ul style="list-style-type: none"> Allows access to deeper, higher grade portions of the ore body, which cannot be mined at cost effective rates through open pit mining <u>Disadvantages</u> <ul style="list-style-type: none"> Does not allow effective mining of the entire ore body 	<u>Advantages</u> <ul style="list-style-type: none"> Optimum balance between open pit mining and underground mining <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		Open pit mining the entire ore body would not yield an optimal return on investment, since too much mine rock would need to be moved to mine lower sections of the ore body. The Project would, however, be economic with open pit only mining Summary Rating: Acceptable	Underground mining on its own is not an effective method for mining near surface, low grade ore deposits Summary Rating: Unacceptable	A combination of open pit and underground mining provides the best balance between the risk and benefits of the two mining methods, and is the only method whereby the RRP is economically feasible Summary Rating: Preferred
Technical Applicability and/or System Integrity and Reliability				
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Standard method worldwide for mining of hard rock, near surface, low grade gold deposits at high production rates <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Allows selective mining of high grade gold, especially for deeper deposits <u>Disadvantages</u> <ul style="list-style-type: none"> Due to equipment and dimension limitations, underground mining not ideal for high production operations 	<u>Advantages</u> <ul style="list-style-type: none"> The combination of the two techniques is commonly used in Ontario and worldwide for comparable deposits/projects <u>Disadvantages</u> <ul style="list-style-type: none"> When in the underground mining phase, disadvantages listed for underground mining apply
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	Not applicable (NA)	NA	NA
Summary evaluation and rating		Very reliable method which has been applied in similar circumstances for decades Summary Rating: Acceptable	Pure underground mining, although a proven technology, not used for operations with low grade, near surface ore at high production rates Summary Rating: Unacceptable	A combination of both techniques is most commonly used for low grade deposits that expand to depth Summary Rating: Preferred

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Ability to Service the Site Effectively				
Service	All indicators	NA	NA	NA
Accessibility	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA
Effects to the Natural Environment				
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for large amounts of dust emissions Since all activities are in the open air, larger noise emissions compared to underground mining More greenhouse gas (GHG) emissions from trucks compared to underground mining Air vibrations and ground vibrations from blasting 	<u>Advantages</u> <ul style="list-style-type: none"> Limited dust emission from surface activities <u>Disadvantages</u> <ul style="list-style-type: none"> Noise emissions from mine ventilation Ground vibrations from blasting 	<u>Advantages</u> <ul style="list-style-type: none"> Less dust and noise emissions than open pit mining scenario on its own <u>Disadvantages</u> <ul style="list-style-type: none"> More dust and noise emissions than pure underground mining scenario Air vibrations and ground vibrations from blasting, albeit less air vibrations compared to open pit only scenario
	Emission rates of GHGs	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> More GHG emissions from trucks compared to underground mining 	<u>Advantages</u> <ul style="list-style-type: none"> Less GHG emission than open pit mining <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Less GHG emissions than pure open pit mining scenario <u>Disadvantages</u> <ul style="list-style-type: none"> More GHG emissions than pure underground mining
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> During initial stripping best practice methods need to be applied to minimize effect on surface water, particularly in relation to particulate loadings Potential effects on surface waters from metals leaching and ARD from open pit walls and mine rock piles Highest risk of non-compliance with final effluent standards 	<u>Advantages</u> <ul style="list-style-type: none"> Very limited surface disturbance, therefore limited potential for effects on aquatic habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Less surface disturbance and therefore less potential for effects on aquatic habitat due to smaller size compared to pure open pit mining <u>Disadvantages</u> <ul style="list-style-type: none"> Similar as those for the open pit alternative, but, due to smaller open pit size, effects expected to be lower

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> In the long term the flooded pit will create new fish habitat <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining and associated management of mine rock will overprint existing habitat, however, the Project is committed to fish habitat compensation to offset adverse effects 	<u>Advantages</u> <ul style="list-style-type: none"> No direct effects on existing habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Smaller footprint compared to open pit mining only scenario <u>Disadvantages</u> <ul style="list-style-type: none"> Still requires removal of existing habitat, which will be compensated
	Maintenance of water flows or conditions suitable for fish passage	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Would require re-alignment of West Creek and overprinting Clark Creek with mine rock 	<u>Advantages</u> <ul style="list-style-type: none"> Would not affect water flows or fish passage <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requires re-alignment of West Creek and overprinting a Clark Creek with mine rock
	Maintenance of groundwater flows, levels and quality	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> The open pit will change the existing groundwater regime locally, no far reaching effects are expected 	<u>Advantages</u> <ul style="list-style-type: none"> Very limited disturbance of local groundwater regime <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Less groundwater disturbance compared to open pit only scenario <u>Disadvantages</u> <ul style="list-style-type: none"> The open pit will change the existing groundwater regime locally, no far reaching effects are expected
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	NA	NA	NA
	Maintenance of wetland connectivity	NA	NA	NA

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Displacement of habitat required for open pit and mine rock management areas 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Requires displacement of limited habitat area, without significant alteration of the functionality of habitat in the area 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Displacement of habitat required for open pit and mine rock management areas, lesser disturbance compared with open pit only scenario
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Noise from open pit operations and associated mine rock disposal may disturb wildlife in the immediate vicinity of the open pit 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Noise from underground mine ventilation will disturb wildlife in the immediate vicinity of the mine/ventilation shaft/raise 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Noise from open pit operations and associated mine rock disposal, and from underground ventilation, may disturb wildlife in the immediate vicinity of the open pit and ventilation raises
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Studies indicate that open pit would not negatively influence plant dispersion and wildlife movement corridors 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Studies indicate that underground mine would not negatively influence plant dispersion and wildlife movement corridors 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Studies indicate that open pit would not negatively influence plant dispersion and wildlife movement corridors

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Various local SAR species could potentially be displaced by open pit and overburden/ mine rock stockpile development, most notably Whip-poor-will 	<u>Advantages</u> <ul style="list-style-type: none"> Very limited potential for displacement or adverse effects on SAR species <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Reduced potential for displacement compared with the open pit only scenario, as there would be less mine rock generated <u>Disadvantages</u> <ul style="list-style-type: none"> Various local SAR species could potentially be displaced by open pit and overburden/ mine rock stockpile development, most notably Whip-poor-will
	Potential for noise (or other harm and harassment) related disturbance	Same as for effect on terrestrial species and habitat	Same as for effect on terrestrial species and habitat	Same as for effect on terrestrial species and habitat
	Maintenance or provision of wildlife movement corridors	NA	NA	NA
Summary evaluation and rating		<p>Mining the deposit with one large open pit would result in the largest surface disturbance of all the options considered. However, this option is still considered acceptable since effects on flora and fauna would be localized but are not expected to affect habitat integrity and migration patterns on a larger scale. Disturbed habitats can be largely rehabilitated at closure.</p> <p>Summary Rating: Acceptable</p>	<p>Surface disturbance and therefore effects on flora and fauna would be least for this option.</p> <p>Summary Rating: Preferred</p>	<p>Mining the deposit with a combination of open pit and underground mining would also result in the surface disturbances, which will, in turn, affect flora and fauna. However, this option is still considered acceptable since effects on flora and fauna would be localized and would not be expected to affect habitat integrity and migration patterns on a larger scale. Disturbed habitats can be largely rehabilitated at closure.</p> <p>Summary Rating: Acceptable</p>

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Effects to the Human Environment				
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Noise and visual disturbances associated with open pit mining and with overburden and mine rock stockpile development could detract from local property values 	<u>Advantages</u> <ul style="list-style-type: none"> Limited, if any, effect on property values due to smaller footprint and much more limited noise and visual intrusion compared with open pit mining <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Lesser net effect compared with open pit mining only scenario <u>Disadvantages</u> <ul style="list-style-type: none"> Noise and visual disturbances associated with open pit mining and with overburden and mine rock stockpile development could detract from local property values
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Open pit mining on its own would be capable of supporting Project development, and hence the provision of local employment and business opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining on its own would not allow for optimal development of the RRP 	<u>Advantages</u> <ul style="list-style-type: none"> Underground mine jobs generally higher paid than work in open pit <u>Disadvantages</u> <ul style="list-style-type: none"> Underground mining on its own would not support development of the RRP, hence potential employment opportunities associated with this alternative would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> A combination of both techniques would allow optimal development of the RRP and associated income and business opportunities Varied skill sets required for work in open pit and underground mine Underground mine jobs generally higher paid than work in open pit <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of local access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requires re-alignment of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> Smallest footprint of all options considered <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requires re-alignment of Highway 600

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining and associated overburden and mine rock disposal will generate noise emissions that will be challenging to meet, and may require property acquisitions 	<u>Advantages</u> <ul style="list-style-type: none"> Reduced noise emissions compared with the open pit alternative, no issues with by-law noise compliance <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Lesser disturbance compared with open pit only scenario <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining and associated overburden and mine rock disposal will generate noise emissions that will be challenging to meet, and may require property acquisitions
	Non-interference with water well supply systems	NA	NA	NA
	Potential for general disturbance and adverse effects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit and mine rock areas will be visible for long time, however, in the long term, after closure, effects on aesthetics will be reduced once area is revegetated and the pit flooded 	<u>Advantages</u> <ul style="list-style-type: none"> Smallest visual disturbance compared to the other options <u>Disadvantages</u> <ul style="list-style-type: none"> Hoist would be visible during the operations phase 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit and mine rock areas will be visible for long time, however, in the long term, after closure, effects on aesthetics will be reduced once area is revegetated and the pit flooded
	Potential for adverse health and safety effects	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Due to larger potential for dust and noise emissions compared to underground mine, this alternative consequently has larger potential for health and safety effects 	<u>Advantages</u> <ul style="list-style-type: none"> Minimal potential for adverse effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Due to larger potential for dust and noise emissions compared to underground mine on its own, this alternative consequently has larger potential for health and safety effects. Note that potential for health effects would be lower compared to the open pit only scenario

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requires re-alignment of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> Smallest footprint of all options considered <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requires re-alignment of Highway 600
	Maintenance and reliability of power supply systems	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for large amounts of dust emissions Since all activities are in the open air, larger noise emissions compared to underground mining More GHG emissions from trucks compared to underground mining 	<u>Advantages</u> <ul style="list-style-type: none"> Limited dust emission from surface activities <u>Disadvantages</u> <ul style="list-style-type: none"> Noise emissions from mine ventilation 	<u>Advantages</u> <ul style="list-style-type: none"> Less dust and noise emissions than open pit mining scenario <u>Disadvantages</u> <ul style="list-style-type: none"> More dust and noise emissions than underground mining only scenario
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Open pit mining on its own would be capable of supporting Project development, and hence the provision of local employment and business opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining on its own would not allow for optimal development of the RRP 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Underground mining on its own is uneconomic and would therefore not support development of the RRP and all associated economic benefits that would derive from Project development 	<u>Advantages</u> <ul style="list-style-type: none"> A combination of both techniques would allow optimal development of the RRP and associated income and business opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Minor loss of habitats that might otherwise be available for hunting and general outdoor recreation 	<u>Advantages</u> <ul style="list-style-type: none"> Less potential disruption to hunting and other local recreational activities, compared with open pit mining <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Minor loss of habitats that might otherwise be available for hunting and general outdoor recreation
Effect on agricultural lands	Potential loss of agricultural lands	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Mineral waste stockpiles associated with open pit mining would displace up to 200 hectares (ha) of active and recently active agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> Little or no displacement of agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Mineral waste stockpiles associated with open pit mining would displace approximately 150 ha of active and recently active agricultural lands
	Potential loss of agricultural productivity	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Mineral waste stockpiles associated with open pit mining would displace up to 200 ha of active and recently active agricultural lands Dust emissions from mineral waste stockpiles could adversely affect the quality of adjacent grass lands for grazing 	<u>Advantages</u> <ul style="list-style-type: none"> Little or no displacement of agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Mineral waste stockpiles associated with open pit mining would displace approximately 150 ha of active and recently active agricultural lands Dust emissions from mineral waste stockpiles could adversely affect the quality of adjacent grass lands for grazing

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> Open pit mining on its own would be capable of supporting Project development, and hence the provision of local and regional employment and business opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining on its own would not allow for optimal development of the RRP 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Underground mining on its own is uneconomic and would therefore not support development of the RRP and all associated economic benefits that would derive from Project development 	<u>Advantages</u> <ul style="list-style-type: none"> A combination of both techniques would allow optimal development of the RRP and associated economic opportunities for the local and regional economies <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on government services	All indicators	NA	NA	NA
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area Mineral development is recognized in the Township of Chapple official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area Mineral development is recognized in the Township of Chapple official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area Mineral development is recognized in the Township of Chapple official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project
Excessive waste materials	Limiting the generation of unnecessary waste materials	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining generates large quantities of waste overburden and mine rock, which require stockpiling and remediation Portions of the mine rock are expected to be ARD and may require long term management and treatment 	<u>Advantages</u> <ul style="list-style-type: none"> Underground mining generates very little mine rock <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit mining generates large quantities of waste overburden and mine rock, which require stockpiling and remediation Portions of the mine rock are expected to be ARD and may require long term management and treatment

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Effect on built heritage and cultural heritage landscapes	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Alternative uses largest area, including associated stockpiles for overburden and mine rock storage, therefore highest potential for affecting built heritage and cultural heritage landscapes 	<u>Advantages</u> <ul style="list-style-type: none"> • Smallest footprint and therefore lowest potential for effects on traditional land use <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Lower potential for effects on built heritage and cultural heritage landscapes than open pit only scenario <u>Disadvantages</u> <ul style="list-style-type: none"> • Higher potential for affecting built heritage and cultural heritage landscapes compared to underground mining
Effects on First Nation reserves and communities, and Métis	All indicators	NA	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Alternative uses largest area, therefore highest potential for affecting traditional land uses 	<u>Advantages</u> <ul style="list-style-type: none"> • Smallest footprint and therefore lowest potential for effects on traditional land use <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Lower potential for effects on traditional land use than open pit only scenario <u>Disadvantages</u> <ul style="list-style-type: none"> • Higher potential for affecting traditional land uses compared to underground mining
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Summary evaluation and rating		<p>Open pit mining would generate air and noise emissions that could affect local property values and the quality of life for local residents. There would also be minor loss of agricultural lands and a need to re-align Highway 600. Open pit mining on its own would be capable of supporting Project development, and hence the provision of local and regional employment and business opportunities. Adverse effects can be mitigated or compensated.</p> <p>Summary Rating: Acceptable</p>	<p>Risks to the human environment with this alternative are considered to be low and easily manageable. Underground mining on its own is uneconomic and would therefore not support development of the RRP and all associated economic benefits that would derive from Project development.</p> <p>Summary Rating: Acceptable</p>	<p>Combined open pit and underground mining would generate lesser air and noise emissions compared with underground mining on its own. As with open pit mining on its own, there would be minor loss of agricultural lands and a need to re-align Highway 600. A combination of both techniques would allow optimal development of the RRP and associated economic opportunities for the local and regional economies. Adverse effects can be mitigated or compensated. This alternative requires a broad skill set required for employment, which is considered positive.</p> <p>Summary Rating: Acceptable</p>
Amenability to Reclamation				
Effect on public safety and security	Avoidance of safety and security risks to the general public	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • At closure access to the pit will need to be prevented until the pit is fully flooded • Mine rock stockpile slopes will need to be rendered stable 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • At the end of the closure phase underground egresses would be capped, thereby preventing any risks to the public <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Underground egresses closed off at the end of the closure phase <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • At closure access to the pit will need to be prevented until the pit is fully flooded • Mine rock stockpile slopes will need to be rendered stable
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Potential effects on surface waters from metals leaching and ARD from open pit walls (until pit is flooded) and mine rock piles • Highest risk of non-compliance with final effluent standards, however, once closed out it is expected that any discharge would meet required effluent quality requirements 	<u>Advantages</u> <ul style="list-style-type: none"> • Very limited surface disturbance, therefore limited potential for effects on aquatic habitat <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Less surface disturbance and therefore less potential for effects on aquatic habitat due to smaller size compared to open pit mining on its own <u>Disadvantages</u> <ul style="list-style-type: none"> • Similar as those for the open pit alternative, but, due to smaller open pit size, potential effects are expected to be lower
	Restoration of passive drainage systems	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Drainage patterns will remain altered as a result of open pit and mineral waste stockpile development 	<u>Advantages</u> <ul style="list-style-type: none"> • Once closure is completed, drainage systems will be almost fully restored <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Drainage patterns will remain altered as a result of open pit and mineral waste stockpile development
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Open pit mining will generate habitat losses associated with open pit and mineral stockpile development; mineral stockpiles can be rehabilitated to wildlife habitat at closure 	<u>Advantages</u> <ul style="list-style-type: none"> • Minimal disturbance to wildlife habitat <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Lesser effects to wildlife habitat than with open pit mining on its own, as underground mining generates less waste rock <u>Disadvantages</u> <ul style="list-style-type: none"> • Open pit mining will generate habitat losses associated with open pit and mineral stockpile development; mineral stockpiles can be rehabilitated to wildlife habitat at closure

Table O-1: Mining Method

Performance Objective / Criteria	Indicator	Alternative Method		
		Open Pit Mining	Underground Mining	Combination of Open Pit and Underground Mining
Effect on land use	Provide opportunities for productive land uses following the completion of mining activities	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Open pit and mineral waste stockpile topography will limit types of future land use to mainly recreational activities, and potentially to livestock use of rehabilitated stockpiles 	<u>Advantages</u> <ul style="list-style-type: none"> • Limited effect on surface topography and conditions <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Mineral waste stockpiles would be smaller compared with an open pit mining only scenario <u>Disadvantages</u> <ul style="list-style-type: none"> • Open pit and mineral waste stockpile topography will limit types of future land use to mainly recreational activities, and potentially to livestock use of rehabilitated stockpiles
	Provide for an aesthetically pleasing site	<u>Advantages</u> <ul style="list-style-type: none"> • Site can be rehabilitated to an aesthetically pleasing condition (pit lake and revegetated hill environment) <u>Disadvantages</u> <ul style="list-style-type: none"> • Changes to existing conditions 	<u>Advantages</u> <ul style="list-style-type: none"> • Little effect on existing conditions <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Site can be rehabilitated to an aesthetically pleasing condition (pit lake and revegetated hill environment) <u>Disadvantages</u> <ul style="list-style-type: none"> • Changes to existing conditions
Summary evaluation and rating		<p>The main closure risk relates to mine rock seepage quality. However, it is expected that long term seepage will be of a quality suitable for discharge. Aesthetics can improve to a pleasing condition. Some changes in land use potential will occur.</p> <p>Summary Rating: Acceptable</p>	<p>Once closed out, this alternative will have very little potential for risk to the public or the environment, and does not appreciably alter the pre-existing landscape.</p> <p>Summary Rating: Preferred</p>	<p>The main closure risk relates to mine rock seepage quality. However, it is expected that long term seepage will be of a quality suitable for discharge. Aesthetics can improve to a pleasing condition. Some changes in land use potential will occur.</p> <p>Summary Rating: Acceptable</p>
Overall Summary Rating – see text for details		Acceptable	Unacceptable	Preferred

Table O-2: Mine Water Management

Performance Objective / Criteria	Indicator	Alternative Method	
		Integrate Minewater Treatment with TMA Operations	Separate Minewater Settling Pond
Cost Effectiveness			
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Reduced water impoundment requirements with an integrated system, translating to lower capital and operating costs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Separate impoundment translates to higher capital and operating costs with no attached benefit
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Reduced water impoundment requirements with an integrated system, translating to lower capital and operating costs Greater operational tailings management area (TMA) water management flexibility, translating to lower overall operating costs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Separate impoundment translates to higher capital and operating costs with no attached benefit Less operational flexibility and hence increased costs compared with an integrated system
Financial risk	All indicators	NA	NA
Summary evaluation and rating		Use of an integrated water management system which includes provision for minewater management is the most cost effective and operationally flexible system, with no associated environmental limitations (see below). Summary Rating: Preferred	Use of a separate minewater management system would unnecessarily increase RRP capital and operating costs, and would reduce operational flexibility, compared with an integrated system, while at the same time conferring no advantage compared with an integrated system. There is consequently no justification for the added costs and constraints that would be associated with a separate system. Summary Rating: Unacceptable
Technical Applicability and/or System Integrity and Reliability			
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Integrated water management systems which include provision for minewater management, and hence greater overall operating flexibility, are commonplace in the industry <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Separate minewater management and treatment is commonplace in the industry, and is used where separation from other facilities makes economic and operational sense No technological limitations <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA

Table O-2: Mine Water Management

Performance Objective / Criteria	Indicator	Alternative Method	
		Integrate Minewater Treatment with TMA Operations	Separate Minewater Settling Pond
Summary evaluation and rating		Integrated and separate minewater management systems are technically viable and reliable alternatives, and as such both are preferred. Summary Rating: Preferred	Integrated and separate minewater management systems are technically viable and reliable alternatives, and as such both are preferred. Summary Rating: Preferred
Ability to Service the Site Effectively			
Service	All indicators	NA	NA
Accessibility	Accessible land base or infrastructure needed to support component development and operation	<u>Advantages</u> <ul style="list-style-type: none"> Integrated system where minewater is managed and treated within other RRP facilities reduces land requirements, all of which had to be (have to be) purchased from private holders <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of additional unnecessary facilities adds to land acquisition and use requirements
Summary evaluation and rating		Available land area for the RRP is limiting, as all such lands have to be purchased from willing private land holders. Alternatives which reduce land base requirements, all other factors being equal are therefore preferred. Summary Rating: Preferred	Use of a separate minewater treatment and management system would unnecessarily increase land holding requirements, where there are no attached benefits. Summary Rating: Acceptable
Effects to the Natural Environment			
Effect on air quality and climate	All indicators	NA	NA
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Integrated, well designed water management systems that provide for minewater management are fully capable of complying with anticipated, stringent final effluent standards required to attain or maintain receiving water protection of aquatic life standards, or scientifically defensible alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Separate, well designed minewater management systems are fully capable of complying with anticipated, stringent final effluent standards required to attain or maintain receiving water protection of aquatic life standards, or scientifically defensible alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> Alternative is able to comply with anticipated, stringent final effluent standards required to attain or maintain protection of aquatic life receiving water standards <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for seasonal effluent storage and release, associated with mine water ammonia reduction, may affect receiving water seasonal flow rates 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative is able to comply with anticipated, stringent final effluent standards required to attain or maintain protection of aquatic life receiving water standards <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for seasonal effluent storage and release, associated with mine water ammonia reduction, may affect receiving water seasonal flow rates

Table O-2: Mine Water Management

Performance Objective / Criteria	Indicator	Alternative Method	
		Integrate Minewater Treatment with TMA Operations	Separate Minewater Settling Pond
	Maintenance of water flows or conditions suitable for fish passage	<u>Advantages</u> <ul style="list-style-type: none"> Alternative provides the greatest flexibility for water management <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for seasonal effluent storage and release, associated with mine water ammonia reduction may affect receiving water seasonal flow rates 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for seasonal effluent storage and release, associated with mine water ammonia reduction may affect receiving water seasonal flow rates
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> Treating minewater within existing, integrated facilities removes the potential for additional wetland disturbance through the siting of unnecessary facilities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Any additional major water impoundment areas would have a high probability of displacing at least some additional wetlands, as such impoundment areas are typically developed in low lying areas
	Maintenance of wetland connectivity	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> Treating minewater within existing, integrated facilities removes the potential for additional terrestrial habitat disturbance through the siting of unnecessary facilities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Any additional major water impoundment areas would unnecessarily displace additional terrestrial habitat
	Potential for noise (or other harm and harassment) related disturbance	NA	NA
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> Treating minewater within existing, integrated facilities removes the potential for additional terrestrial habitat disturbance through the siting of unnecessary facilities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Any additional major water impoundment areas would unnecessarily displace additional terrestrial habitat, and such habitat could potentially provide for plant dispersion or wildlife movement
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	A number of Threatened and Special Concern SAR species are present within the RRP site area, of which Whip-poor-will are regarded as being potentially the most sensitive	A number of Threatened and Special Concern SAR species are present within the RRP site area, of which Whip-poor-will are regarded as being potentially the most sensitive

Table O-2: Mine Water Management

Performance Objective / Criteria	Indicator	Alternative Method	
		Integrate Minewater Treatment with TMA Operations	Separate Minewater Settling Pond
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> Treating minewater within existing, integrated facilities removes the potential for additional disturbance to SAR territories or habitat through the siting of unnecessary facilities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Any additional major water impoundment areas could potentially, and unnecessarily, displace SAR territories or habitat
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> Treating minewater within existing, integrated facilities removes the potential for additional disturbance to SAR species through the siting and operation of unnecessary facilities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> The siting and operation of additional major water impoundment areas could potentially, and unnecessarily, disturb SAR species
	Maintenance or provision of wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> All SAR species that potentially inhabit the RRP site are highly mobile (birds or bats), with the exception of the Snapping Turtle, which is ranked as a species of Special Concern Treating minewater within existing, integrated facilities removes the potential for additional disturbance to SAR territories or habitat through the siting of unnecessary facilities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> All SAR species that potentially inhabit the RRP site are highly mobile (birds or bats), with the exception of the Snapping Turtle, which is ranked as a species of Special Concern <u>Disadvantages</u> <ul style="list-style-type: none"> Any additional major water impoundment areas could potentially, and unnecessarily, disrupt the movement of Snapping Turtles, depending on the placement of such facilities
Summary evaluation and rating		Treating minewater within existing, integrated facilities removes the potential for additional habitat disturbance through the siting of unnecessary facilities. Summary Rating: Preferred	Any additional major water impoundment areas would unnecessarily displace or disturb additional habitat, potentially suited to aquatic and/or wildlife species. Summary Rating: Acceptable
Effects to the Human Environment			
Effect on local residents	All indicators	NA	NA
Effect on infrastructure	All indicators	NA	NA
Public health and safety	All indicators	NA	NA
Effect on local businesses	All indicators	NA	NA
Effect on tourism and recreation	All indicators	NA	NA
Effect on agricultural lands	All indicators	NA	NA
Regional economy	All indicators	NA	NA

Table O-2: Mine Water Management

Performance Objective / Criteria	Indicator	Alternative Method	
		Integrate Minewater Treatment with TMA Operations	Separate Minewater Settling Pond
Effect on government services	All indicators	NA	NA
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> May impact potential bait fishing uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> May impact potential bait fishing uses for the life of the project
Excessive waste materials	All indicators	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	NA	NA
Effects on First Nation reserves and communities, and Métis	All indicators	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA
Effects on traditional land use	All indicators	NA	NA
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA
Summary evaluation and rating		NA	NA
Amenability to Reclamation			
Effect on public safety and security	All indicators	NA	NA
Effect on environmental health and sustainability	All indicators	NA	NA
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	<u>Advantages</u> <ul style="list-style-type: none"> Use of integrated facilities removes the potential for additional land disturbance, resulting in lands requiring a return to productive land uses <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Disturbed lands take time to be rehabilitated to productive land uses, such that it is better if possible, to not to disturb such lands in the first place

Table O-2: Mine Water Management

Performance Objective / Criteria	Indicator	Alternative Method	
		Integrate Minewater Treatment with TMA Operations	Separate Minewater Settling Pond
	Provides for an aesthetically pleasing site	<u>Advantages</u> <ul style="list-style-type: none"> Limiting land disturbance reduces adverse effects to aesthetics <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Disturbed lands take time to be rehabilitated to productive land uses, such that it is better if possible, to not to disturb such lands in the first place
Summary evaluation and rating		Treating minewater within existing, integrated facilities removes the potential for additional land disturbance and reclamation through the siting of unnecessary facilities. Summary Rating: Preferred	Any additional major water impoundment areas would unnecessarily result in additional land disturbance and reclamation needs. Summary Rating: Acceptable
Overall Summary Rating – see text for details		Preferred	Unacceptable

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Cost Effectiveness						
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Potentially more supportable by Environment Canada (EC) and Fisheries and Oceans Canada (DFO) as alternative does not overprint aquatic habitat / waters frequented by fish <u>Disadvantages</u> <ul style="list-style-type: none"> Excessive haul distance would make the RRP uneconomic; added Project cost assuming nominal 200 Mt deposition would exceed the preferred alternative by approximately \$78 million (M) RRR does not have access to all required lands to support this alternative Alternative is very close to the hamlet of Dearlock and could not meet MOE noise guidelines unless additional properties acquired 	<u>Advantages</u> <ul style="list-style-type: none"> Potentially more supportable by EC and DFO as alternative does not overprint aquatic habitat / waters frequented by fish <u>Disadvantages</u> <ul style="list-style-type: none"> Excess haulage distance costs of \$12M, above those associated with Alternative C, are not economically supportable; Requires a haul road crossing of the Pinewood River RRR does not have access to all required lands to support this alternative Alternative is very close to the hamlet of Black Hawk and could not meet MOE noise guidelines 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas RRR holds title (or options) to all required lands Haulage costs would be financially supportable; Project cost assuming nominal 200 Mt deposition is the lowest of the alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> Portions of the alternative overprint aquatic habitat / waters frequented by fish, such that Schedule 2 Metal Mining Effluent Regulation (MMER) listing is required Operational modifications are required to meet MOE noise guidelines at closest receptors; but guidelines can be met 	<u>Advantages</u> <ul style="list-style-type: none"> Generally avoids populated areas <u>Disadvantages</u> <ul style="list-style-type: none"> Excess haulage distance costs of \$16M, above those associated with Alternative C, are not economically supportable; RRR does not have access to all required lands to support this alternative Operational modifications are likely required to meet MOE noise guidelines at closest receptors; but guidelines can likely be met 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas RRR holds title (or options) to all required lands Haulage costs would be financially supportable; added Project cost assuming nominal 200 Mt deposition would be \$5M <u>Disadvantages</u> <ul style="list-style-type: none"> Portions of the alternative overprint aquatic habitat / waters frequented by fish, such that Schedule 2 MMER listing is required Operational modifications are required to meet MOE noise guidelines at closest receptors; but guidelines can be met

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Excess haulage distance costs are not economically supportable RRR does not have access to all required lands to support this alternative 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Excess haulage distance costs are not economically supportable; Requires a haul road crossing of the Pinewood River which would add an additional approximately \$5M to overall Project costs RRR does not have access to all required lands to support this alternative 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds title (or options) to all required lands Haulage costs would be financially supportable; Project cost assuming nominal 200 Mt deposition is the lowest of the alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> Operational modifications are required to meet MOE noise guidelines at closest receptors; but guidelines can be met 	<u>Advantages</u> <ul style="list-style-type: none"> Generally avoids populated areas <u>Disadvantages</u> <ul style="list-style-type: none"> Excess haulage distance costs are not economically supportable; RRR does not have access to all required lands to support this alternative Operational modifications are likely required to meet MOE noise guidelines at closest receptors; but guidelines can likely be met 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas RRR holds title (or options) to all required lands Haulage costs would be financially supportable; added Project cost assuming nominal 200 Mt deposition would be \$5M <u>Disadvantages</u> <ul style="list-style-type: none"> Operational modifications are required to meet MOE noise guidelines at closest receptors; but guidelines can be met
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing not required <u>Disadvantages</u> <ul style="list-style-type: none"> Questionable as to whether or not RRR could obtain land tenure rights to support this alternative, which increases risk of Project delays from affected property owners 	<u>Advantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing not required Avoids populated areas <u>Disadvantages</u> <ul style="list-style-type: none"> Questionable as to whether or not RRR could obtain land tenure rights to support this alternative, which increases risk of Project delays from affected property owners Potential conflict with Black Hawk area residents 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas RRR has access to (or options on) all required lands <u>Disadvantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing is required, but can be accommodated with the Project schedule 	<u>Advantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing not required <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not hold land tenure rights to all properties required to support this alternative, which increases risk of Project delays from affected property owners 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas RRR has access to (or options on) all required lands <u>Disadvantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing is required, but can be accommodated within the Project schedule

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Summary evaluation and rating		<p>The Northwest alternative is potentially more supportable by EC and DFO, but haul distance makes this alternative uneconomic. Also RRR does not have access to all required lands to support this alternative. Close proximity to the hamlet of Dearlock is likely to be problematic.</p> <p>Summary Rating: Unacceptable</p>	<p>The South Alternative is potentially more supportable by EC and DFO as alternative does not overprint aquatic habitat / waters frequented by fish.</p> <p>The primary disadvantages associated with this alternative are excessive haul distance, and proximity to Black Hawk. It would not be possible to meet MOE noise guidelines at Black Hawk receptors, which means that the alternative is not permissible. Also RRR does not have access to all required lands to support this alternative. A haul road bridge crossing over the Pinewood River would be required.</p> <p>Summary Rating: Unacceptable</p>	<p>The principal advantages with this alternative are short haulage, avoidance of populated areas, and that RRR holds title (or options) to all required lands for the development of this alternative.</p> <p>The primary disadvantages are the requirement for MMER Schedule 2 listing, and operational constraints to meet MOE noise guidelines at closest receptors in Black hawk. These constraints can be met.</p> <p>Summary Rating: Preferred</p>	<p>Alternative D has the advantages of generally avoiding populated areas, and not requiring MMER Schedule 2 listing.</p> <p>The primary disadvantages associated with this alternative are excessive haul distance, and the fact that RRR does not have access to all required lands to support this alternative. Operational modifications would also likely be required to meet MOE noise guidelines at closest receptors; but guidelines can likely be met.</p> <p>Summary Rating: Unacceptable</p>	<p>The principal advantages with this alternative similar to those of Alternative C, namely short haulage (especially for overburden stripping), avoidance of populated areas, and that RRR holds title (or options) to all required lands for the development of this alternative.</p> <p>The primary disadvantages are the requirement for MMER Schedule 2 listing, and operational constraints to meet MOE noise guidelines at closest receptors in Black Hawk. These constraints can be met.</p> <p>Summary Rating: Preferred (for overburden)</p>
Technical Applicability and/or System Integrity and Reliability						
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Predictively effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Likely weaker lacustrine clay foundations require shallower slope angles 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Predictively effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Predictively effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Predictively effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Predictively effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Weaker lacustrine clay foundations require shallower slope angles

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA	NA
Summary evaluation and rating		The alternative is predicatively effective, but likely weaker lacustrine clay foundations require shallower slope angles, which can be accommodated. Summary Rating: Acceptable	Alternative is predictably effective with low risk. Summary Rating: Preferred	Alternative is predictably effective with low risk. Summary Rating: Preferred	Alternative is predictably effective with low risk. Summary Rating: Preferred	The alternative is predicatively effective, but weaker lacustrine clay foundations require shallower slope angles, which can be accommodated. Summary Rating: Acceptable
Ability to Service the Site Effectively						
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	NA	NA	NA	NA	NA

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Accessibility	Accessible land base or infrastructure needed to support component development or operation	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to portions of lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not have access to all required lands required to support this alternative Close proximity to the hamlet of Dearlock is likely to be problematic Further disruption to Highway 600 access Increasing distance from open pit 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to portions of lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not have access to all required lands required to support this alternative Close proximity to the larger hamlet of Black Hawk is problematic Increasing distance from open pit 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to lands needed to support this alternative Close proximity to open pit <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to portions of lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not have access to all lands required to support this alternative 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to lands needed to support this alternative Close proximity to open pit, especially for stockpiling overburden <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		<p>RRR would have to obtain surface rights to additional lands to support this alternative, with the acquisition of some such lands being potentially problematic.</p> <p>Close proximity to the hamlet of Dearlock may be problematic, as would further disruption to Highway 600</p> <p>Summary Rating: Unacceptable</p>	<p>RRR would have to obtain surface rights to additional lands to support this alternative, the acquisition of which is likely to be problematic because of close proximity to the larger hamlet of Black Hawk. Increasing distance from open pit.</p> <p>Summary Rating: Acceptable</p>	<p>RRR holds surface rights to all lands needed to support this alternative.</p> <p>Summary Rating: Preferred</p>	<p>RRR would have to obtain surface rights to additional lands to support this alternative, with such lands being potentially available.</p> <p>Summary Rating: Acceptable</p>	<p>RRR holds surface rights to all lands needed to support this alternative.</p> <p>Summary Rating: Preferred</p>

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Effects to the Natural Environment						
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can likely be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Additional properties need to be acquired to allow compliance with air quality point of impingement standards 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can likely be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Additional properties need to be acquired to allow compliance with air quality point of impingement standards 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Property boundaries are tight 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can likely be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Additional properties need to be acquired to allow compliance with air quality point of impingement standards 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Emission rates of GHGs	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased haulage distance of approximately 6.5 kilometre (km) would contribute to increased GHG emissions 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased haulage distance of approximately 1.0 km would contribute to increased GHG emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Shortest haul distance resulting in lowest fuel consumption <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased haulage distance (approximately 1.3 km) would contribute to increased GHG emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Second shortest haul distance (approximately 0.4 km differential) resulting in reduced fuel consumption <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> All alternatives are generally comparable for this indicator <u>Disadvantages</u> <ul style="list-style-type: none"> No comparative disadvantage 	<u>Advantages</u> <ul style="list-style-type: none"> All alternatives are generally comparable for this indicator <u>Disadvantages</u> <ul style="list-style-type: none"> Requires an effluent pipeline crossing of the Pinewood River 	<u>Advantages</u> <ul style="list-style-type: none"> All alternatives are generally comparable for this indicator <u>Disadvantages</u> <ul style="list-style-type: none"> No comparative disadvantage 	<u>Advantages</u> <ul style="list-style-type: none"> All alternatives are generally comparable for this indicator <u>Disadvantages</u> <ul style="list-style-type: none"> A portion of the Northeast Stockpile alternative extends outside of the Pinewood River watershed 	<u>Advantages</u> <ul style="list-style-type: none"> All alternatives are generally comparable for this indicator <u>Disadvantages</u> <ul style="list-style-type: none"> No comparative disadvantage

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> No direct loss of fish habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No direct loss of fish habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Clark Creek supports a small fish population, but is too small to provide habitat for larger fish species <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative results in the displacement of a major portion of the Clark Creek system, such that fish habitat compensation would be required in accordance with <i>Fisheries Act</i> requirements 	<u>Advantages</u> <ul style="list-style-type: none"> No direct loss of fish habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Marr Creek supports a small fish population, but is too small to provide habitat for larger fish species <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative results in the displacement of a major portion of the Marr Creek system, such that fish habitat compensation would be required in accordance with <i>Fisheries Act</i> requirements
	Maintenance of water flows or conditions suitable for fish passage	NA	NA	NA	NA	NA
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> No (or very minor) displacement of wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No (or very minor) displacement of wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No (or very minor) displacement of wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No (or very minor) displacement of wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No (or very minor) displacement of wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
	Maintenance of wetland connectivity	NA	NA	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the Natural Environment Local Study Area (NLSA) <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 714 ha. 	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 594 ha. 	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 375 ha. 	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 612 ha. 	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 399 ha.
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> Comparatively: stockpile boundary overprints one known Whip-poor-will territory, and three known Bobolink territories <u>Disadvantages</u> <ul style="list-style-type: none"> Limited overprinting of Threatened level Whip-poor-will and Bobolink territories 	<u>Advantages</u> <ul style="list-style-type: none"> Comparatively: stockpile boundary overprints one known Whip-poor-will territory, and no known Bobolink territories <u>Disadvantages</u> <ul style="list-style-type: none"> Limited overprinting of Threatened level Whip-poor-will territories 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Stockpile boundary overprints two known Whip-poor-will territories, and four known Bobolink territories 	<u>Advantages</u> <ul style="list-style-type: none"> Comparatively: stockpile boundary does not overprint any known Whip-poor-will or Bobolink territories – but much more limited surveying in this area due to poor access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Comparatively: stockpile boundary overprints two known Bobolink territories <u>Disadvantages</u> <ul style="list-style-type: none"> Limited overprinting of Bobolink territories
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound and dust emission disturbances during operations
	Maintenance or provision of wildlife movement corridors	NA	NA	NA	NA	NA
Summary evaluation and rating		Development of this alternative would not overprint aquatic habitat or wetlands, and would have limited effect on SAR species. The major disadvantage is increased GHG emissions related to the greater transport distance from the open pit	Development of this alternative would not overprint aquatic habitat or wetlands, and would have limited effect on SAR species. Small increase in GHG emissions compared with alternatives closer to the open pit. Requires a haul road bridge crossing over the Pinewood River. Runoff and seepage more difficult to integrate with other site water management operations because positioned on the opposite site of the Pinewood River	Development of this alternative would overprint a portion of Clark Creek and its associated Beaver meadow wetlands, and would overprint a slightly greater number of known SAR species territories (Whip-poor-will and Bobolink), compared with other alternatives	Development of this alternative would not overprint aquatic habitat or wetlands, and would have limited, if any, effect on SAR species. Small increase in GHG emissions compared with alternatives closer to the open pit	Development of this alternative would overprint a portion of Marr Creek and its associated Beaver meadow wetlands, and would overprint two known Bobolink territories. Close proximity to open pit would reduce GHG emissions

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
		Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Acceptable
Effects to the Human Environment						
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Location is immediately beside the hamlet of Dearlock, and would require purchase of all Dearlock residences One resident to the immediate north has indicated an unwillingness to sell their property 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Location is immediately beside the hamlet of Black Hawk and would require purchase of all Black Hawk area residences, which is not reasonably feasible 	<u>Advantages</u> <ul style="list-style-type: none"> Reasonably remote from local residents Associated properties have already been acquired by RRR <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Reasonably remote from local residents <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Reasonably remote from local residents Associated properties have already been acquired by RRR <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would be cost prohibitive for the RRP (\$78M greater than proposed alternative); hence potential employment opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the South Alternative is not permissible because of noise by-law constraints relating to the Black Hawk area; hence potential employment opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> Provides a positive contribution to Project economics because of short haul distance thereby making it more likely that the Project will go ahead <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Longer haul distance adversely affects Project economics 	<u>Advantages</u> <ul style="list-style-type: none"> Provides a positive contribution to Project economics because of short haul distance thereby making it more likely that the Project will go ahead <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of local access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would dislocate a substantial portion of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along Tait Road would be severed, which would appreciably confound the planned re-aligning of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along Clark Road would be severed, the effects of which would be limited 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along the planned East Access Road would be blocked, which would appreciably confound access to existing upper Marr Road properties 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to local access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Use of the Northwest stockpile alternative would not allow compliance with applicable MOE noise guidelines at nearby receptors north or south of the proposed location 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Use of the South stockpile alternative would not allow compliance with applicable MOE noise guidelines at nearby receptors under any possible operational scenario 	<u>Advantages</u> <ul style="list-style-type: none"> Further removed from noise receptors compared with Alternatives A and B <u>Disadvantages</u> <ul style="list-style-type: none"> Modifications to equipment, equipment positioning and operations scheduling are required to demonstrate compliance with noise guidelines 	<u>Advantages</u> <ul style="list-style-type: none"> Further removed from noise receptors compared with Alternatives A and B <u>Disadvantages</u> <ul style="list-style-type: none"> Modifications to equipment, equipment positioning and operations scheduling are required to demonstrate compliance with noise guidelines 	<u>Advantages</u> <ul style="list-style-type: none"> Further removed from noise receptors compared with Alternatives A and B <u>Disadvantages</u> <ul style="list-style-type: none"> Modifications to equipment, equipment positioning and operations scheduling are required to demonstrate compliance with noise guidelines
	Non-interference with water well supply systems	NA	NA	NA	NA	NA
	Potential for general disturbance and adverse effects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Dearlock residents and at least one resident immediately north would be located in very close proximity to the stockpile 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Black Hawk area residents would be located in very close proximity to the stockpile 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative has reasonable setbacks from nearby residences <u>Disadvantages</u> <ul style="list-style-type: none"> The Alternative C stockpile would be visible to Black Hawk area residents 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative has reasonable setbacks from nearby residences <u>Disadvantages</u> <ul style="list-style-type: none"> The Alternative D stockpile would be visible to Gallinger Road and Finland area residents 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative has reasonable setbacks from nearby residences <u>Disadvantages</u> <ul style="list-style-type: none"> The Alternative E stockpile would be visible to Black Hawk area residents
	Potential for adverse health and safety effects	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, dust would be managed to meet applicable point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Noise emissions would be problematic to nearby residents, relative to MOE guidelines 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, dust would be managed to meet applicable point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Noise emissions would be problematic to nearby residents, relative to MOE guidelines 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, dust would be managed to meet applicable point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Noise emissions may be of concern to some nearby residents, irrespective of compliance with MOE guidelines 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, dust would be managed to meet applicable point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Noise emissions may be of concern to some nearby residents, irrespective of compliance with MOE guidelines 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, dust would be managed to meet applicable point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Noise emissions may be of concern to some nearby residents, irrespective of compliance with MOE guidelines

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would dislocate a substantial portion of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along Tait Road would be severed, which would appreciably confound the planned re-aligning of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along Clark Road would be severed, the effects of which would be limited 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along the planned East Access Road would be blocked, which would appreciably confound access to existing upper Marr Road properties 	<u>Advantages</u> <ul style="list-style-type: none"> No adverse effects to provision of local access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance and reliability of power supply systems	NA	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Standards would be attained <u>Disadvantages</u> <ul style="list-style-type: none"> Additional property acquisition would be required to meet standards 	<u>Advantages</u> <ul style="list-style-type: none"> Standards would be attained <u>Disadvantages</u> <ul style="list-style-type: none"> Additional property acquisition would be required to meet standards 	<u>Advantages</u> <ul style="list-style-type: none"> Standards would be attained <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Standards would be attained <u>Disadvantages</u> <ul style="list-style-type: none"> Additional property acquisition would be required to meet standards 	<u>Advantages</u> <ul style="list-style-type: none"> Standards would be attained <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA	NA	NA

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
	Maintenance or provision of health services	NA	NA	NA	NA	NA
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would be cost prohibitive for the RRP (\$78M greater than proposed alternative); hence potential employment and business opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the South Alternative is not permissible because of noise by-law constraints relating to the Black Hawk area; hence potential employment and business opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> Provides a positive contribution to Project economics because of short haul distance thereby making it more likely that the Project will go ahead <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Longer haul distance is not economically supportable 	<u>Advantages</u> <ul style="list-style-type: none"> Provides a positive contribution to Project economics because of short haul distance thereby making it more likely that the Project will go ahead <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses
Effect on agricultural lands	Potential loss of agricultural lands	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 220 ha of agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 35 ha of agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 6 ha of agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative would not displace any agricultural land <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 94 ha of agricultural lands
	Potential loss of agricultural productivity	NA	NA	NA	NA	NA

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Development of the Northwest Alternative would be cost prohibitive for the RRP (\$78M greater than proposed alternative); hence potential employment and business opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Development of the South Alternative is not permittable because of noise by-law constraints relating to the Black Hawk area; hence potential employment and business opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> • Provides a positive contribution to Project economics because of short haul distance thereby making it more likely that the Project will go ahead <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Longer haul distance is not economically supportable 	<u>Advantages</u> <ul style="list-style-type: none"> • Provides a positive contribution to Project economics because of short haul distance thereby making it more likely that the Project will go ahead <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effect on government services	Maintenance or improvement of the capacity of existing health, education and family support services	NA	NA	NA	NA	NA

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Effect on resource management objectives	Consistency with established and planned resource management objectives	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project
Excessive waste materials	Limiting the generation of unnecessary waste materials	No distinction between alternatives	No distinction between alternatives	No distinction between alternatives	No distinction between alternatives	No distinction between alternatives
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damaged, or relocation cannot reasonably be avoided	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative would affect several identified built heritage and cultural heritage landscape areas Will be visible from nearby roads 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative would affect several identified built heritage and cultural heritage landscape areas Will be visible from nearby roads 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative would affect one identified built heritage and cultural heritage landscape area Will be visible from nearby roads 	<u>Advantages</u> <ul style="list-style-type: none"> Will not disturb any identified built heritage or cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> Will be visible from nearby roads 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative would affect one identified built heritage and cultural heritage landscape area Will be visible from nearby roads

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject limitations of Company capacity and community members' personal choice)	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project, and which could accrue to First Nations, would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the South Alternative is not permissible because of noise by-law constraints; hence potential employment and business opportunities associated with the Project, and which could accrue to First Nations, would not exist with this alternative 	<u>Advantages</u> <ul style="list-style-type: none"> Development of the Clark Creek Basin alternative would be capable of supporting Project development, and hence the provision of employment and business opportunities, which could accrue to First Nations, linked to the RRP <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northeast Alternative would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project, and which could accrue to First Nations, would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> Development of the West Alternative would be capable of supporting Project development, and hence the provision of employment and business opportunities, which could accrue to First Nations, linked to the RRP <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms of protection / preservation supported by local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		The excess haul distance to the Northwest location would make this alternative and the overall Project uneconomic, hence employment, training and business opportunities that would otherwise derive from the RRP would not exist. In addition, development off the Northwest Alternative would not allow compliance with MOE noise guidelines at Dearlock and at the receptor north of the site; hence this alternative is not permissible, unless RRR were to acquire these properties. One owner has indicated an unwillingness to sell.	Irrespective of any other attributes related to the human environment, development of the South Alternative would not allow compliance with MOE noise guidelines at Black Hawk area receptors. This alternative is therefore not permissible,	The Clark Creek Basin alternative is cost effective and would support Project development and associated employment and business opportunities. The potential for conflicts with local residents is limited, provided that stringent measures are implemented to control noise emissions.	The Northeast Alternative is not economic. Dislocation of the planned East Access Road to maintain access to the upper Marr Road properties can likely be addressed, but would be challenging with this alternative. The potential for conflicts with local residents is limited, provided that stringent measures are implemented to control noise emissions.	Alternative E is cost effective and would support Project development and associated employment and business opportunities. The potential for conflicts with local residents is limited, provided that stringent measures are implemented to control noise emissions.
		Summary Rating: Unacceptable	Summary Rating: Unacceptable	Summary Rating: Preferred	Summary Rating: Unacceptable	Summary Rating: Preferred

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
Amenability to Reclamation						
Effect on public safety and security	Avoidance of safety and security risks to the general public	NA	NA	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Location does not facilitate natural drainage of runoff and seepage to the open pit at closure for site effluent and seepage control at closure 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Location of this alternative on the south side of the Pinewood River prevents passive drainage integration with the remainder of the site for the management of runoff and seepage at closure 	<u>Advantages</u> <ul style="list-style-type: none"> Location facilitates natural drainage of runoff and seepage to the open pit at closure for site effluent and seepage control at closure, especially with respect to mine rock ARD potentials <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Location does not facilitate natural drainage of runoff and seepage to the open pit at closure for site effluent and seepage control at closure, as a portion of the stockpile lies outside of the Pinewood River watershed 	<u>Advantages</u> <ul style="list-style-type: none"> Location facilitates natural drainage of runoff and seepage to the open pit at closure for site effluent and seepage control at closure, especially with respect to mine rock ARD potentials <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Restoration of passive drainage systems	All alternatives are broadly similar in their potential for the restoration of passive drainage, with the exception that drainage from Alternatives C and E, and a portion of D, can be made to drain to the open pit for optimal long term management of and associated ARD seepage	All alternatives are broadly similar in their potential for the restoration of passive drainage, with the exception that drainage from Alternatives C and E, and a portion of D, can be made to drain to the open pit for optimal long term management of and associated ARD seepage	All alternatives are broadly similar in their potential for the restoration of passive drainage, with the exception that drainage from Alternatives C and E, and a portion of D, can be made to drain to the open pit for optimal long term management of and associated ARD seepage	All alternatives are broadly similar in their potential for the restoration of passive drainage, with the exception that drainage from Alternatives C and E, and a portion of D, can be made to drain to the open pit for optimal long term management of and associated ARD seepage	All alternatives are broadly similar in their potential for the restoration of passive drainage, with the exception that drainage from Alternatives C and E, and a portion of D, can be made to drain to the open pit for optimal long term management of and associated ARD seepage

Table O-3: Mine Rock and Overburden

Performance Objective / Criteria	Indicator	Alternative Method				
		Alternative A (Northwest Alternative)	Alternative B (South Alternative)	Alternative C (Clark Creek Basin)	Alternative D (Northeast Alternative)	Alternative E (West Alternative)
	Provision of habitats for vegetation and wildlife species, including SAR	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species
	Provide for an aesthetically pleasing site	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure
Summary evaluation and rating		The main disadvantage to Alternative A regarding closure is the inability to direct passive drainage from this area to the open pit for integrated water management at closure. This is especially important for ARD seepage control. Otherwise the alternatives are broadly similar in their amenability to closure. Summary Rating: Unacceptable	The main disadvantage to Alternative B regarding closure is the inability to direct passive drainage from this area to the open pit for integrated water management at closure. This is especially important for ARD seepage control. Otherwise the alternatives are broadly similar in their amenability to closure. Summary Rating: Unacceptable	Alternative C is very conducive to directing passive drainage and seepage to the open pit at closure, which is very important for long term site ARD management. Summary Rating: Preferred	Major portions, but not all of the drainage and seepage from the Northeast Stockpile alternative can be direct to the open pit at closure. Drainage reporting outside of the Pinewood River would have to be pumped. Summary Rating: Acceptable	Alternative E is well positioned to direct passive drainage and seepage to the open pit at closure. Summary Rating: Preferred
Overall Summary Rating – see text for details		Unacceptable	Unacceptable	Preferred	Unacceptable	Preferred for overburden stockpile and associated Non-Potentially Acid Generating (NPAG) rock

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Cost Effectiveness					
Project financing	Investor attractiveness or risk	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Test work shows that whole ore cyanide recovery provides a 4.5% increase in gold recovery (92% versus 87.5%) compared with flotation concentrate plus cyanidation recovery. At a gold price of \$1,250 per US/ounce, this translates to a life of mine cost differential of \$235M. Labour, reagent and power savings would add an additional approximately \$50M to the cost differential. Whole ore cyanidation is standard industry practice; most existing gold mines in Ontario use this processing method <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Gold recoveries can be improved with addition of an upfront gravity concentration circuit 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Test work shows that gravity concentration is capable of recovering 20 to 30% of the gold hosted in the ore; subsequent intensive cyanide leaching of the gold fraction is 98 to 99% efficient Installation of a gravity concentration circuit is a comparative low cost mill component that more than pays for itself in overall gold recovery efficiencies <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Gravity concentration on its own would be cost prohibitive and could not support mining and capital costs 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Flotation concentration of sulphides allows for easier management of the TMA at closure, as a smaller portion of the tailings (10 to 15%) would require intensive management <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> The life of mine all in cost differential of approximately \$300M for flotation concentration (coupled with cyanide recovery of the flotation concentrate), compared with whole ore cyanidation, is not supportable Flotation concentration on its own would be cost prohibitive, and does not allow for gold recovery 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Gravity concentration coupled with whole ore cyanidation (see text) offers the greatest return on investment, and is industry standard practice <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent with the gravity concentration/whole ore cyanidation combination The gravity concentration/flotation concentration/cyanidation of the two concentrates alternative is not cost effective (represents an approximate -\$300M life of mine cost differential)
Return on investment	Provides a competitive or acceptable return on investment	See above	See above	See above	See above
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Gold recoveries and processing costs are predictable, and do not present a significant risk <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Gold recoveries and processing costs are predictable, and do not present a significant risk <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Gold recoveries and processing costs are predictable, and do not present a significant risk <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Gold recoveries and processing costs are predictable, and do not present a significant risk <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Summary evaluation and rating		Whole ore cyanide recovery provides an approximate \$300M life of mine, positive cost differential compared with flotation concentrate plus cyanidation recovery. Whole ore cyanidation is standard industry practice and presents a low risk. The only disadvantage is that gold recoveries can be improved, at nominal cost, with the addition of a gravity concentration circuit. Summary Rating: Acceptable	Gravity concentration is used to supplement (improve) gold recovery using other methods, but on its own is not economic. Summary Rating: Unacceptable on its own	Flotation concentrate recovery on its own is uneconomic, and even with the adjunct use of gravity concentration and cyanidation of the gravity and flotation concentrates, presents a negative \$300M life of mine cost differential compared with gravity concentration plus whole ore cyanidation. Summary Rating: Unacceptable on its own, or in combination with other methods	Gravity concentration coupled with whole ore cyanidation presents the most attractive investment and financial alternative; and presents low financial and operator risk. Summary Rating: Preferred
Technical Applicability and/or System Integrity and Reliability					
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Whole ore cyanidation is commonly used with predictable success in the industry Gold recovery efficiencies are frequently improved with the addition of a gravity recovery circuit <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Gravity concentrate recovery of free gold is commonly used with predictable success in the industry <u>Disadvantages</u> <ul style="list-style-type: none"> Gravity concentration on its own is only able to recover approximately 20 to 30% of the ore gold content 	<u>Advantages</u> <ul style="list-style-type: none"> Flotation concentrate recovery is commonly used with predictable success in the industry <u>Disadvantages</u> <ul style="list-style-type: none"> The flotation concentrate must be subsequently leached with cyanide to recover the gold content 	<u>Advantages</u> <ul style="list-style-type: none"> Combination cyanidation and non-cyanidation gold recovery technologies are frequently used in the industry <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Summary evaluation and rating		Whole ore cyanidation is commonly used in the industry and typically produces good recoveries. Summary Rating: Preferred	Gravity concentration on its own would only be able to recover approximately 20 to 30% of the available gold. Summary Rating: Unacceptable on its own	Flotation recovery of a gold concentrate requires subsequent cyanidation to recover the gold contained in the concentrate. All of the technologies considered herein are commonly used in the industry. Summary Rating: Unacceptable on its own	Gravity concentration and/or flotation concentration are commonly and effectively used in combination with cyanidation for gold recovery. Summary Rating: Preferred
Ability to Service the Site Effectively					
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption and/or contingencies available	NA	NA	NA	NA
Accessibility	Accessible land base or infrastructure needed to support component development and operation	NA	NA	NA	NA
Summary evaluation and rating		NA	NA	NA	NA
Effects to the Natural Environment					
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Emission rates of GHGs	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Gold recovery using cyanide would be followed by cyanide destruction and heavy metal precipitation using the SO₂/Air process Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver <u>Disadvantages</u> <ul style="list-style-type: none"> Use of cyanide requires the mill effluent to be treated to attain protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver 	<u>Advantages</u> <ul style="list-style-type: none"> The mill final effluent would not have to be treated except for liquid/solids separation, and potentially for neutral soluble metals <u>Disadvantages</u> <ul style="list-style-type: none"> Requires effluent treatment to achieve liquid/solids separation, and potentially for neutral soluble metals 	<u>Advantages</u> <ul style="list-style-type: none"> The mill final effluent would not have to be treated except for liquid/solids separation <u>Disadvantages</u> <ul style="list-style-type: none"> Requires effluent treatment to achieve liquid/solids separation Flotation on its own is not able to recover gold, hence flotation must be used in combination with cyanidation to recover gold, such that cyanide destruction and heavy metal precipitation would still be needed 	<u>Advantages</u> <ul style="list-style-type: none"> Gold recovery using cyanide would be followed by cyanide destruction and heavy metal precipitation using the SO₂/Air process Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver <u>Disadvantages</u> <ul style="list-style-type: none"> Use of cyanide requires the mill effluent to be treated to attain protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver
	Maintenance or provision of fish habitat	See above	See above	See above	See above
	Maintenance of water flows or conditions suitable for fish passage	NA	NA	NA	NA
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA
Effect on wetlands	All indicators	NA	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Potential for noise (or other harm and harassment) related disturbance.	Maintenance or provision of plant dispersion and wildlife movement corridors.	<u>Advantages</u> <ul style="list-style-type: none"> Residual cyanide and associated parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings pond aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings pond aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Residual cyanide and associated aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Sensitivity level of involved species (Endangered, Threatened, Special Concern).	Various local SAR species could potentially encounter tailings ponds associated with the treatment of processing effluents	Various local SAR species could potentially encounter tailings ponds associated with the treatment of processing effluents	Various local SAR species could potentially encounter tailings ponds associated with the treatment of processing effluents	Various local SAR species could potentially encounter tailings ponds associated with the treatment of processing effluents
Area, type and quality of SAR territories or habitat that would be displaced.	Potential for noise (or other harm and harassment) related disturbance	Same as for effect on terrestrial species and habitat	Same as for effect on terrestrial species and habitat	Same as for effect on terrestrial species and habitat	Same as for effect on terrestrial species and habitat
	Maintenance or provision of wildlife movement corridors.	NA	NA	NA	NA
Summary evaluation and rating	Final effluent would be treated to a level consistent with receiving water protection of aquatic life guidelines, or scientifically defensible alternatives, irrespective of the selected ore processing alternative. Effluent aqueous parameter concentrations in tailings ponds would also be maintained below wildlife toxicity thresholds irrespective of the selected ore processing alternative. Summary Rating: Preferred	Final effluent would be treated to a level consistent with receiving water protection of aquatic life guidelines, or scientifically defensible alternatives, irrespective of the selected ore processing alternative. Effluent aqueous parameter concentrations in tailings ponds would also be maintained below wildlife toxicity thresholds irrespective of the selected ore processing alternative. Summary Rating: Preferred	Final effluent would be treated to a level consistent with receiving water protection of aquatic life guidelines, or scientifically defensible alternatives, irrespective of the selected ore processing alternative. Effluent aqueous parameter concentrations in tailings ponds would also be maintained below wildlife toxicity thresholds irrespective of the selected ore processing alternative. Summary Rating: Preferred	Final effluent would be treated to a level consistent with receiving water protection of aquatic life guidelines, or scientifically defensible alternatives, irrespective of the selected ore processing alternative. Effluent aqueous parameter concentrations in tailings ponds would also be maintained below wildlife toxicity thresholds irrespective of the selected ore processing alternative. Summary Rating: Preferred	

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Effects to the Human Environment					
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiving water Residual cyanide and associated aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds No known potential to interfere with area well users <u>Disadvantages</u> <ul style="list-style-type: none"> Perceptions of cyanide use, even if properly treated and managed to protect all aspects of the environment, could be of concern to some residents and potential property purchasers 	<u>Advantages</u> <ul style="list-style-type: none"> No known adverse effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No known adverse effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiving water Residual cyanide and associated aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds No known potential to interfere with area well users <u>Disadvantages</u> <ul style="list-style-type: none"> Perceptions of cyanide use, even if properly treated and managed to protect all aspects of the environment, could be of concern to some residents and potential property purchasers
	Maintenance or improvement of income opportunities	NA	NA	NA	NA
	Maintenance or provision of local access	NA	NA	NA	NA
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
	Non-interference with water well supply systems	<u>Advantages</u> <ul style="list-style-type: none"> No known potential to interfere with area well users <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No known potential to interfere with area well user <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No known potential to interfere with area well users <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No known potential to interfere with area well users <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for general disturbance and adverse affects on aesthetics	NA	NA	NA	NA
	Potential for adverse health and safety effects	See public health and safety criteria	See public health and safety criteria	See public health and safety criteria	See public health and safety criteria
Effect on infrastructure	Maintenance or provision of local and regional access	NA	NA	NA	NA
	Maintenance and reliability of power supply systems	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Maintenance or attainment of the quality of drinking water supply systems	<u>Advantages</u> <ul style="list-style-type: none"> Gold recovery using cyanide would be followed by cyanide destruction and heavy metal precipitation using the SO₂/Air process Tailings pond waters would meet all applicable health related standards <u>Disadvantages</u> <ul style="list-style-type: none"> Use of cyanide requires the mill effluent to be treated to attain applicable environmental and health related standards 	<u>Advantages</u> <ul style="list-style-type: none"> No known potential to cause adverse health related effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No known potential to cause adverse health related effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Gold recovery using cyanide would be followed by cyanide destruction and heavy metal precipitation using the SO₂/Air process Tailings pond waters would meet all applicable health related standards <u>Disadvantages</u> <ul style="list-style-type: none"> Use of cyanide requires the mill effluent to be treated to attain applicable environmental and health related standards
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA	NA
Effect on local businesses	All indicators	NA	NA	NA	NA
Effect on tourism and recreation	All indicators	NA	NA	NA	NA
Effect on agricultural lands	All indicators	NA	NA	NA	NA
Regional economy	All indicators	NA	NA	NA	NA
Effect on government services	All indicators	NA	NA	NA	NA
Effect on resource management objectives	All indicators	NA	NA	NA	NA
Excessive waste materials	All indicators	NA	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	NA	NA	NA	NA
Effects on First Nation reserves and communities, and Métis	All indicators	No known potential for adverse effects	No known potential for adverse effects	No known potential for adverse effects	No known potential for adverse effects
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver Residual cyanide and associated aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds No realistic potential for the bioaccumulation of heavy metals in country foods <u>Disadvantages</u> <ul style="list-style-type: none"> Perceptions of cyanide use, even if properly treated and managed to protect all aspects of the environment, could be of concern to some residents and potential property purchasers 	<u>Advantages</u> <ul style="list-style-type: none"> Final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives Tailings pond aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds No realistic potential for the bioaccumulation of heavy metals in country foods No known adverse effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives Tailings pond aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds No realistic potential for the bioaccumulation of heavy metals in country foods No known adverse effects <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver Residual cyanide and associated aqueous parameter concentrations would be well below wildlife toxicity thresholds, should wildlife land on or drink from tailings ponds No realistic potential for the bioaccumulation of heavy metals in country foods <u>Disadvantages</u> <ul style="list-style-type: none"> Perceptions of cyanide use, even if properly treated and managed to protect all aspects of the environment, could be of concern to some residents and potential property purchasers
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Summary evaluation and rating		Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver, and any associated protection of wildlife and human health standards. There is the potential for adverse perception effects related to cyanide use by local residents and Aboriginal peoples, irrespective of actual risks. Summary Rating: Acceptable	No realistic potential for adverse effects or concerns. Summary Rating: Preferred when technology used on its own	No realistic potential for adverse effects or concerns. Summary Rating: Preferred when technology used on its own	Proposed associated final effluent management would allow attainment of protection of aquatic life guidelines, or scientifically defensible alternatives in the receiver, and any associated protection of wildlife and human health standards. There is the potential for adverse perception effects related to cyanide use by local residents and Aboriginal peoples, irrespective of actual risks. Summary Rating: Acceptable
Amenability to Reclamation					
Effect on public safety and security	All indicators	NA	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> TMA can be closed out to a point where passive management would be capable of generating effluent quality suitable for the protection of receiving water aquatic life <u>Disadvantages</u> <ul style="list-style-type: none"> More extensive reclamation would be required compared with alternatives involving flotation concentration 	<u>Advantages</u> <ul style="list-style-type: none"> TMA can be closed out to a point where passive management would be capable of generating effluent quality suitable for the protection of receiving water aquatic life <u>Disadvantages</u> <ul style="list-style-type: none"> More extensive reclamation would be required compared with alternatives involving flotation concentration 	<u>Advantages</u> <ul style="list-style-type: none"> Flotation concentration of sulphides allows for easier management of the TMA at closure, as a smaller portion of the tailings (10 to 15%) requires intensive management <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> TMA can be closed out to a point where passive management would be capable of generating effluent quality suitable for the protection of receiving water aquatic life If flotation concentrations were to be used as part of combination processing, additional opportunities would be available for tailings management at closure <u>Disadvantages</u> <ul style="list-style-type: none"> More extensive reclamation would be required compared with alternatives involving flotation concentration, if flotation concentration was not part of processing
	Restoration of passive drainage systems	NA	NA	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	NA	NA	NA	NA
Effect on land use	All indicators	NA	NA	NA	NA

Table O-4: Ore Processing

Performance Objective / Criteria	Indicator	Alternative Method			
		Whole Ore Cyanide Recovery	Gravity Recovery	Flotation Concentrate Recovery	Combination of Non-cyanide and Cyanide Recovery
Summary evaluation and rating	Non-segregated tailings can be suitably closed out to effectively manage drainage quality, but use of flotation concentration would provide a greater range of tailings management alternatives, and would improve the economics of TMA closure.	Use of gravity concentration alone would still generate non-segregated tailings as far as ARD and metal leaching potentials are concerned. Closure would therefore be the same as for whole ore cyanidation tailings.	Segregated tailings generated by flotation concentration recovery, either on its own or in combination with other recovery methods, provide a greater range of final closure tailings management options, and improved closure economics.	Non-segregated tailings can be suitably closed out to effectively manage drainage quality, but use of flotation concentration would provide a greater range of tailings management alternatives, and would improve the economics of TMA closure. Further closure opportunities are available for segregated tailings, if flotation concentration is used as part of processing.	
		Summary Rating: Acceptable	Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Preferred
Overall Summary Rating – see text for details		Acceptable	Unacceptable on its own	Unacceptable on its own or in combination with other methods	Preferred when the combination of methods involves gravity recovery coupled with whole ore cyanidation

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
Cost Effectiveness				
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Provides the best and most secure method of effluent treatment with minimal environmental risk, including risks associated with potential TMA catastrophic failure Reduces Project Environmental Assessment (EA) and permitting risk Proven technology Reduced tailings dam storage requirements compared with other options lowering capital and operating costs <u>Disadvantages</u> <ul style="list-style-type: none"> Slightly higher plant operating costs 	<u>Advantages</u> <ul style="list-style-type: none"> Reduced reagent costs <u>Disadvantages</u> <ul style="list-style-type: none"> Higher environmental risk scenario in terms of potential wildlife exposure, long term seepage concerns, and TMA failure mode risks Likely to be viewed as stepping back from the application of best available, economically achievable technologies Requires longer storage times, and hence increased dam containment costs to achieve acceptable environmental performance Greater EA acceptance and permitting risks 	<u>Advantages</u> <ul style="list-style-type: none"> Reduced reagent costs, as natural degradation processes would remove much of the cyanide and metals prior to H₂O₂ chemical treatment <u>Disadvantages</u> <ul style="list-style-type: none"> Higher environmental risk scenario in terms of potential wildlife exposure, long term seepage concerns, and TMA failure mode risks Likely to be viewed as stepping back from the application of best available, economically achievable technologies Greater EA acceptance and permitting risks
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Higher treatment reagent costs likely to be offset by reduced TMA water retention capacity requirements, translating to lower tailings dam costs, especially during early operations Greater operational TMA water management flexibility, translating to lower overall operating costs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Savings in reagent costs, likely to be more than offset by increased dam containment costs, long term seepage management costs, and potential project delays through the EA and permitting processes 	<u>Advantages</u> <ul style="list-style-type: none"> Reduced TMA dam containment requirements, compared with natural degradation on its own, would more than offset treatment reagent costs <u>Disadvantages</u> <ul style="list-style-type: none"> Long term seepage management costs would be comparable to the natural degradation alternative as there would be elevated cyanide and metals concentrations in the tailings pore water
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> Alternative best able to comply with anticipated, stringent final effluent standards Minimizes potential liability costs in the event of a catastrophic tailings dam failure <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Highest risk of non-compliance with final effluent standards Increased potential liability costs in the event of a catastrophic tailings dam failure 	<u>Advantages</u> <ul style="list-style-type: none"> Likely to achieve a higher quality final effluent compared with natural degradation on its own <u>Disadvantages</u> <ul style="list-style-type: none"> Higher risk of non-compliance with final effluent standards compared with SO₂/Air alternative Increased potential liability costs in the event of a catastrophic tailings dam failure

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
Summary evaluation and rating		<p>The SO₂/Air alternative is industry best practice, is cost effective, and presents the lowest overall environmental risk, thereby presenting the greatest likelihood of attaining financial support. Option therefore facilitates a competitive return on investment.</p> <p>Summary Rating: Preferred</p>	<p>Natural degradation on its own, while presenting a technically feasible treatment alternative, carries with it likely additional costs for dam containment/water management that would more than offset any savings in reagent costs associated with other alternatives. Environmental risks associated with this alternative may not be acceptable to financial lenders, or to the public and government regulators, thereby potentially jeopardizing project financing and scheduling.</p> <p>Summary Rating: Unacceptable</p>	<p>The H₂O₂ alternative in combination with natural degradation is capable of generating an acceptable final effluent, but carries with it additional environmental risks which may be less attractive to financial lenders, the general public and regulators, given that other better, financially acceptable alternatives are available.</p> <p>Summary Rating: Acceptable</p>
Technical Applicability and/or System Integrity and Reliability				
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Used increasingly widely within the gold mining industry since the middle 1980's with predictably good success Rendering heavy metals in solid phase, increases metals removal efficiencies in tailings ponds, as solid phase metals adhere to tailings solids in the treated tailings slurry discharged from the mill, providing for more effective precipitate settling compared to that achievable in clear solutions Post-chemical treatment (extended aging in tailings ponds) provides for the effective removal of cyanide destruction breakdown products (cyanate and ammonia) <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Volatilization of cyanide to the atmosphere, with subsequent breakdown therein, limits the generation of cyanide breakdown products (cyanate and ammonia) within the tailings pond <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Natural degradation is only effective for effluents with low concentrations of associated heavy metals, especially nickel; the RRP effluent has low associated metals TMA pore waters would contain increased concentrations of cyanide and heavy metals, contributing to lower quality seepage quality Elevated total cyanide levels to as much as 10-20 mg/L, seasonally, would be expected to occur in tailings ponds, which would pose an increased environmental risk in the event of a tailings dam failure (tailings pond cyanide levels would be below toxicity thresholds for wildlife) 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Volatilization of cyanide to the atmosphere, with subsequent breakdown therein, limits the generation of cyanide breakdown products (cyanate and ammonia) within the tailings pond Use of H₂O₂ after effluent aging in tailings ponds reduces residual cyanide and associated heavy metals to low levels, but typically not to levels achieved with use of SO₂/Air on mill slurry <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> TMA pore waters would contain increased concentrations of cyanide and heavy metals, contributing to lower quality seepage quality Elevated total cyanide levels to as much as 10 to 20 mg/L, seasonally, would be expected to occur in tailings ponds, which would pose an increased environmental risk in the event of a tailings dam failure (tailings pond cyanide levels would be below toxicity thresholds for wildlife)

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA
Summary evaluation and rating		<p>The SO₂/Air alternative is industry best practice, and is likely in combination with further effluent aging to produce the best final effluent quality of the three alternatives, and presents the lowest overall environmental risk. This technology also produces the lowest pore strength cyanide and metal concentrations, thereby optimizing seepage quality.</p> <p>Summary Rating: Preferred</p>	<p>Natural degradation on its own is unlikely to provide as good a final effluent quality as other alternatives considered herein. Tailings ponds will contain higher cyanide and metals concentrations compared with use of cyanide destruction in the mill, thereby increasing environmental risks in the event of a tailings dam failure. Tailings pore space cyanide and metals concentrations would be elevated, leading to greater concern over seepage quality.</p> <p>Summary Rating: Unacceptable</p>	<p>Natural degradation in combination with H₂O₂ is unlikely to provide as good a final effluent quality as SO₂/Air treatment on slurry within the mill, other tailings ponds will contain higher cyanide and metals concentrations compared with use of cyanide destruction in the mill, thereby increasing environmental risks in the event of a tailings dam failure. Tailings pore space cyanide and metals concentrations would be elevated, leading to greater concern over seepage quality.</p> <p>Summary Rating: Acceptable</p>
Ability to Service the Site Effectively				
Service	All indicators	NA	NA	NA
Accessibility	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA
Effects to the Natural Environment				
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Removes any potential for free cyanide emissions to the atmosphere <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Would result in minor release of free cyanide to the atmosphere, through volatilization, but concentrations would be expected to be within O. Reg. 419/05 standards 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Would result in minor release of free cyanide to the atmosphere, through volatilization, but concentrations would be expected to be within O. Reg. 419/05 standards
	Emission rates of GHGs	NA	NA	NA

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> SO₂/Air together with extended subsequent effluent aging in TMA ponds is the best alternative able to comply with anticipated, stringent final effluent standards required to attain or maintain receiving water protection of aquatic life standards, or scientifically defensible alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Given sufficiently long retention times in TMA aging ponds, may be able to provide acceptable final effluent quality suitable for achieving protection of aquatic life standards in the receiving water (would need to be demonstrated by more extensive testing) <u>Disadvantages</u> <ul style="list-style-type: none"> Highest risk of non-compliance with final effluent standards 	<u>Advantages</u> <ul style="list-style-type: none"> Likely to achieve a higher quality final effluent compared with natural degradation on its own <u>Disadvantages</u> <ul style="list-style-type: none"> Higher risk of non-compliance with final effluent standards compared with SO₂/Air alternative
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> Alternative best able to comply with anticipated, stringent final effluent standards required to attain or maintain protection of aquatic life receiving water standards <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for post treatment effluent aging in TMA ponds necessitates seasonal effluent storage and release, which may have an effect on receiving water seasonal flow rates 	<u>Advantages</u> <ul style="list-style-type: none"> May be able to provide acceptable final effluent quality suitable for achieving protection of aquatic life standards in the receiving water <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for extended effluent aging in TMA ponds necessitates seasonal effluent storage and release, which would have a greater effect on receiving water seasonal flow rates compared with the SO₂/Air alternative 	<u>Advantages</u> <ul style="list-style-type: none"> Better able to provide acceptable final effluent quality, suitable for achieving protection of aquatic life standards in the receiving water, compared with natural degradation on its own <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for pre-treatment effluent aging in TMA ponds necessitates seasonal effluent storage and release, which may have an effect on receiving water seasonal flow rates, similar to that of the SO₂/Air alternative
	Maintenance of water flows or conditions suitable for fish passage	<u>Advantages</u> <ul style="list-style-type: none"> Alternative provides the greatest flexibility for water management <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for post treatment effluent aging in TMA ponds necessitates seasonal effluent storage and release, as per the above 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Least flexible water management alternative Requirement for extended effluent aging in TMA ponds necessitates seasonal effluent storage and release, as per the above 	<u>Advantages</u> <ul style="list-style-type: none"> Water management flexibility greater than with natural degradation on its own <u>Disadvantages</u> <ul style="list-style-type: none"> Requirement for pre-treatment effluent aging in TMA ponds necessitates seasonal effluent storage and release, as per the above

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
	Maintenance of groundwater flows, levels and quality	<u>Advantages</u> <ul style="list-style-type: none"> Alternative able to provide optimal seepage effluent quality Increased groundwater recharge associated with head increase in TMA ponds <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Increased groundwater recharge associated with head increase in TMA ponds <u>Disadvantages</u> <ul style="list-style-type: none"> Higher strength cyanide and metals concentrations in tailings pore water provides a potential groundwater contamination source 	<u>Advantages</u> <ul style="list-style-type: none"> Increased groundwater recharge associated with head increase in TMA ponds <u>Disadvantages</u> <ul style="list-style-type: none"> Higher strength cyanide and metals concentrations in tailings pore water provides a potential groundwater contamination source
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> Tailings solids and water storage requirements are similar for all alternatives in terms of wetlands displaced by TMA development <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for "Advantages" above 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings solids and water storage requirements are similar for all alternatives in terms of wetlands displaced by TMA development <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for "Advantages" above 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings solids and water storage requirements are similar for all alternatives in terms of wetlands displaced by TMA development <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for "Advantages" above
	Maintenance of wetland connectivity	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> Tailings solids and water storage requirements are similar for all alternatives in terms of terrestrial habitat that would be displaced <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for "Advantages" above 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings solids and water storage requirements are similar for all alternatives in terms of terrestrial habitat that would be displaced <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for "Advantages" above 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings solids and water storage requirements are similar for all alternatives in terms of terrestrial habitat that would be displaced <u>Disadvantages</u> <ul style="list-style-type: none"> Same as for "Advantages" above
	Potential for noise (or other harm and harassment) related disturbance	NA	NA	NA

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA	NA
Effect on SAR	All indicators	NA	NA	NA
Summary evaluation and rating		SO ₂ /Air together with extended subsequent effluent aging in TMA ponds is the best alternative able to comply with anticipated final effluent standards required to attain or maintain receiving water protection of aquatic life standards, or scientifically defensible alternatives. This alternative also provides optimal seepage quality, and is the lowest risk option in the event of a tailings dam failure. Summary Rating: Preferred	Alternative carries the highest risk in its ability to achieve acceptable final effluent and receiving water quality, and also presents a higher risk for seepage contamination, and downstream receiving water effects in the event of a tailings dam failure. Associated low probability of regulatory approval, as other, better alternatives are readily available. Summary Rating: Unacceptable	Alternative carries a higher risk in its ability to achieve acceptable final effluent and receiving water quality, compared with the SO ₂ /Air alternative. Risks associated with seepage management and downstream receiving water effects in the event of a tailings dam failure are similar to the natural degradation alternative. Summary Rating: Acceptable
Effects to the Human Environment				
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> Use of in plant cyanide destruction could improve resident perception of the overall RRP <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Having tailings ponds with elevated cyanide concentrations beyond those that could be achieved with use of more favourable technologies (such as SO₂/Air) could be viewed negatively by local property owners, irrespective of actual risk 	<u>Advantages</u> <ul style="list-style-type: none"> Likely to be viewed by local residents as better than natural degradation on its own, but not as favourable as in plant cyanide destruction <u>Disadvantages</u> <ul style="list-style-type: none"> Having tailings ponds with elevated cyanide concentrations beyond those that could be achieved with use of more favourable technologies (such as SO₂/Air) could be viewed negatively by local property owners, irrespective of actual risk
	Maintenance or improvement of income opportunities	NA	NA	NA
	Maintenance or provision of local access	NA	NA	NA

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	NA	NA	NA
	Non-interference with water well supply systems	<u>Advantages</u> <ul style="list-style-type: none"> In-plant cyanide destruction and heavy metal precipitation will optimize TMA seepage quality There is no credible risk of well contamination from TMA seepage with any alternative, but perceptions would likely be most favourable with the SO₂/Air alternative <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Natural degradation does not address tailings pore water quality, and hence seepage quality; but even so there is no credible threat to local, off property well systems with any of the alternatives 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Natural degradation, followed by H₂O₂ treatment, does not address tailings pore water quality, and hence seepage quality; but even so there is no credible threat to local, off property well systems with any of the alternatives
	Potential for general disturbance and adverse affects on aesthetics	NA	NA	NA
	Potential for adverse health and safety effects	See public health and safety criteria	See public health and safety criteria	See public health and safety criteria
Effect on infrastructure	All indicators	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Removes any potential for free cyanide emissions to the atmosphere <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Would result in minor release of free cyanide to the atmosphere, but concentrations would be well below health threshold risks 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Would result in minor release of free cyanide to the atmosphere, but concentrations would be well below health threshold risks

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
	Maintenance or attainment of the quality of drinking water supply systems	<u>Advantages</u> <ul style="list-style-type: none"> Alternative able to provide optimal seepage effluent quality <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Higher strength cyanide and metals concentrations in tailings pore water provides a potential groundwater contamination source; health risk is minimal 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Higher strength cyanide and metals concentrations in tailings pore water provides a potential groundwater contamination source; health risk is minimal
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA
Effect on local businesses	All indicators	NA	NA	NA
Effect on tourism and recreation	All indicators	NA	NA	NA
Effect on agricultural lands	All indicators	NA	NA	NA
Regional economy	All indicators	NA	NA	NA
Effect on government services	All indicators	NA	NA	NA
Effect on resource management objectives	All indicators	NA	NA	NA
Excessive waste materials	All indicators	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	NA	NA	NA

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
Effects on First Nation reserves and communities, and Métis	All indicators	NA	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Alternative provides highest level of environmental protection <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Likely provides an acceptable level of environmental protection for routine operations <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary downstream toxicity effects to aquatic life could occur in the event of the tailings dam failure 	<u>Advantages</u> <ul style="list-style-type: none"> Provides an acceptable level of environmental protection for routine operations <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary downstream toxicity effects to aquatic life could occur in the event of the tailings dam failure
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA
Summary evaluation and rating		SO ₂ /Air together with extended subsequent effluent aging in TMA ponds provides the highest level of environmental protection, and is the lowest risk option in the event of a tailings dam failure, and is therefore likely to be perceived as the safest alternative, irrespective of actual risk. Summary Rating: Preferred	Risks to the human environment with this alternative are considered to be low and easily manageable, but the perceived increase in risk compared with the SO ₂ /Air alternative is likely to be important. Summary Rating: Acceptable	Risks to the human environment with this alternative are considered to be low and easily manageable, but the perceived increase in risk compared with the SO ₂ /Air alternative is likely to be important. Summary Rating: Acceptable
Amenability to Reclamation				
Effect on public safety and security	All indicators	NA	NA	NA

Table O-5: Process Plant Effluent

Performance Objective / Criteria	Indicator	Alternative Method		
		In-Plant SO ₂ /Air Treatment plus Natural Degradation	Natural Degradation	Natural Degradation plus H ₂ O ₂ Treatment
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Alternative provides for optimal tailings pore space parameter concentrations and seepage quality <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings pore space parameter concentrations will be elevated, potentially resulting in long term seepage management requirements 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings pore space parameter concentrations will be elevated, potentially resulting in long term seepage management requirements
	Restoration of passive drainage systems	NA	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	NA	NA	NA
Effect on land use	All indicators	NA	NA	NA
Summary evaluation and rating		The only related closure risk relates to tailings seepage quality. The SO ₂ /Air in plant treatment system reduces tailings pore space parameters to low levels, such that long term seepage management for effluent quality control would not be required. Summary Rating: Preferred	Tailings pore space parameter concentrations will be elevated, potentially resulting in long term seepage management requirements. Summary Rating: Acceptable	Tailings pore space parameter concentrations will be elevated, potentially resulting in long term seepage management requirements. Summary Rating: Acceptable
Overall Summary Rating – see text for details		Preferred	Unacceptable	Acceptable

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Cost Effectiveness					
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Potentially more supportable by EC and DFO as alternative does not overprint aquatic habitat / waters frequented by fish <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings dam fill volume calculated at 18.7 million cubic metres (Mm³), or 4.6 Mm³ greater than for Alternative B, translating to an approximate cost differential of \$46M at \$10 per cubic metres (m³) RRR does not have access to all required lands to support this alternative Alternative would overprint a portion of Highway 600 is very close to the hamlet of Dearlock and therefore may meet some resistance 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas Located on lands to which RRR holds surface rights Natural containment available along substantial portions of the dam alignment, resulting in lower dam fill volume (14.1 Mm³) compared to other alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> Dam structure required around much of the perimeter Portions of the alternative overprint aquatic habitat / waters frequented by fish, such that Schedule 2 MMER listing is required for a portion of the basin 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas Very close to the mill complex <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings dam fill volume calculated at 25.9 Mm³, or 11.8 Mm³ greater than for Alternative B, translating to an approximate cost differential of \$118M at \$10/m³ RRR does not have access to all required lands Portions of the alternative overprint aquatic habitat / waters frequented by fish, such that Schedule 2 MMER listing is required for the basin Schedule 2 listing would delay construction of a water management pond, and hence the Project by approximately 8 months 	<u>Advantages</u> <ul style="list-style-type: none"> Potentially more supportable by EC and DFO as alternative does not overprint aquatic habitat / waters frequented by fish <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings dam fill volume calculated at 32.7 Mm³, or 18.6 Mm³ greater than for Alternative B, translating to an approximate cost differential of \$186M at \$10/m³ RRR does not have access to all required lands Alternative is very close to the hamlet of Black Hawk and therefore likely to meet resistance Higher risk associated with potential tailings line leaks or failure, as tailings line would cross Pinewood River

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings dam fill volume of 18.7 Mm³ is higher than for Alternative B making this option uneconomic RRR does not have access to all required lands to support this alternative Disruption of Highway 600 would further complicate provision of alternate local access 	<u>Advantages</u> <ul style="list-style-type: none"> Located on lands to which RRR holds surface rights Natural containment available along substantial portions of the dam alignment, resulting in lower tailings dam fill volumes (total requirement 14.1 Mm³), and consequent overall lower costs compared with other alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> Greater distance from mill compared with Alternative C 	<u>Advantages</u> <ul style="list-style-type: none"> Very close to the mill complex, so shorter tailings and reclaim lines <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings dam fill volume of 25.9 Mm³ is higher than for Alternatives A and B making this option uneconomic RRR does not have access to all required lands 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Tailings dam fill volume of 32.7 Mm³ is higher than for all other alternatives making this option uneconomic RRR does not have access to all required lands
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing not required <u>Disadvantages</u> <ul style="list-style-type: none"> Questionable as to whether or not RRR could obtain land tenure rights to support this alternative, which increases risk of Project delays from affected property owners 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas Located on lands to which RRR holds surface rights Larger basin catchment to help provide a passive water cover over ARD tailings at closure A portion of the basin can be developed without waiting for MMER Schedule 2 listing <u>Disadvantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing is required for full basin development, which poses potential for construction delays 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas Very close to the mill complex so reduced potential for tailings line leaks or failure <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not have access to all required lands MMER Schedule 2 listing is required, which would likely delay the RRP for approximately 8 months 	<u>Advantages</u> <ul style="list-style-type: none"> MMER Schedule 2 listing not required <u>Disadvantages</u> <ul style="list-style-type: none"> Questionable as to whether or not RRR could obtain land tenure rights to support this alternative, which increases risk of Project delays Potential conflict with Black Hawk residents Tailings line would have to cross the Pinewood River

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Summary evaluation and rating		<p>The Northwest alternative is potentially more supportable by EC and DFO, but tailings dam fill volumes are considerably higher than for Alternative B, making this option uneconomic. The total cost differential compared with Alternative B is estimated at \$60M taking into account the extra dam volume, re-aligning of Highway 600, additional property acquisition, and longer tailings lines. Also, RRR does not have access to all required lands to support this alternative. Close proximity to the hamlet of Dearlock is likely to be problematic.</p> <p>Summary Rating: Unacceptable</p>	<p>The Loslo Creek Basin alternative avoids populated areas, and is located on lands to which RRR holds surface rights. This alternative provides reasonable natural containment, and is the least costly alternative to construct. The larger surface catchment area provides more assurance of a continued water cover following mine closure to better manage ARD potential. The only negative aspect of this alternative is the need for MMER Schedule 2 listing for a portion of the basin.</p> <p>Summary Rating: Preferred</p>	<p>The principal advantage of the Clark Creek Basin alternative is close proximity to the mill, and avoidance of populated areas. This is nonetheless uneconomic. RRR also lacks current access to all required lands. Expected delays related to MMER Schedule 2 listing are problematic for Project schedule.</p> <p>Summary Rating: Unacceptable</p>	<p>Alternative D is the most costly alternative, and also carries with it uncertain land tenure, and high risk of public concern (close proximity to the hamlet of Black Hawk). Having a tailings line that crosses the Pinewood River is also undesirable.</p> <p>Summary Rating: Unacceptable</p>
Technical Applicability and/or System Integrity and Reliability					
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Predictively effective • Lower average dam height compared with Alternatives C and D, but not B <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Predictively effective • Lower average dam height compared with other alternatives <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Predictively effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Higher average dam height compared with Alternatives A and B 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Predictively effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Highest average dam height of the four alternatives
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA
Summary evaluation and rating		<p>Lower average dam height compared with Alternatives C and D, but not B</p> <p>Summary Rating: Preferred</p>	<p>Alternative is predictably effective with low risk.</p> <p>Summary Rating: Preferred</p>	<p>Higher average dam heights associated with this alternative provide some added risk, all other factors being equal.</p> <p>Summary Rating: Acceptable</p>	<p>Higher average dam heights associated with this alternative provide some added risk, all other factors being equal.</p> <p>Summary Rating: Acceptable</p>

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Ability to Service the Site Effectively					
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	<u>Advantages</u> <ul style="list-style-type: none"> Does not require MMER Schedule 2 listing <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for construction delays associated with property acquisition and possible public opposition 	<u>Advantages</u> <ul style="list-style-type: none"> Not subject to property acquisition limitations <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for construction delays associated with MMER Schedule 2 listing 	<u>Advantages</u> <ul style="list-style-type: none"> Shorter tailings lines <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for construction delays associated with MMER Schedule 2 listing Potential for construction delays associated with property acquisition 	<u>Advantages</u> <ul style="list-style-type: none"> Does not require MMER Schedule 2 listing <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for construction delays associated with property acquisition and possible public opposition Strong potential for tailings capacity constraints
Accessibility	Accessible land base or infrastructure needed to support component development or operation	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to portions of lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not have access to all required lands required to support this alternative Close proximity to the hamlet of Dearlock may be problematic Further disruption to Highway 600 access Increasing distance from mill 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to all lands required to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to portions of lands needed to support this alternative Close proximity to mill <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not have access to all required lands required to support this alternative 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to portions of lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> RRR does not have access to the majority of lands required to support this alternative Close proximity to the hamlet of Black Hawk is likely to be problematic Located on the far side of the Pinewood River
Summary evaluation and rating		The principal advantage of this alternative is that it does not require MMER Schedule 2 listing, which removes some uncertainty regarding timelines. This advantage is outweighed by a lack of ownership of all lands required to support this alternative; close proximity to the hamlet of Dearlock, and further disruption to Highway 600.	The principal advantage of this alternative is that RRR holds title to all lands required to develop this option. The only limitation to development is the need for MMER Schedule 2 listing for the portions of the site, which has the potential to delay production start up if Schedule 2 listing is not achieved in a timely manner. The contingency is to delay mill start up.	RRR does not hold surface rights to all lands required to develop this alternative, and an MMER Schedule 2 listing is required to develop the site. The principal advantage of the site is close proximity to the mill. It is not possible to develop any portions of this site without Schedule 2 listing. This would result in serious and unacceptable scheduling delays.	The principal advantage of this alternative is that it does not require MMER Schedule 2 listing, which removes some uncertainty regarding timelines. This advantage is outweighed by tailings capacity constraints, lack of ownership of all lands required to support this alternative; close proximity to the hamlet of Black Hawk, and location on the opposite side of the Pinewood River.
		Summary Rating: Unacceptable	Summary Rating: Acceptable	Summary Rating: Unacceptable	Summary Rating: Unacceptable

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Effects to the Natural Environment					
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Air emissions would be minor and not material to meeting site wide applicable standards <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Air emissions would be minor and not material to meeting site wide applicable standards <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Air emissions would be minor and not material to meeting site wide applicable standards <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Air emissions would be minor and not material to meeting site wide applicable standards <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Emission rates of GHGs	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> TMA effluents can be managed to meet receiving water guidelines for the protection of aquatic life, or scientifically defensible alternatives Geography of the site allows for incorporation of a wetland polishing system Closer proximity to Pinewood River discharge point downstream of McCallum Creek <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> TMA effluents can be managed to meet receiving water guidelines for the protection of aquatic life, or scientifically defensible alternatives Geography of the site allows incorporation of a wetland polishing system Closer proximity to Pinewood River discharge point downstream of McCallum Creek <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Modest potential for effluent ponding / retention <u>Disadvantages</u> <ul style="list-style-type: none"> Meeting receiving water guidelines for the protection of aquatic life, or scientifically defensible alternatives would be more challenging for this site compared with Alternatives A and B because of more limited space for effluent storage No potential for wetland polishing 	<u>Advantages</u> <ul style="list-style-type: none"> Geography of the site allows for incorporation of a wetland polishing system <u>Disadvantages</u> <ul style="list-style-type: none"> Meeting receiving water guidelines for the protection of aquatic life, or scientifically defensible alternatives would be very challenging for this site, and possibly not attainable, because of limited space for effluent storage Geography of the site allows for incorporation of a wetland polishing system

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> No direct loss of fish habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Loslo and Marr Creeks supports a small fish population, but are too small to provide habitat for larger fish species <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative results in the displacement of a major portion of the Loslo Creek and Marr Creek systems, such that fish habitat compensation would be required in accordance with <i>Fisheries Act</i> requirements 	<u>Advantages</u> <ul style="list-style-type: none"> Clark Creek supports a small fish population, but is too small to provide habitat for larger fish species <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative results in the displacement of a major portion of the Clark Creek system, such that fish habitat compensation would be required in accordance with <i>Fisheries Act</i> requirements 	<u>Advantages</u> <ul style="list-style-type: none"> No direct loss of fish habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance of water flows or conditions suitable for fish passage	<u>Advantages</u> <ul style="list-style-type: none"> Effluent storage and release can be managed so as to maintain conditions suitable for fish passage in the Pinewood River <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Effluent storage and release can be managed so as to maintain conditions suitable for fish passage in the Pinewood River <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Effluent storage and release with this alternative, so as to maintain conditions suitable for fish passage in the Pinewood River during low flow conditions, may be more challenging because of difficulties in providing adequate effluent retention and aging to achieve acceptable final effluent quality 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Effluent storage and release with this alternative, so as to maintain conditions suitable for fish passage in the Pinewood River during low flow conditions, would be more challenging because of difficulties in providing adequate effluent retention and aging to achieve acceptable final effluent quality
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> No displacement of wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Loslo Creek Basin alternative would result in the displacement of substantive areas of Beaver meadow wetlands 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Clark Creek Basin alternative would result in the displacement of substantive areas of Beaver meadow wetlands 	<u>Advantages</u> <ul style="list-style-type: none"> No displacement of wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance of wetland connectivity	NA	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 700 ha of terrestrial habitat 	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 900 ha of terrestrial habitat 	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 850 ha of terrestrial habitat 	<u>Advantages</u> <ul style="list-style-type: none"> All habitats that would be displaced are extensive and commonplace in the NLSA <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 600 ha of terrestrial habitat
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbance during construction 	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbance during construction 	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbance during construction 	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbance during construction
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent or known <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent or known
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> TMA boundary overprints only one known Whip-poor-will territory, and two Bobolink territories <u>Disadvantages</u> <ul style="list-style-type: none"> Limited overprinting of Threatened level Whip-poor-will and Bobolink territories 	<u>Advantages</u> <ul style="list-style-type: none"> TMA boundary has been defined to exclude all known Whip-poor-will territories <u>Disadvantages</u> <ul style="list-style-type: none"> TMA overprints areas with Bobolink territories and areas where Barn Swallow have been observed 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> TMA overprints areas with Whip-poor-will and Bobolink territories, and areas where Barn Swallow have been observed 	<u>Advantages</u> <ul style="list-style-type: none"> TMA boundary excludes known Whip-poor-will and Bobolink territories, and avoids known areas used by Barn Swallow <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> Limited potential for disturbance during construction phase <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited potential for disturbance during construction phase <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited potential for disturbance during construction phase <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited potential for disturbance during construction phase <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of wildlife movement corridors	NA	NA	NA	NA
Summary evaluation and rating		Development of this alternative would not overprint aquatic habitat or wetlands, and would have limited effect on isolated SAR territories. TMA effluents could be effectively managed to protect receiving water quality and to maintain receiver low flow conditions. Summary Rating: Preferred	This alternative offers the best case for effluent management and receiving water protection; and avoids know Whip-poor-will territories. The major limitations are overprinting aquatic habitats and wetlands associated with the Loslo Creek and Marr Creek systems. Summary Rating: Acceptable	Reduced potentials for longer term effluent aging within the TMA would make it very uncertain as to whether or not compliance could be achieved with anticipated MOE approval conditions demonstrating protection of the receiver (Pinewood River). The Pinewood River has limited assimilation potential during major portions of the year. Displacement of SAR species (Whip-poor-will and Bobolink) would also occur. Summary Rating: Unacceptable	Reduced potentials for longer term effluent aging within the TMA would make it very uncertain as to whether or not compliance could be achieved with anticipated MOE approval conditions demonstrating protection of the receiver (Pinewood River). Otherwise there are no major limitations to this alternative from the perspective of environmental protection. Summary Rating: Unacceptable

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Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Effects to the Human Environment					
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Location is immediately beside the hamlet of Dearlock, and would require purchase of all Dearlock residences 	<u>Advantages</u> <ul style="list-style-type: none"> Reasonably remote from local residents <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Reasonably remote from local residents <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Location is immediately beside the hamlet of Black Hawk and would require purchase of all Black Hawk residences; which is not reasonably feasible
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would be cost prohibitive for the RRP (estimated at approximately \$60M greater than proposed alternative); hence potential employment opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> Development of the Loslo Creek Basin alternative would be capable of supporting Project development, and hence the provision of employment and business opportunities linked to the RRP <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of Alternative C would be cost prohibitive for the RRP (estimated at \$118M+ greater than proposed alternative); hence potential employment opportunities associated with the Project would not exist MMER Schedule 2 listing requirements needed to develop a water inventory pond to support mill start up would likely delay the overall Project by approximately 8 months, risking the overall Project schedule and financing 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the South Alternative would be cost prohibitive for the RRP (estimated at \$186M+ greater than proposed alternative); hence potential employment opportunities associated with the Project would not exist

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Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
	Maintenance or provision of local access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would dislocate a substantial portion of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative does not interfere with any existing road access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along Clark Road would be severed, the effects of which would be limited 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the South Alternative would block the existing Tait Road access, which in combination with the dislocation of Highway 600 through the core mine site area would make it difficult to develop a reasonable access alternative around the overall RRP site
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> Tailings dam development would be classed as construction which is exempt from noise by-law guidelines <u>Disadvantages</u> <ul style="list-style-type: none"> Proximity to Dearlock would provide an irritation to local residents, irrespective of the applicability of the guidelines to construction activities 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings dam development would be classed as construction which is exempt from noise by-law guidelines <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings dam development would be classed as construction which is exempt from noise by-law guidelines <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Tailings dam development would be classed as construction which is exempt from noise by-law guidelines <u>Disadvantages</u> <ul style="list-style-type: none"> Proximity to Black Hawk would provide an irritation to local residents, irrespective of the applicability of the guidelines to construction activities
	Non-interference with water well supply systems	NA	NA	NA	NA
	Potential for general disturbance and adverse affects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Dearlock residents would be located very close to the TMA 	<u>Advantages</u> <ul style="list-style-type: none"> The Loslo Creek Basin alternative is furthest removed from area residents <u>Disadvantages</u> <ul style="list-style-type: none"> One residence for which RRR does not have a purchase agreement is located within about 1.2 km of the TMA; and there is a camp / cabin within about 700 metres (m) of the TMA 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative has reasonable setbacks from nearby residences which RRR has not acquired, or has an option to acquire <u>Disadvantages</u> <ul style="list-style-type: none"> Three residences are located within approximately 1 km of the TMA alternative 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Black Hawk residents would be located very close to the TMA

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
	Potential for adverse health and safety effects	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, cyanide would be destroyed in the mill before the mill effluent is discharged to the TMA <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, cyanide would be destroyed in the mill before the mill effluent is discharged to the TMA <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, cyanide would be destroyed in the mill before the mill effluent is discharged to the TMA <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, cyanide would be destroyed in the mill before the mill effluent is discharged to the TMA <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would dislocate a substantial portion of Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative does not interfere with any existing road access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Access along Clark Road would be severed, the effects of which would be limited 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the South Alternative would block the existing Tait Road access, which in combination with the dislocation of Highway 600 through the core mine site area would make it difficult to develop a reasonable access alternative around the overall RRP site
	Maintenance and reliability of power supply systems	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA	NA

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Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would be cost prohibitive for the RRP; hence potential employment opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> Development of the Loslo Creek Basin alternative would be capable of supporting Project development, and hence the provision of employment and business opportunities linked to the RRP <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of Alternative C would be cost prohibitive for the RRP; hence potential employment opportunities associated with the Project would not exist Project delays and financial risks linked to MMER Schedule 2 listing requirements – see above 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of Alternative D would be cost prohibitive for the RRP; hence potential employment opportunities associated with the Project would not exist
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> All options will result in some loss of access to lands otherwise used for hunting, and other outdoor uses
Effect on agricultural lands	Potential loss of agricultural lands	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 172 ha of agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 110 ha of agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 64 ha of agricultural lands 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative would displace the least amount of agricultural land <u>Disadvantages</u> <ul style="list-style-type: none"> Development of this alternative would result in the displacement of 35 ha of agricultural lands
	Potential loss of agricultural productivity	NA	NA	NA	NA

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Northwest Alternative would be cost prohibitive for the RRP; hence potential employment opportunities associated with the Project would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> Development of the Loslo Creek Basin alternative would be capable of supporting Project development, and hence the provision of employment and business opportunities linked to the RRP <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the Alternative C would be cost prohibitive for the RRP; hence potential employment opportunities associated with the Project would not exist Project delays and financial risks linked to MMER Schedule 2 listing requirements – see above 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Development of the South Alternative would be cost prohibitive for the RRP; hence potential employment opportunities associated with the Project would not exist
Effect on government services	Maintenance or improvement of the capacity of existing health, education and family support services	NA	NA	NA	NA
Effect on resource management objectives	Consistency with established and planned resource management objectives	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Mineral development is consistent with MNR Crown land use policies for the area The Township of Chapple is a resource based economy and mine development is recognized in the official plan for its potential contribution to the economic and social well being of Township residents, and is a highly anticipated component of the Township's official plan <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project
Excessive waste materials	Limiting the generation of unnecessary waste materials	No distinction between alternatives	No distinction between alternatives	No distinction between alternatives	No distinction between alternatives

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damaged, or relocation cannot reasonably be avoided	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Alternative would affect several identified built heritage and cultural heritage landscape areas • Will be visible from nearby roads 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Alternative would affect up to two identified built heritage and cultural heritage landscape areas • Will be visible from nearby roads 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Alternative would affect several identified built heritage and cultural heritage landscape areas • Will be visible from nearby roads 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Alternative would affect several identified built heritage and cultural heritage landscape areas • Will be visible from nearby roads
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject limitations of Company capacity and community members' personal choice)	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Development of the Northwest Alternative would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project, and which could accrue to First Nations, would not exist 	<u>Advantages</u> <ul style="list-style-type: none"> • Development of the Loslo Creek Basin alternative would be capable of supporting Project development, and hence the provision of employment and business opportunities, which could accrue to First Nations, linked to the RRP <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Development of the Clark Creek Basin alternative would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project, and which could accrue to First Nations, would not exist • Project delays and financial risks linked to MMER Schedule 2 listing requirements – see above 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Development of the South Alternative would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project, and which could accrue to First Nations, would not exist

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms of protection / preservation supported by local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
Summary evaluation and rating		<p>Development of the Northwest Alternative would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project would not exist. Undue disturbance would also occur to residents of Dearlock. Access along Highway 600 would also be further disrupted.</p> <p>Summary Rating: Unacceptable</p>	<p>The Loslo Creek Basin alternative is the most cost effective alternative that would support Project development and associated employment and business opportunities. The potential for conflicts with local residents is limited.</p> <p>Summary Rating: Preferred</p>	<p>Development of the Alternative C would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project would not exist.</p> <p>MMER Schedule 2 listings requirements are likely to delay the overall Project by approximately 8 months and could risk Project financing which is unacceptable.</p> <p>Summary Rating: Unacceptable</p>	<p>Development of the South Alternative would be cost prohibitive for the RRP; hence potential employment and business opportunities associated with the Project would not exist. Undue disturbance would also occur to residents of Black Hawk. Development of the South Alternative would also block the existing Tait Road access, which in combination with the dislocation of Highway 600 through the core mine site area would make it difficult to develop a reasonable access alternative around the overall RRP site</p> <p>Summary Rating: Unacceptable</p>
Amenability to Reclamation					
Effect on public safety and security	Avoidance of safety and security risks to the general public	NA	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Basin geometry facilitates development of a water cover over a substantive portion of the TMA footprint at closure, supported by a perimeter low permeability overburden / overburden cover to prevent development of ARD <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Basin geometry facilitates development of a water cover over a substantive portion of the TMA footprint at closure, supported by a perimeter low permeability overburden / overburden cover to prevent development of ARD <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Basin geometry facilitates development of a more limited a water cover at closure to compared with Alternatives A and B 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Basin geometry facilitates development of a more limited a water cover at closure to compared with Alternatives A, B and C

Table O-6: Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northwest Alternative)	Alternative B (Loslo Creek Basin)	Alternative C (Clark Creek Basin)	Alternative D (South Alternative)
	Restoration of passive drainage systems	<u>Advantages</u> <ul style="list-style-type: none"> ARD potentials can be controlled through development of a water cover and a perimeter overburden cover, and the TMA would be configured to drain passively at closure <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> ARD potentials can be controlled through development of a water cover and a perimeter overburden cover, and the TMA would be configured to drain passively at closure <u>Disadvantages</u> <ul style="list-style-type: none"> The major part of the Loslo Creek system would be permanently lost 	<u>Advantages</u> <ul style="list-style-type: none"> ARD potentials can be controlled through development of a water cover, and perimeter overburden cover, and the TMA would be configured to drain passively at closure <u>Disadvantages</u> <ul style="list-style-type: none"> The major part of the Clark Creek system would be permanently lost 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Provision of habitats for vegetation and wildlife species, including SAR	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure	All alternatives are broadly similar in their potential for development of habitats for vegetation and wildlife species at closure
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	Opportunities for productive land uses associated with all alternatives, at closure, are essentially limited to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are essentially limited to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are essentially limited to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are essentially limited to the development of habitats for vegetation and wildlife species
	Provide for an aesthetically pleasing site	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure
Summary evaluation and rating		Alternative A is well suited to development of an extensive water cover at closure, supported by a perimeter overburden / soil cover, for management of ARD potentials. Otherwise there are few differences between the alternatives relative to amenability to reclamation. Summary Rating: Preferred	Alternative B is well suited to development of an extensive water cover at closure, supported by a perimeter overburden / soil cover, for management of ARD potentials. Otherwise there are few differences between the alternatives relative to amenability to reclamation. Summary Rating: Preferred	Close out of the South Alternative for ARD management would be more difficult in terms of ARD management, compared with Alternatives A and B. Summary Rating: Acceptable	Close out of the South Alternative for ARD management would be more difficult in terms of ARD management, compared with Alternatives A and B. Summary Rating: Acceptable
Overall Summary Rating – see text for details		Unacceptable	Preferred	Unacceptable	Unacceptable

Table O-7: Buildings, Facilities and Areas

Positioning of the process plant complex and explosives facility are primarily constrained by geographic factors (proximity to the open pit and bedrock foundation conditions, in the case of the process plant complex) and regulatory factors (regulated separation distances in the *Quantity Distance Principles User's Manual*, in the case of the explosives facility). Please see Section 6.9 of the Final EA Report for a full discussion.

Performance Objective / Criteria	Indicator	Alternative Method	
		Process Plant Complex	Explosives Facility
Cost Effectiveness			
Project financing	Investor attractiveness or risk	NA	NA
Return on investment	Provides a competitive or acceptable return on investment	NA	NA
Financial risk	All indicators	NA	NA
Summary evaluation and rating		NA	NA
Technical Applicability and/or System Integrity and Reliability			
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	NA	NA
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA
Summary evaluation and rating		NA	NA
Ability to Service the Site Effectively			
Service	All indicators	NA	NA
Accessibility	Accessible land base or infrastructure needed to support component development and operation	There are no suitable bedrock outcrop (or subcrop) zones within close proximity to the north, west or south sides of the open pit. The closest such bedrock zones consist of small, isolated bedrock outcrop areas located approximately 1,200 m to the south-southeast and south-southwest of the open pit on the opposite side of the Pinewood River. These locations are too far from the pit, will require haul road crossings over the Pinewood River and will result in site drainage complications. Positioning the process plant complex on the east side of the open pit is therefore the only reasonable alternative.	The current proposed location of the explosives plant and magazine storage area is due east of the tailings management area and is well removed from the principal RRP work site areas and from external residences for safety purposes, but sufficiently close to the open pit and underground workings so as not to involve the undue transport of manufactured product.
Summary evaluation and rating		NA	NA

Table O-7: Buildings, Facilities and Areas

Performance Objective / Criteria	Indicator	Alternative Method	
		Process Plant Complex	Explosives Facility
Effects to the Natural Environment			
Effect on air quality and climate	All indicators	NA	NA
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA
	Maintenance or provision of fish habitat	NA	NA
	Maintenance of water flows or conditions suitable for fish passage	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	NA	NA
	Maintenance of wetland connectivity	Preferred positioning of the process plant complex will require the re-routing of a minor drainage to West Creek.	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	NA	NA
	Potential for noise (or other harm and harassment) related disturbance	NA	NA
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	NA	NA
	Area, type and quality of SAR territories or habitat that would be displaced	There is no reasonable alternative position for the process plant complex that will allow avoidance of known whip-poor-will breeding territories.	The proposed location avoids interference with known whip-poor-will territories.
	Potential for noise (or other harm and harassment) related disturbance	NA	NA
	Maintenance or provision of wildlife movement corridors	NA	NA
Summary evaluation and rating		NA	NA

Table O-7: Buildings, Facilities and Areas

Performance Objective / Criteria	Indicator	Alternative Method	
		Process Plant Complex	Explosives Facility
Effects to the Human Environment			
Effect on local residents	All indicators	Positioning the process plant complex on either of the small rock outcrop areas to the south of the open pit will not allow compliance to be achieved with MOE sound guidelines at Black Hawk residences.	The only available alternative for siting the explosives manufacturing facilities is a location west of the overburden stockpile. This location is almost twice as far from the open pit and is located within approximately 2 km of Dearlock, and is considered unacceptable.
Effect on infrastructure	All indicators	NA	NA
Public health and safety	All indicators	NA	Existing explosives manufacturing facilities are located in Winnipeg, Manitoba and Thunder Bay, Ontario. Given the quantity of explosives required for the RRP, the transportation of the explosives required for the RRP will increase the truck traffic on the existing roads, therefore increasing the risk of traffic accidents and collisions with wildlife. In addition, the transport of explosives in large quantities is neither practical nor safe in comparison to manufacturing explosives onsite, from materials readily transportable individually.
Effect on local businesses	All indicators	NA	NA
Effect on tourism and recreation	All indicators	NA	NA
Effect on agricultural lands	All indicators	NA	NA
Regional economy	All indicators	NA	NA
Effect on government services	All indicators	NA	NA
Effect on resource management objectives	All indicators	NA	NA
Excessive waste materials	All indicators	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	NA	NA
Effects on First Nation reserves and communities, and Métis	All indicators	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA
Effects on traditional land use	All indicators	NA	NA
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA
Summary evaluation and rating		NA	NA
Amenability to Reclamation			
Effect on public safety and security	All indicators	NA	NA
Effect on environmental health and sustainability	All indicators	NA	NA

Table O-7: Buildings, Facilities and Areas

Performance Objective / Criteria	Indicator	Alternative Method	
		Process Plant Complex	Explosives Facility
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	NA	NA
	Provides for an aesthetically pleasing site	NA	NA
Summary evaluation and rating		NA	NA
Overall Summary Rating – see text for details		Preferred	Preferred

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Cost Effectiveness						
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Mine rock will be produced as a mining waste Avoids the need for additional quarry sites Production timing meets most Project needs <u>Disadvantages</u> <ul style="list-style-type: none"> Costs would be incurred for crushing Sulphide content may preclude use for some types of concrete manufacture 	<u>Advantages</u> <ul style="list-style-type: none"> Low sulphide rock better suited for some types of concrete manufacture Close proximity to locations where product is needed (adjacent to Highway 600 and East Access Road; and to mill site) Rock can be taken from sites that would be overprinted by mineral waste stockpiles <u>Disadvantages</u> <ul style="list-style-type: none"> Costs would be incurred for crushing; Additional blasting beyond that required for mining 	<u>Advantages</u> <ul style="list-style-type: none"> RRR aggregate pit is owned by RRR, and is in close proximity to the open pit Materials would require screening, but not crushing <u>Disadvantages</u> <ul style="list-style-type: none"> RRR aggregate pit is located within a known Whip-poor-will territory concentration area that would require a SAR permit 	<u>Advantages</u> <p>Would fill a critical project need if onsite resources are not available</p> <u>Disadvantages</u> <ul style="list-style-type: none"> Longer haul distances 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Likely longer haul distances, depending on location
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Mine rock will be produced as a mining waste Avoids the need for additional quarry sites Production timing meets most Project needs <u>Disadvantages</u> <ul style="list-style-type: none"> Costs would be incurred for crushing Sulphide content may preclude use for some types of concrete manufacture 	<u>Advantages</u> <ul style="list-style-type: none"> Low sulphide rock better suited for some types of concrete manufacture Close proximity to locations where product is needed (adjacent to Highway 600 and East Access Road; and to mill site) <u>Disadvantages</u> <ul style="list-style-type: none"> Costs would be incurred for crushing; Additional blasting beyond that required for mining 	<u>Advantages</u> <ul style="list-style-type: none"> RRR pit is owned by RRR, and is in close proximity to the open pit Materials would require screening, but not crushing <u>Disadvantages</u> <ul style="list-style-type: none"> RRR aggregate pit is located within a known Whip-poor-will territory concentration area that would require a SAR permit 	<u>Advantages</u> <ul style="list-style-type: none"> Would fill a critical project need if onsite resources are not available <u>Disadvantages</u> <ul style="list-style-type: none"> Longer haul distances 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Likely longer haul distances, depending on location

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> No foreseeable risks <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No foreseeable risks so long as sensitive Whip-poor-will areas are avoided; and selected sites are sufficiently removed from area residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent so long as sensitive Whip-poor-will areas are avoided; and selected sites are sufficiently removed from area residences 	<u>Advantages</u> <ul style="list-style-type: none"> RRR aggregate pit is owned by RRR, and is in close proximity to the open pit <u>Disadvantages</u> <ul style="list-style-type: none"> RRR aggregate pit is located within a known Whip-poor-will territory that would require a SAR permit 	<u>Advantages</u> <ul style="list-style-type: none"> No foreseeable risk if sourced from a licensed facility <u>Disadvantages</u> <ul style="list-style-type: none"> Haulage would likely be required along public roads resulting in possible public concern and possible associated EA delays given that other alternatives are available 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Haulage would likely be required along public roads, as well as potential disturbance to local residents from blasting, depending on location, both of which could generate public concern and possible associated EA delays given that other alternatives are available
Summary evaluation and rating		<p>NPAG mine rock will be available as a mining waste suitable for most aggregate functions, which would avoid the need for additional quarry sites, except possibly for some types of concrete manufacture, where quarried rock may be more suitable. Costs would be incurred for crushing to produce fine aggregate.</p> <p>Summary Rating: Preferred (for coarse aggregate, and for fine aggregate where local sand and gravel sources are not available)</p>	<p>Quarried rock with a low sulphide content may be better suited for some types of concrete manufacture, and could be taken from sites that would be later overprinted by mineral waste stockpiles, and therefore not contribute to an expanded mine footprint.</p> <p>Local quarried rock would be better located for the construction of Highway 600 and the East Access Road.</p> <p>Summary Rating: Preferred (for some types of concrete manufacture, and for Highway 600 and East Access Road construction)</p>	<p>The local RRR aggregate pit is owned by RRR, and is located in close proximity to the open pit. Materials would require screening, but not crushing. The only disadvantage to this alternative is that known Whip-poor-will territories overlap with the gravel pit. A SAR permit would therefore be required, with such permit being required in any event for this area, because of proximity to other RRP infrastructure.</p> <p>Summary Rating: Acceptable</p>	<p>There are no apparent advantages to this alternative, unless the resource is not available onsite.</p> <p>Costs would be higher because of longer haul distances, and there is greater potential for public concern resulting from use of public roads for haulage, and hence a potential for EA delays.</p> <p>Summary Rating: Preferred (if resource is not available onsite)</p>	<p>There are no apparent advantages to this alternative, unless the resource is not available onsite.</p> <p>Costs would be higher because of longer haul distances, and there is greater potential for public concern resulting from use of public roads for haulage, and blasting disturbance, and hence a potential for EA delays.</p> <p>Summary Rating: Acceptable (if resource is not available onsite)</p>

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Technical Applicability and/or System Integrity and Reliability						
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Predictively effective <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Predictively effective <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Predictively effective <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Predictively effective <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Predictively effective <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA	NA
Summary evaluation and rating		All alternatives are comparable and are preferred for this performance objective. Summary Rating: Preferred	All alternatives are comparable and are preferred for this performance objective. Summary Rating: Preferred	All alternatives are comparable and are preferred for this performance objective. Summary Rating: Preferred	All alternatives are comparable and are preferred for this performance objective. Summary Rating: Preferred	All alternatives are comparable and are preferred for this performance objective. Summary Rating: Preferred
Ability to Service the Site Effectively						
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	<u>Advantages</u> <ul style="list-style-type: none"> No restrictions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No restrictions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No restrictions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No restrictions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No restrictions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Accessibility	Accessible land base or infrastructure needed to support component development or operation	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> RRR holds surface rights to lands needed to support this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Surface rights would have to be obtained to support this alternative; or contracts would be required with outside suppliers 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Surface rights would have to be obtained to support this alternative; or contracts would be required with outside suppliers

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Summary evaluation and rating		There are no supply or access restrictions associated with this alternative. Summary Rating: Preferred	There are no supply or access restrictions associated with this alternative. Summary Rating: Preferred	There are no supply or access restrictions associated with this alternative. Summary Rating: Preferred	Potential options are accessible; but surface rights or contracts with existing operators would be required Summary Rating: Acceptable	Potential options are accessible; but surface rights or contracts with existing operators would be required Summary Rating: Acceptable
Effects to the Natural Environment						
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> • Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> • Crushing will generate increased air emissions	<u>Advantages</u> • Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> • Crushing will generate increased air emissions	<u>Advantages</u> • Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards • Blasting and crushing not required <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards • Blasting and crushing not required <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Mitigation measures can likely be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> • Crushing will generate increased air emissions
	Emission rates of GHGs	<u>Advantages</u> • Reduced haulage distance <u>Disadvantages</u> • Crushing requires power, which translates to increased GHG emissions	<u>Advantages</u> • Reduced haulage distance <u>Disadvantages</u> • Crushing requires power, which translates to increased GHG emissions	<u>Advantages</u> • Reduced haulage distance • Crushing not required <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Crushing not required <u>Disadvantages</u> • Increased haul distance translates to increased GHG emissions	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Increased haul distance and crushing translate to increased GHG emissions
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> • No apparent limitations as rock would be blasted in any event to support mining <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Quarry discharge water, if any, would have ammonia residuals, from the use of blasting agents, which would require management	<u>Advantages</u> • No limitations <u>Disadvantages</u> • None apparent	<u>Advantages</u> • No limitations <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Quarry discharge water, if any, would have ammonia residuals, from the use of blasting agents, which would require management
	Maintenance or provision of fish habitat	NA	NA	NA	NA	NA

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
	Maintenance of water flows or conditions suitable for fish passage	NA	NA	NA	NA	NA
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA	NA
Effect on wetlands	All indicators	NA	NA	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> No effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited disturbance, which is easily rehabilitated <u>Disadvantages</u> <ul style="list-style-type: none"> Some minor alteration of habitat for quarries used to develop Highway 600 and the East Access Road 	<u>Advantages</u> <ul style="list-style-type: none"> Existing disturbed site, adjacent to other proposed RRP site infrastructure <u>Disadvantages</u> <ul style="list-style-type: none"> Location of a known small cluster of Whip-poor-will of territories 	<u>Advantages</u> <ul style="list-style-type: none"> Existing sites already disturbed <u>Disadvantages</u> <ul style="list-style-type: none"> Some minor alteration of habitat will likely occur 	<u>Advantages</u> <ul style="list-style-type: none"> Limited habitat disturbance, which can be rehabilitated <u>Disadvantages</u> <ul style="list-style-type: none"> Some minor alteration of habitat
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> No appreciable additional disturbance <u>Disadvantages</u> <ul style="list-style-type: none"> Minor additional dust emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary, or intermittent <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary, or intermittent <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA	NA	NA	NA
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> No effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited disturbance, which is easily rehabilitated <u>Disadvantages</u> <ul style="list-style-type: none"> Some minor alteration of habitat for quarries used to develop Highway 600 and East Access Road 	<u>Advantages</u> <ul style="list-style-type: none"> Existing disturbed site, adjacent to other proposed RRP site infrastructure <u>Disadvantages</u> <ul style="list-style-type: none"> Location of a known small cluster of Whip-poor-will of territories 	<u>Advantages</u> <ul style="list-style-type: none"> Existing sites already disturbed <u>Disadvantages</u> <ul style="list-style-type: none"> Some minor alteration of habitat will likely occur 	<u>Advantages</u> <ul style="list-style-type: none"> Limited habitat disturbance, which can be rehabilitated <u>Disadvantages</u> <ul style="list-style-type: none"> Some minor alteration of habitat
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> No appreciable additional disturbance <u>Disadvantages</u> <ul style="list-style-type: none"> Minor additional dust emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary, or intermittent <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary, or intermittent <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Activity would be minor and temporary <u>Disadvantages</u> <ul style="list-style-type: none"> Minor dust and noise emissions
	Maintenance or provision of wildlife movement corridors	NA	NA	NA	NA	NA
Summary evaluation and rating		Additional air emissions would be minor and temporary / intermittent and associated solely with crushing. No adverse habitat effects. Summary Rating: Preferred	Air emissions would be minor and temporary / intermittent and associated with both blasting and crushing. Some additional habitat disturbance, but would be temporary and easily rehabilitated. Summary Rating: Preferred	Air emissions would be minor and temporary / intermittent. Some additional disturbance would occur to Whip-poor-will, requiring a SAR permit. Summary Rating: Acceptable	Air emissions would be minor and temporary / intermittent. Increased GHG emissions associated with longer haul distance. Minor habitat disturbance would be rehabilitated. Summary Rating: Acceptable	Air emissions would be minor and temporary and associated with both blasting and crushing. Increased GHG emissions associated with longer haul distance. Some additional habitat disturbance, but would be temporary and easily rehabilitated. Summary Rating: Acceptable
Effects to the Human Environment						
Effect on local residents	Maintenance of property values	NA	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> Temporary / intermittent activity <u>Disadvantages</u> <ul style="list-style-type: none"> Possible influence of increased truck traffic 	<u>Advantages</u> <ul style="list-style-type: none"> Temporary activity <u>Disadvantages</u> <ul style="list-style-type: none"> Possible influence of increased truck traffic

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Maintenance or improvement of income opportunities		NA	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> Possible increased opportunity if contracted to an existing supplier <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Possible increased opportunity if contracted to an existing supplier <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Maintenance or provision of local access	The purpose of the Highway 600 re-alignment and constructing the East Access Road is to maintain or provide local access. This aspect is common to all alternatives.					
Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> Currently factored into site activity profile <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary effect Remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary, or intermittent effect Remote from local residences Currently factored into site activity profile <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary, or intermittent effect Likely remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary effect Likely remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	
Non-interference with water well supply systems	NA	NA	NA	NA	NA	
Potential for general disturbance and adverse affects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary effect Remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary effect Remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary, or intermittent effect Remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary, or intermittent effect Likely remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Limited and temporary effect Likely remote from local residences <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	
Potential for adverse health and safety effects	NA	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased traffic on local roads increases potential for traffic accidents 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased traffic on local roads increases potential for traffic accidents 	

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Effect on infrastructure	Maintenance or provision of local and regional access	The purpose of the Highway 600 re-alignment and constructing the East Access Road is to maintain or provide local access. This aspect is common to all alternatives.				
	Maintenance and reliability of power supply systems	NA	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Crushing will generate increased air emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Crushing will generate increased air emissions 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards Blasting and crushing not required <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can be put in place to achieve compliance with air quality point of impingement standards Blasting and crushing not required <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Mitigation measures can likely be put in place to achieve compliance with air quality point of impingement standards <u>Disadvantages</u> <ul style="list-style-type: none"> Crushing will generate increased air emissions
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased traffic on local roads increases potential for traffic accidents 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased traffic on local roads increases potential for traffic accidents

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
	Maintenance or provision of health services	NA	NA	NA	NA	NA
Effect on local businesses	Maintenance or improvement of business opportunities	NA	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> Possible increased opportunity if contracted to an existing supplier <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Possible increased opportunity if contracted to an existing supplier <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	NA	NA	NA	NA	NA
Effect on agricultural lands	Potential loss of agricultural lands	NA	NA	NA	NA	NA
	Potential loss of agricultural productivity	NA	NA	NA	NA	NA
Regional economy	Maintenance or improvement of the regional economy	NA	NA	NA	NA	NA
Effect on government services	Maintenance or improvement of the capacity of existing health, education and family support services	NA	NA	NA	NA	NA

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Effect on resource management objectives	Consistency with established and planned resource management objectives	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Aggregate extraction is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Aggregate extraction is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Project is predominantly on privately-held lands Aggregate extraction is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> May affect other potential land uses for the life of the project 	<u>Advantages</u> <ul style="list-style-type: none"> Aggregate extraction is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent if sourced from an existing facility 	<u>Advantages</u> <ul style="list-style-type: none"> Aggregate extraction is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent if sourced from an existing facility
Excessive waste materials	Limiting the generation of unnecessary waste materials	<u>Advantages</u> <ul style="list-style-type: none"> Utilizing mining wastes for construction material reduces Project generated wastes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	No distinction between remaining alternatives	No distinction between remaining alternatives	No distinction between remaining alternatives	No distinction between remaining alternatives
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damaged, or relocation cannot reasonably be avoided	<u>Advantages</u> <ul style="list-style-type: none"> No effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative may affect identified built heritage and cultural heritage landscape areas 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative may affect identified built heritage and cultural heritage landscape areas 	No potential areas have been identified or assessed.	No potential areas have been identified or assessed.
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject limitations of Company capacity and community members' personal choice)	NA	NA	NA	NA	NA

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms of protection / preservation supported by local First Nations and Métis	NA	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided, or otherwise suitably catalogued and managed in accordance with Provincial and First Nation / Métis requirements and commitments Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No anticipated adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements, or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Summary evaluation and rating		Developing aggregate from NPAG mine rock would have no appreciable adverse effect on the human environment, as all activities would take place on the mine site proper, using mine rock that requires removal in any event to support mining. There would be no offsite traffic association with this alternative. Summary Rating: Preferred	Use of this alternative would include the development of small offsite quarries to support Highway 600 and East Access Road construction. Selected quarry sites would be well removed from area residents, and any potential disturbance would be short term (a few months). Any onsite quarry development would not affect the off property human environment. Summary Rating: Preferred	Utilization of the existing RRR aggregate pit would have no appreciable adverse effect on the human environment, as all activities would take place on the mine site proper. Summary Rating: Preferred	The development and/or use of offsite sand and gravel sources would result in increased traffic on local roads, with associated potentials for increased levels of general disturbance and possible increased frequency of traffic accidents. On the positive side there would be potential opportunities for local employment and business associated with supplying aggregate. Use would be temporary / intermittent. Summary Rating: Acceptable	The development and/or use of offsite quarry sources would result in increased traffic on local roads, with associated potentials for increased levels of general disturbance and possible increased frequency of traffic accidents. On the positive side there would be potential opportunities for local employment and business associated with supplying aggregate. Use would be short term (mine construction phase). Summary Rating: Acceptable
Amenability to Reclamation						
Effect on public safety and security	Avoidance of safety and security risks to the general public	NA	NA	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA	NA

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
	Restoration of passive drainage systems	NA	NA	NA	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Quarry sites would be localized and would be rehabilitated to provide wildlife habitat including habitat for SAR <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Aggregate pit is existing, and would be rehabilitated to provide wildlife habitat including habitat for SAR <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Aggregate pit(s) would be rehabilitated to provide wildlife habitat including habitat for SAR; unless owned by others who would continue to operate independent of RRP needs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Quarry(s) would be rehabilitated to provide wildlife habitat including habitat for SAR; unless owned by others who would continue to operate independent of RRP needs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	NA	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species	Opportunities for productive land uses associated with all alternatives, at closure, are limited mainly to the development of habitats for vegetation and wildlife species
	Provide for an aesthetically pleasing site	NA	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure	All alternatives are broadly similar in their potential to develop an aesthetically pleasing site at closure
Summary evaluation and rating		Use of this alternative has no closure implications other than a small reduction in remaining NPAG mine rock wastes at the end of the mine life. Summary Rating: Preferred	Small quarry sites developed in association with this alternative would be rehabilitated to provide wildlife habitat, including habitat for SAR. Summary Rating: Preferred	The RRR aggregate pit would be rehabilitated to provide wildlife habitat, including habitat for SAR. Summary Rating: Preferred	Aggregate sites developed in association with this alternative would be rehabilitated to provide wildlife habitat, including habitat for SAR; unless owned by others and retained in operation. Summary Rating: Preferred	Quarry sites developed in association with this alternative would be rehabilitated to provide wildlife habitat, including habitat for SAR; unless owned by others and retained in operation. Summary Rating: Preferred

Table O-8: Aggregates

Performance Objective / Criteria	Indicator	Alternative Method				
		NPAG Mine Rock	Project Lands Quarry Sources	Project Lands Sand and Gravel Sources	Off Property Sand and Gravel Sources	Off Property Quarry Sources
Overall Summary Rating – see text for details		Preferred (for coarse aggregate, and for fine aggregate where local sand and gravel sources are not available)	Preferred (for some types of concrete manufacture, and for Highway 600 and East Access Road construction)	Acceptable	Acceptable	Acceptable

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Cost Effectiveness					
Project financing	Investor attractiveness or risk	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Water supply is an essential part of proposed operations, and hence a focus for investor confidence. The Pinewood River, on its own, or in combination with other water supply sources, has the potential to meet RRP water supply needs, when used in combination with extensive site water recycle and storage Close proximity to the RRP reduces water supply infrastructure needs and associated costs and risks No anticipated conflicts with other water users <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> The Pinewood River is a modest sized system which exhibits extremes in flow patterns, making it an unreliable year round source, thereby necessitating considerable onsite water storage capacity 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Runoff from site drainages (Clark, Marr, Loslo and West Creeks) requires capture and management, in whole or in part, for water quality management, so use of this same water for process and other site needs yields greater efficiencies compared with use of other sources Runoff from site drainages is adequate for RRP water supply needs No anticipated conflicts with other water users <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Site drainages exhibit extremes in flow patterns, making these drainages an unreliable year round source, necessitating considerable onsite water storage capacity The capture of site drainages will be subject to permitting timeline constraints because of the need for MMER Schedule 2 listings, an alternate start up water supply alternative is therefore required 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Area lakes having the capacity to provide for site water needs are largely limited to Off and Burditt Lakes, respectively located 12 and 17 km northeast of the RRP plant site Road access to these lakes is available <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Both lakes support a number of cottages and other recreational facilities, which would likely make permitting difficult, and potentially also lead to project delays Off Lake is located 20 km away by road, and Burditt Lake is located 25 km away by road, leading to increased infrastructure costs compared with other alternatives 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Groundwater has the potential to provide for limited, interim potable water needs, and therefore could potentially form part of an integrated water supply system <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Groundwater supplies are too small to provide a major water source for the RRP

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> The Pinewood River is in close proximity to the site, thereby limiting infrastructure costs for this alternative Pipeline and road access infrastructure to the Pinewood River are required in any event for treated effluent discharge to the Pinewood River <u>Disadvantages</u> <ul style="list-style-type: none"> Once site drainage catchments are fully permitted and developed, water supply from the Pinewood River would not be required 	<u>Advantages</u> <ul style="list-style-type: none"> Capture and management of runoff from site drainages is required in any event for TMA development and to meet Provincial and Federal site effluent management requirements, so there would be no appreciable added infrastructure costs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Road access to both lakes is currently available Water supplies are adequate for RRP needs <u>Disadvantages</u> <ul style="list-style-type: none"> Infrastructure costs for developing the Off Lake / Burditt Lake alternative would be greater than for other alternatives yielding a poor return on investment Potential for substantive EA/permitting delays because of cottage and resort interests 	<u>Advantages</u> <ul style="list-style-type: none"> Water supply would be adequate for short term potable need only <u>Disadvantages</u> <ul style="list-style-type: none"> Inadequate supply for substantive water demands
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> Alternative able to provide for water supply needs when coupled with extensive water recycle and storage capacity <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative able to provide for water supply needs when coupled with extensive water recycle and storage capacity <u>Disadvantages</u> <ul style="list-style-type: none"> Delay expected in source availability due to MMER Schedule 2 listing requirements 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative able to provide for water supply needs when coupled with extensive water recycle and storage capacity <u>Disadvantages</u> <ul style="list-style-type: none"> High risk of EA and permitting delays because of cottage and resort interests 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Major supply constraints

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Summary evaluation and rating		<p>The Pinewood River is capable of supplying RRP water supply needs, and does not present a conflict with other users. But once site drainage capture is fully developed (as required for other purposes), water taking from the Pinewood River would become redundant to maintain long term site water inventories. Use of the Pinewood River as an initial short term measure to build the necessary water inventory to support mill start up is essential to RRP economics and scheduling.</p> <p>Summary Rating: Preferred in the short term</p>	<p>The collection of runoff from site drainages (Clark, Marr, Loslo and West Creeks) is required for TMA development and site effluent management, in any event, such that only limited additional infrastructure would be required to develop these sources for site water needs. Site drainages in combination with water storage and recycle are capable of supplying all site water needs, except in preparation for start up because of MMER Schedule 2 listing requirements. Alternative does not present a conflict with other users.</p> <p>Summary Rating: Preferred</p>	<p>Infrastructure associated with this alternative would be more expensive to develop compared with other alternatives. There is also significant risk for EA and permitting delays because of potential conflicts with cottage owner and recreational interests.</p> <p>Summary Rating: Unacceptable</p>	<p>Groundwater supplies are inadequate to provide for mine water supply needs, except possibly for the short term supply of potable water, prior to open pit development. Once open pit development occurs, groundwater sources that could provide for site potable water needs would no longer be available.</p> <p>Summary Rating: Unacceptable except as a short term limited source</p>
Technical Applicability and/or System Integrity and Reliability					
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Seasonal use of river supply water is a common industry practice <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Use of site runoff water to provide for or augment site water supplies is common industry practice <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Use of lakes to provide for mine water need is common practice <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Groundwater extraction for water supply is an industry standard practice, where supplies are adequate <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA
Summary evaluation and rating		<p>Seasonal use of river supply water is a common industry practice.</p> <p>Summary Rating: Preferred</p>	<p>Use of site runoff water to provide for or augment site water supplies is common industry practice.</p> <p>Summary Rating: Preferred</p>	<p>Use of lakes to provide for mine water needs is common practice.</p> <p>Summary Rating: Preferred</p>	<p>Groundwater extraction for water supply is an industry standard practice, where supplies are adequate.</p> <p>Summary Rating: Preferred</p>

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Ability to Service the Site Effectively					
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption and/or contingencies available	<u>Advantages</u> <ul style="list-style-type: none"> Water supply is adequate to meet supply needs when used in combination with extensive site water recycle <u>Disadvantages</u> <ul style="list-style-type: none"> The Pinewood River is a modest sized system which exhibits extremes in flow patterns, making it an unreliable year round source, thereby necessitating considerable onsite water storage capacity 	<u>Advantages</u> <ul style="list-style-type: none"> Water supply is adequate to meet supply needs when used in combination with extensive site water recycle <u>Disadvantages</u> <ul style="list-style-type: none"> The Pinewood River is a modest sized system which exhibits extremes in flow patterns, making it an unreliable year round source, thereby necessitating considerable onsite water storage capacity 	<u>Advantages</u> <ul style="list-style-type: none"> Water supply is adequate to meet supply needs <u>Disadvantages</u> <ul style="list-style-type: none"> Significant risk for EA and permitting delays (or non-approval) because of potential conflicts with cottage owner and recreational interests 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, except as a short term supply for potable water use only <u>Disadvantages</u> <ul style="list-style-type: none"> Inadequate supply for main water uses
Accessibility	Accessible land base or infrastructure needed to support component development and operation	<u>Advantages</u> <ul style="list-style-type: none"> Access is primarily available along Township right-of-ways (ROWs) <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> All water supply components are within the proposed mine site area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Access is primarily available along Township roadways <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Water supply components are within the proposed mine site area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		<p>The Pinewood River is capable of supplying RRP water supply needs. But once site drainage capture is fully developed (as required for other purposes), water taking from the Pinewood River would become redundant. Use of the Pinewood River as an initial short term measure to build the necessary water inventory to support mill start up is essential to RRP economics and scheduling.</p> <p>Summary Rating: Preferred in the short term</p>	<p>Site drainages in combination with water storage and recycle are capable of supplying all site water needs, except in preparation for start up because of MMER Schedule 2 listing requirements, where an alternative water supply would be needed to build an initial water inventory to support the start up of mill operations.</p> <p>Summary Rating: Preferred</p>	<p>Area lakes (Burditt and Off) are capable of supplying RRP water supply needs. But once site drainage capture is fully developed (as required for other purposes), water taking from these sources would become redundant except possibly as a contingency water source to maintain long term site water inventories. However, there is a significant risk for EA and permitting delays (or non-approval) because of potential conflicts with cottage owner and recreational interests.</p> <p>Summary Rating: Unacceptable</p>	<p>Groundwater supplies are inadequate to provide for mine water supply needs, except possibly for the short term supply of potable water, prior to open pit development. Once open pit development occurs, groundwater sources that could provide for site potable water needs would no longer be available.</p> <p>Summary Rating: Unacceptable except as a short term limited source</p>

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Effects to the Natural Environment					
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Emission rates of GHGs	<u>Advantages</u> <ul style="list-style-type: none"> Lower power demand compared with area lakes alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Increased power demand compared with collection of site drainage waters which is required in any event 	<u>Advantages</u> <ul style="list-style-type: none"> Lowest power demand requirement since water collection is required in any event <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased power demand compared with collection of site drainage waters which is required in any event 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Major supply constraints

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Water taking from the Pinewood River in preparation for mill start up would be confined to not more than 20% of the spring flow, and 15% of the flow during other portions of the non-winter period, as measured at the McCallum Creek inflow Water takings to support mill start up would be of short duration – approximately 2 years <u>Disadvantages</u> <ul style="list-style-type: none"> A 20% water taking would result in a calculated average 12.5% reduction in spring river water levels, and a 15% water taking would result in a calculated average 9.3% reduction in non-spring open water river water levels, as measured at the McCallum Creek inflow 	<u>Advantages</u> <ul style="list-style-type: none"> Capture and management of runoff from site drainages, and the displacement of such drainages, is required in any event for TMA and stockpile development, and to meet Provincial and Federal site effluent management requirements, so there would be no added adverse effect on fish and fish habitat <u>Disadvantages</u> <ul style="list-style-type: none"> Capture of runoff from site drainages would disrupt approximately 25 square kilometers (km²) of drainage area reporting to the Pinewood River, and would result in an annualized flow loss of approximately 7,500 cubic metres per day to the Pinewood River as a result of water losses to tailings voids and mill evaporative processes 	<u>Advantages</u> <ul style="list-style-type: none"> Flow reductions due to water taking could be seasonally offset to avoid, or reduce, water takings during low flow periods by treating the lakes as reservoirs Water takings would have minimal effects on lake water levels <u>Disadvantages</u> <ul style="list-style-type: none"> Capture of RRP site drainage water is required for water management and treatment purposes in any event, so the benefits of introducing additional water from other systems, which would diminish flows in those other systems, is not advantageous 	NA
	Maintenance or provision of fish habitat	See above	See above	See above	See above

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
	Maintenance of water flows or conditions suitable for fish passage	<u>Advantages</u> <ul style="list-style-type: none"> Water taking would be restricted during low flow periods so as not to disrupt the potential for fish movement in the Pinewood River <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Clark, Marr and Loslo Creeks would be overprinted by TMA and stockpile development, such that fish passage considerations would no longer apply to these creeks West Creek will be impounded to provide a freshwater reservoir, but the impoundment could be constructed so as to allow for intermittent fish passage throughout West Creek during higher flow conditions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent as flow disruption will result from TMA and stockpile development in any case 	<u>Advantages</u> <ul style="list-style-type: none"> Water taking can be timed to avoid adverse effects to fish passage <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA
	Maintenance of groundwater flows, levels and quality	NA – local surface and groundwater systems are not functionally connected as far as fish habitat is concerned	NA – local surface and groundwater systems are not functionally connected as far as fish habitat is concerned	NA – local surface and groundwater systems are not functionally connected as far as fish habitat is concerned	NA – local surface and groundwater systems are not functionally connected as far as fish habitat is concerned
Effect on wetlands	All indicators	NA	NA	NA	NA
Effect on terrestrial species and habitat	All indicators	NA	NA	NA	NA
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Snapping Turtles were observed at three locations within the NLSA. The species is listed as Special Concern.	Snapping Turtles were observed at three locations within the NLSA. The species is listed as Special Concern.	Snapping Turtles were observed at three locations within the NLSA. The species is listed as Special Concern.	Snapping Turtles were observed at three locations within the NLSA and undoubtedly occur more broadly, but sparingly in the NRSA. The species is listed as Special Concern

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> Water taking associated with the Pinewood River is not expected to appreciably alter associated riverine habitats, or wildlife movements associated with the Pinewood River corridor One Snapping Turtle was observed on the Pinewood River upstream of the proposed development site, but no nests were observed No territories are likely to be displaced <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Water taking associated with site drainages would not be expected to appreciably alter site drainage watersheds, beyond alterations associated with open pit, TMA and stockpile development One Snapping Turtle was observed within the site drainages area The potential for disruption to Snapping Turtle nest sites is low, as suitable nesting habitats are principally confined to roadbeds <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No changes to aquatic habitats are anticipated with this alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Pipeline construction to access the lakes would follow along existing roadsides, where there would be a small potential to disrupt turtle nest sites during the summer months. 	NA
	Potential for noise (or other harm and harassment) related disturbance	NA	NA	NA	NA
	Maintenance or provision of wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> The Pinewood River corridor would not be altered by water taking activities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The West Creek diversion would allow for a riverine wildlife passage corridor through the RRP site Only limited water would be taken from West Creek Other local creek systems would be displaced by site developments, irrespective of water taking <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative would not affect wildlife movement corridors <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Summary evaluation and rating		<p>Water taking from the Pinewood River would be restricted to not more than 20% of the spring flow, and not more than 15% of flows during other times of the year, except in winter when no water would be taken. Aquatic habitat and wildlife corridor functions would therefore be maintained. Direct water taking would only be advantageous in preparation for mill start up. Otherwise taking would be redundant and disadvantageous relative to the site drainages alternative.</p> <p>Summary Rating: Preferred in the short term</p>	<p>Habitat and ecological functions supported by site drainages would for the most part be rendered nonfunctional by open pit, TMA and stockpile developments, and drainages from these areas would have to be collected and managed in any event to meet effluent quality needs, such that use of this water for mine site needs would not place additional burden on the ecological systems.</p> <p>Summary Rating: Preferred</p>	<p>Water taking from area lakes could be undertaken with limited adverse effects to the natural environment. The major limitation to this alternative would be a spreading of the RRP footprint for short term needs, as additional external water (external to site drainages) would not be required once site drainage capture is complete.</p> <p>Summary Rating: Acceptable</p>	<p>Groundwater taking would not be expected to adversely affect the natural environment in any meaningful way.</p> <p>Summary Rating: Preferred</p>
Effects to the Human Environment					
Effect on local residents	Maintenance of property values	<p><u>Advantages</u></p> <ul style="list-style-type: none"> No known adverse effects, as there are no known downstream water users that pull water directly from the river (as far as is known all downstream water users are on wells) <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> If substantive downstream water users were present, there would be a potential for an adverse effect 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> No known adverse effects <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> If substantive downstream water users were present, there would be a potential for an adverse effect 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Water taking would not adversely affect availability of lake water to local cottage, camp or resort users <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Local cottage, camp and resort owners could perceive industrial water taking from area lakes as an infringement/disturbance to their recreational use apparent, and may resist such action 	NA
	Maintenance or improvement of income opportunities	NA	NA	NA	NA
	Maintenance or provision of local access	NA	NA	NA	NA

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	NA	NA	NA	NA
	Non-interference with water well supply systems	<u>Advantages</u> <ul style="list-style-type: none"> Pinewood River is perched within the clay plain and isolated from groundwater aquifers <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Site drainages are perched within clay/clay till overburden and isolated from groundwater aquifers <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No known potential to interfere with area well users <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No external users wells within 2 km of potential short term use RRP site wells, hence no potential for an adverse effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for general disturbance and adverse affects on aesthetics	NA	NA	NA	NA
	Potential for adverse health and safety effects	See public health and safety criteria	See public health and safety criteria	See public health and safety criteria	NA
Effect on infrastructure	Maintenance or provision of local and regional access	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Pipeline construction bordering local roads has the potential to interfere with cottage, camp and resort owner/user access 	NA
	Maintenance and reliability of power supply systems	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA
Public health and safety	All indicators	NA	NA	NA	NA
Effect on local businesses	All indicators	NA	NA	NA	NA

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational activities	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume and duration of water taking from the Pinewood River would limit the potential for adverse effects to fishing and fisheries resources <u>Disadvantages</u> <ul style="list-style-type: none"> Minor potential to adversely affect fisheries resources 	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume of water taking from creeks draining to the Pinewood River would limit the potential for adverse effects to Pinewood River fishing and fisheries resources <u>Disadvantages</u> <ul style="list-style-type: none"> Minor potential to adversely affect fisheries resources 	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume and duration of water taking would limit the potential for adverse effects to fishing and fisheries resources <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for perceived disruption of recreational use Minor potential to adversely affect fisheries resources 	NA
Effect on agricultural lands	All indicators	NA	NA	NA	
Regional economy	Maintenance of improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> Alternative likely to achieve stakeholder support to build an initial water inventory, and hence not present delays to the Project <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative likely to achieve stakeholder support, and hence not present delays to the Project <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No known adverse effects <u>Disadvantages</u> <ul style="list-style-type: none"> If serious delays to the Project EA and permitting schedule were to occur as a result of cottage and resort owner interests, there would be a corresponding delay in Project related employment and business opportunities to the region 	NA
Effect on government services	All indicators	NA	NA	NA	NA
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Mineral development and activities are consistent with MNR Crown land use policies for the area Water taking would be of short-term duration during project start up, and restricted during low flow periods so as not to place additional burden on the ecological systems <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Mineral development and activities are consistent with MNR Crown land use policies for the area Water taking would be of short-term duration during project start up, and restricted during low flow periods so as not to place additional burden on the ecological systems <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Mineral development and activities are consistent with MNR Crown land use policies for the area Water taking would be of short-term duration during project start up, and restricted during low flow periods so as not to place additional burden on the ecological systems <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Excessive waste materials	All indicators	NA	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume and duration of water taking from the Pinewood River would limit the potential for adverse effects to cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume of water taking from creeks draining to the Pinewood River would limit the potential for adverse effects to cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume and duration of water taking would limit the potential for adverse effects to cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA
Effects on First Nation reserves and communities, and Métis	All indicators	No known potential for adverse effects	No known potential for adverse effects	No known potential for adverse effects	No known potential for adverse effects
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume and duration of water taking from the Pinewood River would limit the potential for adverse effects to fishing and fisheries resources <u>Disadvantages</u> <ul style="list-style-type: none"> Minor potential to adversely affect fisheries resources 	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume of water taking from creeks draining to the Pinewood River would limit the potential for adverse effects to Pinewood River fishing and fisheries resources <u>Disadvantages</u> <ul style="list-style-type: none"> Minor potential to adversely affect fisheries resources 	<u>Advantages</u> <ul style="list-style-type: none"> Restricted volume and duration of water taking would limit the potential for adverse effects to fishing and fisheries resources <u>Disadvantages</u> <ul style="list-style-type: none"> Minor potential to adversely affect fisheries resources 	NA
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	No known effect other than minor potential to adversely affect fisheries resources in the Pinewood River, the use of which appears to be limited	No known effect other than minor potential to adversely affect fisheries resources in the Pinewood River, the use of which appears to be limited	No anticipated adverse effect	NA

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
Summary evaluation and rating		As far as is known, water taking from the Pinewood River would not be expected to have any adverse effects to the human environment, with the possible exception of a very minor effect on fisheries resources of the river, and hence the availability of such resources to local residents and Aboriginal peoples. Summary Rating: Preferred	As far as is known, water taking from site drainages, which would in turn remove water from the Pinewood River, would not be expected to have any adverse effects to the human environment, with the possible exception of a very minor effect on Pinewood River fisheries resources, and hence the availability of such resources to local residents and Aboriginal peoples. Summary Rating: Preferred	Water takings would not be expected to adversely affect other users in terms of quantities of water taken and water availability; but local cottage, camp and resort users may perceive industrial water taking from recreational lakes as a threat to recreational environment, and resist the action. There is also the potential for road access interference during construction. Summary Rating: Unacceptable	No potential for adverse effect. Summary Rating: Preferred
Amenability to Reclamation					
Effect on public safety and security	All indicators	NA	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA

Table O-9: Water Supply

Performance Objective / Criteria	Indicator	Alternative Method			
		Pinewood River	Site Drainages	Other Area Watercourses, Lakes and Ponds	Groundwater
	Restoration of passive drainage systems	NA	<u>Advantages</u> <ul style="list-style-type: none"> Disruption of site drainages is due to other site factors and not to water taking, with the exception of the proposed West Creek water supply impoundment (West Creek Pond) <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	NA	NA	NA	NA
Effect on land use	All indicators	NA	NA	NA	NA
Summary evaluation and rating		There are no water taking impediments or liabilities relating to site reclamation at closure. Summary Rating: Preferred	There are no water taking impediments or liabilities relating to site reclamation at closure. Summary Rating: Preferred	There are no water taking impediments or liabilities relating to site reclamation at closure. Summary Rating: Preferred	There are no water taking impediments or liabilities relating to site reclamation at closure. Summary Rating: Preferred
Overall Summary Rating – see text for details		Preferred in the short term	Preferred	Unacceptable	Unacceptable except as a short term limited source

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Cost Effectiveness						
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Operated by a third party Existing partnership with the Township of Chapple landfill operation <u>Disadvantages</u> <ul style="list-style-type: none"> Existing landfill will likely require expansion, which will be funded partly or in whole by RRR Risk of operation delay or issues given that the landfill is operated by a third party 	<u>Advantages</u> <ul style="list-style-type: none"> Operated by a third party <u>Disadvantages</u> <ul style="list-style-type: none"> Existing landfill will likely require expansion, which will be funded partly or in whole by RRR Risk of operation delay or issues given that the landfill is operated by a third party 	<u>Advantages</u> <ul style="list-style-type: none"> Operated by RRR, eliminating the risk of operation delays <u>Disadvantages</u> <ul style="list-style-type: none"> Potential risk of liability at closure, which will require long term management and monitoring 	<u>Advantages</u> <ul style="list-style-type: none"> Operated by a third party <u>Disadvantages</u> <ul style="list-style-type: none"> Risk of operation delay or issues given that the landfill is operated by a third party 	<u>Advantages</u> <ul style="list-style-type: none"> Operated by RRR, eliminating the risk of operation delays <u>Disadvantages</u> <ul style="list-style-type: none"> Potential risk of liability at closure, which will require long term management and monitoring
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Most cost efficient alternative <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Comparatively higher operating cost compared to trucking to the Township of Chapple landfill 	<u>Advantages</u> <ul style="list-style-type: none"> Lower operating cost due to reduced cost of fuel <u>Disadvantages</u> <ul style="list-style-type: none"> Comparatively higher capital cost compared to the other alternatives 	<u>Advantages</u> <ul style="list-style-type: none"> Most cost efficient alternative <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Risk of seepage with elevated concentrations, however, this should be mitigated by proper design 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Risk of seepage with elevated concentrations, however, this should be mitigated by proper design

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Summary evaluation and rating		<p>Solid wastes from the exploration program are currently trucked to the Township of Chapple landfill. It has been indicated that the landfill does not have enough capacity for the needs of the Project. Negotiations would be required with the Township of Chapple, with which RRR has an ongoing relationship.</p> <p>This option allows for the closure liability to be transferred to the third party operating the landfill. It is presumed that RRR would accept its share of any short and long term liabilities through contractual arrangements with the Township.</p> <p>This option is the most favored from an economic perspective.</p>	<p>To date, no other offsite landfill facilities have been identified near the Project. It is likely that this landfill would be further, increasing the cost of solid waste transport.</p> <p>This option allows for the closure liability to be transferred to the third party operating the landfill. It is presumed that RRR would accept its share of any short and long term liabilities through contractual arrangements.</p>	<p>An onsite facility would allow RRR to control the operational aspects of the landfill. Additionally, the transportation cost would decrease.</p> <p>This option would require closure and post-closure seepage management and monitoring programs to ensure the efficiency of the closure activities. There is a risk of seepage with elevated concentrations, however, this would be mitigated by proper design.</p>	<p>No onsite alternatives (such as development of an onsite hazardous waste landfill) are considered acceptable to RRR and meet the RRR identification criteria for alternatives. The potential negative effects on the natural and human environment are considered unacceptable when compared with transporting the material to an existing hazardous waste management facility, particularly given the relatively low quantity of waste expected to be generated. It is also very unlikely that such a site could be approved for the RRP given the severe constraints for these types of facilities.</p>	<p>An onsite facility would allow RRR to control the operational aspects of the landfill. Additionally, the transportation cost would decrease.</p> <p>This option would require closure and post-closure seepage management and monitoring programs to ensure the efficiency of the closure activities. There is a risk of seepage with elevated concentrations, however, this would be mitigated by proper design.</p>
		Summary Rating: Preferred	Summary Rating: Acceptable	Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Acceptable

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Technical Applicability and/or System Integrity and Reliability						
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology used at other mine sites The contingency would include trucking the solid waste to another neighboring landfill facility Using a regional waste management facility allows for recycling <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology used at other mine sites The contingency would include trucking the solid waste to another neighboring landfill facility Using a regional waste management facility allows for recycling <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology used at other mine sites The contingency would include using a facility off site. <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology used at other mine sites <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology used at other mine sites <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA	NA
Summary evaluation and rating		The technology used for this landfill option would be similar in nature to the technology used in other landfill facilities.	The technology used for this landfill option would be similar in nature to the technology used in other landfill facilities.	The technology used for this landfill option would be similar in nature to the technology used in other landfill facilities.	The technology used for this landfill option would be similar in nature to the technology used in other hazardous waste landfill facilities.	The technology used for soil remediation would be similar in nature to the technology used in other facilities.
		Summary Rating: Preferred	Summary Rating: Preferred	Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Acceptable

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Ability to Service the Site Effectively						
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	<u>Advantages</u> <ul style="list-style-type: none"> Practice currently used by RRR for the exploration phase <u>Disadvantages</u> <ul style="list-style-type: none"> Managed by a third party, offering a potential risk for service disruption Facility would need to be expanded due to the lack in capacity; the expansion would require negotiation with the Township of Chapple, which could be a potential schedule risk 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Managed by a third party, offering a potential risk for service disruption Facility would likely need to be expanded to ensure enough capacity for the Project; the expansion would require negotiation with the municipality (or other), which could be a potential schedule risk 	<u>Advantages</u> <ul style="list-style-type: none"> Operated by RRR, eliminating the risk of service disruptions. <u>Disadvantages</u> <ul style="list-style-type: none"> Facility would need to be sited, designed and permitted on the Project site; depending on the location, additional roads may need to be constructed to provide access 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Managed by a third party, offering a potential risk for service disruption 	<u>Advantages</u> <ul style="list-style-type: none"> Operated by RRR, eliminating the risk of service disruptions. <u>Disadvantages</u> <ul style="list-style-type: none"> Facility would need to be sited, designed and permitted on the Project site; depending on the location, additional roads may need to be constructed to provide access
Accessibility	Accessible land base or infrastructure needed to support component development or operation	<u>Advantages</u> <ul style="list-style-type: none"> Existing facility has the possibility to expand its capacity <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Existing facility would likely have the possibility to expand its capacity <u>Disadvantages</u> <ul style="list-style-type: none"> This landfill facility could be located at a significant distance away from the Project 	<u>Advantages</u> <ul style="list-style-type: none"> The landfill would likely be located on existing Project site land <u>Disadvantages</u> <ul style="list-style-type: none"> The new landfill facility would likely require the construction of additional roads 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The landfill would likely be located on existing Project site land <u>Disadvantages</u> <ul style="list-style-type: none"> The new landfill facility may require the construction of additional roads

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Summary evaluation and rating		All alternatives can service the site effectively. The main potential risk for the offsite alternatives is for a strike of the transportation company or the landfill facility operator, which will create a temporary disruption in service.	All alternatives can service the site effectively . The main potential risk for the offsite alternatives is for a strike of the transportation company or the landfill facility operator, which will create a temporary disruption in service.	This new onsite landfill facility would require detailed design and permitting. Additional access roads may need to be constructed to access the landfill. However, it is less likely that there would be service disruptions since RRR will be operating the landfill.	All alternatives can service the site effectively . The main potential risk for the offsite alternatives is for a strike of the transportation company or the landfill facility operator, which will create a temporary disruption in service.	Suitability of this option will be assessed in future engineering studies. This new onsite facility would require detailed design and permitting. Additional access roads may need to be constructed to access the facility.
		Summary Rating: Acceptable	Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Preferred	Summary Rating: Acceptable
Effects to the Natural Environment						
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases air emissions 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases air emissions 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases air emissions 	NA
	Emission rates of GHGs	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases GHG emissions 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases GHG emissions 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases air emissions 	NA
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA	NA

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
	Maintenance or provision of fish habitat	NA	NA	NA	NA	NA
	Maintenance of water flows or conditions suitable for fish passage	NA	NA	NA	NA	NA
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	NA	NA	NA	NA	NA
	Maintenance of wetland connectivity	NA	NA	NA	NA	NA

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> May be able to make use of planned disturbance by the TMA <u>Disadvantages</u> <ul style="list-style-type: none"> May result in an incremental removal of additional terrestrial wildlife habitat, up to a nominal 5 ha. Could potentially attract unwanted wildlife to the landfill facility, resulting in human-wildlife contact or wildlife poisoning 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May result in minor incremental displacement of terrestrial habitat – to be determined in subsequent engineering studies.
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> Minimal additional noise would be generated from the increased capacity of the landfill, as it is an existing operation <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Minimal additional noise would be generated from the increased capacity of the landfill, as it would be an existing operation <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Minimal additional noise would be generated from the landfill, as it is located on the Project site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA	NA	NA	NA
Effect on SAR	All indicators	NA	NA	NA	NA	NA

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Summary evaluation and rating		The environmental effects of this alternative include: air, GHG and noise emissions generated by the trucks transporting solid waste.	The environmental effects of this alternative include: air, GHG and noise emissions generated by the trucks transporting solid waste.	No offsite trucking required, however, there is a potential to attract unwanted wildlife from the smell of the landfill.	The environmental effects of this alternative include: air, GHG and noise emissions generated by the trucks transporting hazardous waste.	Suitability of this option will be assessed in future engineering studies. This new onsite facility would require detailed design and permitting.
		Summary Rating: Acceptable	Summary Rating: Acceptable	Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Acceptable
Effects to the Human Environment						
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> Due to the existing location, the property values would likely not decrease further from the expansion of the landfill <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Due to the existing location, the property values would likely not decrease further from the expansion of the landfill <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> If the landfill is located nearby residents or farmers, the property values could potentially decrease 	<u>Advantages</u> <ul style="list-style-type: none"> Removes hazardous waste from the site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <p>If the facility is located nearby residents or farmers, the property values could potentially decrease</p>
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> The additional need for solid waste management will result in an increase in jobs in the region <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The additional need for solid waste management will result in an increase in jobs in the region <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The additional need for solid waste management will result in an increase in jobs in the region <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of local access	NA	NA	NA	NA	NA
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> The increase in activity at the landfill could result in marginally higher levels of noise 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> The increase in activity at the landfill could result in marginally higher levels of noise 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> The noise levels of the Project site may be marginally increased by the landfill activity 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
	Non-interference with water well supply systems	NA	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> Removes hazardous waste from the site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA
	Potential for general disturbance and adverse effects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Depending on the design of the expansion of the landfill, there could be further adverse changes in aesthetics 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Depending on the design of the expansion of the landfill, there could be further adverse changes in aesthetics 	<u>Advantages</u> <ul style="list-style-type: none"> Marginal change in aesthetics given the location near the Project site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for adverse health and safety effects	NA	NA	NA	NA	NA
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking of the solid waste would marginally increase the traffic on the local roads 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking of the solid waste would marginally increase the traffic on the local roads 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking of the waste would marginally increase the traffic on the local roads 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance and reliability of power supply systems	NA	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases air emissions but would remain below standards 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases air emissions but would remain below standards 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Trucking the solid waste to the offsite landfill increases air emissions but would remain below standards 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA	NA	NA
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Local businesses would be able to provide services for waste transportation <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Local businesses would be able to provide services for waste transportation <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Local businesses would be able to provide services for waste transportation <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on tourism and recreation	All indicators	NA	NA	NA	NA	NA
Effect on agricultural lands	All indicators	NA	NA	NA	NA	NA
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> The additional need for solid waste management will result in an increase in jobs in the region <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The additional need for solid waste management will result in an increase in jobs in the region <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The additional need for solid waste management will result in an increase in jobs in the region <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Effect on government services	Maintenance or improvement of the capacity of existing health, education and family support services	<u>Advantages</u> <ul style="list-style-type: none"> The capacity of the landfill would be increased, for both the Project as well as for the residents nearby <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The capacity of the landfill would be increased, for both the Project as well as for the residents nearby <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Excessive waste materials	All indicators	NA	NA	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Siting of an onsite landfill would be co-located with the TMA, resulting in no additional effect <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May have the potential to affect built heritage and cultural heritage landscapes depending on location
Effects on First Nation reserves and communities, and Métis	All indicators	NA	NA	NA	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	NA	NA	NA	NA	NA

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA	NA	NA
Summary evaluation and rating		This option is preferred as it offers more opportunities to the local businesses and boosts the regional economy.	This option is preferred as it offers more opportunities to the local businesses and boosts the regional economy.	There are no major effects on the human environment for this alternative.	This option is preferred as there are no acceptable onsite alternatives with a likelihood of receiving approval.	Suitability of this option will be assessed in future engineering studies. This new onsite facility would require detailed design and permitting.
		Summary Rating: Preferred	Summary Rating: Preferred	Summary Rating: Acceptable	Summary Rating: Preferred	Summary Rating: Acceptable
Amenability to Reclamation						
Effect on public safety and security	All indicators	NA	NA	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> The landfill is presumed to be designed to applicable standards to mitigate any potential for meaningful off-property migration <u>Disadvantages</u> <ul style="list-style-type: none"> RRR expected to carry its share of any long term liabilities through contractual arrangements 	<u>Advantages</u> <ul style="list-style-type: none"> The landfill is presumed to be designed to applicable standards to mitigate any potential for meaningful off-property migration <u>Disadvantages</u> <ul style="list-style-type: none"> RRR expected to carry its share of any long term liabilities through contractual arrangements 	<u>Advantages</u> <ul style="list-style-type: none"> The landfill would be designed to applicable standards to mitigate any potential for meaningful off-property migration Landfill leachate management would be integrated with other, site wide effluent management programs <u>Disadvantages</u> <ul style="list-style-type: none"> Liability for long term leachate management and monitoring 	<u>Advantages</u> <ul style="list-style-type: none"> The landfill is presumed to be designed to applicable standards to mitigate any potential for meaningful off-property migration <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> The landfill would be designed to applicable standards to mitigate any potential for meaningful off-property migration Landfill leachate management would be integrated with other, site wide effluent management programs <u>Disadvantages</u> <ul style="list-style-type: none"> Liability for long term leachate management and monitoring

Table O-10: Solid Waste Management

Performance Objective / Criteria	Indicator	Alternative Method				
		Truck Waste Off Site to the Existing Township of Chapple Landfill	Truck Waste Off Site to an Alternate Existing Landfill	Develop an Onsite Landfill	Transport Hazardous Solid Waste to Licensed Offsite Facility	Onsite Remediation of Hydrocarbon Contaminated Soils
	Restoration of passive drainage systems	NA	NA	NA	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> Expansion of an existing disturbed site Site to be rehabilitated at closure to a condition that would be supportive of local wildlife <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Expansion of an existing disturbed site Site to be rehabilitated at closure to a condition that would be supportive of local wildlife <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Site to be rehabilitated at closure to a condition that would be supportive of local wildlife <u>Disadvantages</u> <ul style="list-style-type: none"> Disturbance of a new site 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Site to be rehabilitated at closure to a condition that would be supportive of local wildlife <u>Disadvantages</u> <ul style="list-style-type: none"> Disturbance of a new site
Effect on land use	All indicators	NA	NA	NA	NA	NA
Summary evaluation and rating		No expected off property leachate migration following closure. Site can be returned to productive wildlife habitat at closure. Summary Rating: Preferred	No expected off property leachate migration following closure. Site can be returned to productive wildlife habitat at closure. Summary Rating: Preferred	No expected off property leachate migration following closure. Site can be returned to productive wildlife habitat at closure. Summary Rating: Preferred	This option is preferred as there are no acceptable onsite alternatives with a likelihood of receiving approval.	Suitability of this option will be assessed in future engineering studies. This new onsite facility would require detailed design and permitting.
Overall Summary Rating – see text for details		Preferred	Acceptable	Acceptable	Preferred	Acceptable

Table O-11: Domestic Sewage Management

Performance Objective / Criteria	Indicator	Alternative Method		
		Package Sewage Treatment Plant (rotating biological contactor, sequencing batch reactor, or membrane bioreactor)	Septic Tank(s) and Tile Field(s)	Offsite Treatment of Sewage (Onsite storage in tanks and truck to local sewage treatment plant)
Cost Effectiveness				
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology with no operational risks <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology with no operational risks <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proven technology with no operational risks <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> More economic than offsite treatment <u>Disadvantages</u> <ul style="list-style-type: none"> May or may not be cost competitive with a septic tank and tile field 	<u>Advantages</u> <ul style="list-style-type: none"> More economic than offsite treatment <u>Disadvantages</u> <ul style="list-style-type: none"> Tile field construction would require imported fill; land space for development of a tile field is at a premium 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Least economically viable alternative
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	NA	NA	NA
Summary evaluation and rating		Package sewage treatment plants provide a cost competitive, risk free technology. Given that the site conditions are not well suited for development of the septic tank and tile field alternative, this appears to be the most suitable option. Summary Rating: Preferred	Based on the site conditions, this option would require additional material and site preparation; thereby making this option potentially more costly than a package sewage treatment plant. Summary Rating: Acceptable	Although a reliable option, the cost associated with this alternative is highest, making this alternative less desirable. Summary Rating: Acceptable
Technical Applicability and/or System Integrity and Reliability				
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Proven and effective technology <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Proven and effective technology <u>Disadvantages</u> <ul style="list-style-type: none"> Technology is generally better suited to smaller scale operations 	<u>Advantages</u> <ul style="list-style-type: none"> Proven and effective technology <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA

Table O-11: Domestic Sewage Management

Performance Objective / Criteria	Indicator	Alternative Method		
		Package Sewage Treatment Plant (rotating biological contactor, sequencing batch reactor, or membrane bioreactor)	Septic Tank(s) and Tile Field(s)	Offsite Treatment of Sewage (Onsite storage in tanks and truck to local sewage treatment plant)
Summary evaluation and rating		This is a frequently applied, proven and effective technology. Summary Rating: Preferred	This is a frequently applied, proven and effective technology, but with potential capacity constraints. Summary Rating: Acceptable	This is a frequently applied, proven and effective technology. Summary Rating: Acceptable
Ability to Service the Site Effectively				
Service	All indicators	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Potential land availability and capacity constraints	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Dependence on third party operator to remove sewage from site
Accessibility	All indicators	NA	NA	NA
Summary evaluation and rating		Since this system would be operated by RRR, it is a reliable option, without capacity constraints. Summary Rating: Preferred	Since this system is operated by RRR, it is a reliable option, but with potential capacity constraints. Summary Rating: Acceptable	Due to the dependence on third party, there is a potential risk for service disruption. Summary Rating: Acceptable
Effects to the Natural Environment				
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Trucking the sewage to the offsite sewage treatment plant increases air emissions
	Emission rates of GHGs	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Trucking the sewage to the offsite sewage treatment plant increases GHG emissions
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Potential for effects on water quality due to discharge of process liquid, however, this option will be designed to meet discharge criteria	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Potential for effects on water quality due to seepage from tile field, however, this option will be designed to prevent effects on the receiving environment	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent
	Maintenance or provision of fish habitat	NA	NA	NA

Table O-11: Domestic Sewage Management

Performance Objective / Criteria	Indicator	Alternative Method		
		Package Sewage Treatment Plant (rotating biological contactor, sequencing batch reactor, or membrane bioreactor)	Septic Tank(s) and Tile Field(s)	Offsite Treatment of Sewage (Onsite storage in tanks and truck to local sewage treatment plant)
	Maintenance of water flows or conditions suitable for fish passage	NA	NA	NA
	Maintenance of groundwater flows, levels and quality	NA	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	NA	NA	NA
	Maintenance of wetland connectivity	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Potential for habitat disruption, however, it would be sited to minimize any effect 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Potential for habitat disruption, however, it would be sited to minimize any effect 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
	Potential for noise (or other harm and harassment) related disturbance	NA	NA	NA
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA	NA
Effect on SAR	All indicators	NA	NA	NA
Summary evaluation and rating		With proper design, effects on the natural environment are not anticipated. Summary Rating: Preferred	With proper design, effects on the natural environment are not anticipated. Summary Rating: Preferred	This option is acceptable; however, due to the requirement to truck the sewage offsite, the environmental effects are higher compared to the other alternatives. Summary Rating: Acceptable
Effects to the Human Environment				
Effect on local residents	Maintenance of property values	NA	NA	NA
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • A third party will be required for transport of the sewage to the local sewage treatment plant <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent

Table O-11: Domestic Sewage Management

Performance Objective / Criteria	Indicator	Alternative Method		
		Package Sewage Treatment Plant (rotating biological contactor, sequencing batch reactor, or membrane bioreactor)	Septic Tank(s) and Tile Field(s)	Offsite Treatment of Sewage (Onsite storage in tanks and truck to local sewage treatment plant)
	Maintenance or provision of local access	NA	NA	NA
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	NA	NA	NA
	Non-interference with water well supply systems	NA	NA	NA
	Potential for general disturbance and adverse affects on aesthetics	NA	NA	NA
	Potential for adverse health and safety effects	NA	NA	NA
Effect on infrastructure	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Will utilize capacity from the local sewage treatment plant
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Trucking the sewage to the offsite sewage treatment plant increases air emissions
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA
Effect on local businesses	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • A third party will be required for transport of the sewage to the local sewage treatment plant <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent

Table O-11: Domestic Sewage Management

Performance Objective / Criteria	Indicator	Alternative Method		
		Package Sewage Treatment Plant (rotating biological contactor, sequencing batch reactor, or membrane bioreactor)	Septic Tank(s) and Tile Field(s)	Offsite Treatment of Sewage (Onsite storage in tanks and truck to local sewage treatment plant)
Effect on tourism and recreation	All indicators	NA	NA	NA
Effect on agricultural lands	All indicators	NA	NA	NA
Regional economy	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • A third party will be required for transport of the sewage to the local sewage treatment plant <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effect on government services	All indicators	NA	NA	NA
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Excessive waste materials	All indicators	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	NA	NA	NA
Effects on First Nation reserves and communities, and Métis	All indicators	NA	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	NA	NA	NA
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA
Summary evaluation and rating		There is no predicted effect or benefit to the human environment. Summary Rating: Acceptable	There is no predicted effect or benefit to the human environment. Summary Rating: Acceptable	Handling of the sewage by a third party marginally increases local business opportunities. Summary Rating: Preferred
Amenability to Reclamation				
Effect on public safety and security	All indicators	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA

Table O-11: Domestic Sewage Management

Performance Objective / Criteria	Indicator	Alternative Method		
		Package Sewage Treatment Plant (rotating biological contactor, sequencing batch reactor, or membrane bioreactor)	Septic Tank(s) and Tile Field(s)	Offsite Treatment of Sewage (Onsite storage in tanks and truck to local sewage treatment plant)
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA
	Restoration of passive drainage systems	NA	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	NA	NA	NA
Effect on land use	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA
Overall Summary Rating – see text for details		Preferred	Acceptable	Acceptable

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Cost Effectiveness					
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Intermediate cost option which is unlikely to dissuade investor confidence <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative is not supported by the local township 	<u>Advantages</u> <ul style="list-style-type: none"> Intermediate cost option which is unlikely to dissuade investor confidence <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative is not supported by the local township 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative is supported by the local township, and therefore has the highest probability of approval through the EA process <u>Disadvantages</u> <ul style="list-style-type: none"> Highest cost of the four alternatives, but not to a level that would be expected to dissuade investor confidence 	<u>Advantages</u> <ul style="list-style-type: none"> Lowest cost of the four alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative is not supported by the local township
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Allows a competitive return on investment Intermediate cost estimate <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Allows a competitive return on investment Intermediate cost estimate <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Allows a competitive return on investment <u>Disadvantages</u> <ul style="list-style-type: none"> Longest of the re-alignment options Highest cost estimate of the four alternatives, being assessed at \$14.4M 	<u>Advantages</u> <ul style="list-style-type: none"> Allows a competitive return on investment Lowest cost estimate of the four alternatives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	NA	NA	NA	NA
Summary evaluation and rating		All options allow a competitive return on investment. Summary Rating: Acceptable	All options allow a competitive return on investment. Summary Rating: Acceptable	All options allow a competitive return on investment. Alternative C is slightly more expensive than the other alternatives, but support by the local township considerably de-risks this alternative, and is expected to provide enhanced investor confidence which is likely to outweigh the cost differential. Summary Rating: Preferred	All options allow a competitive return on investment. Summary Rating: Acceptable

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Technical Applicability and/or System Integrity and Reliability					
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Road re-alignments are commonly used throughout Ontario and are predictably effective <u>Disadvantages</u> <ul style="list-style-type: none"> Additional turns and bends in re-alignment reduce road safety 	<u>Advantages</u> <ul style="list-style-type: none"> Road re-alignments are commonly used throughout Ontario and are predictably effective <u>Disadvantages</u> <ul style="list-style-type: none"> Additional turns and bends in re-alignment reduce road safety 	<u>Advantages</u> <ul style="list-style-type: none"> Road re-alignments are commonly used throughout Ontario and are predictably effective <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Road re-alignments are commonly used throughout Ontario and are predictably effective <u>Disadvantages</u> <ul style="list-style-type: none"> Additional turns and bends in re-alignment reduce road safety
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA
Summary evaluation and rating		Alternative A is acceptable as safety can be enhanced with road design. Summary Rating: Acceptable	Alternative B is acceptable as safety can be enhanced with road design. Summary Rating: Acceptable	Alternative C is preferred because it is the safest option with least number of turns. Summary Rating: Preferred	Alternative D is acceptable as safety can be enhanced with road design. Summary Rating: Acceptable
Ability to Service the Site Effectively					
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	<u>Advantages</u> <ul style="list-style-type: none"> Effectively diverts traffic around the mine site Allows minor expansion of project facilities if required <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Effectively diverts traffic around the mine site Allows minor expansion of project facilities if required <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Effectively diverts traffic around the mine site Allows expansion of project facilities if required <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Effectively diverts traffic around the mine site <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative is less conducive to RRP expansion to the south, if required (currently no such expansion is envisioned) Although traffic is diverted around the mine site, traffic remains very close to mine infrastructure
Accessibility	Accessible land base or infrastructure needed to support component development or operation	<u>Advantages</u> <ul style="list-style-type: none"> Can effectively provide access for local residents <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Can effectively provide access for local residents <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Can effectively provide access for local residents <u>Disadvantages</u> <ul style="list-style-type: none"> Least turns and bends Longest route 	<u>Advantages</u> <ul style="list-style-type: none"> Can effectively provide access for local residents <u>Disadvantages</u> <ul style="list-style-type: none"> Most turns and bends

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Summary evaluation and rating		Alternative A is rated as preferred because it effectively diverts traffic around the mine site and allows for project expansion if needed. Summary Rating: Preferred	Alternative B is rated as preferred because it effectively diverts traffic around the mine site and allows for project expansion if needed. Summary Rating: Preferred	Alternative C is the preferred route, primarily because it effectively diverts traffic around the site and allows for project expansion if needed. Summary Rating: Preferred	Alternative D is rated acceptable because it effectively diverts traffic around the site, but potentially constraining if Project expansion was ever to occur to the south of the Pinewood River. Summary Rating: Acceptable
Effects to the Natural Environment					
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> As Alternative A results in a shorter route than the existing Highway 600, less fuel combustion emissions will be released during transit No significant impact anticipated to point of impingement air quality <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic could generate dust plumes 	<u>Advantages</u> <ul style="list-style-type: none"> As Alternative B results in a shorter route than the existing Highway 600, less fuel combustion emissions will be released during transit As the shortest route of the alternatives, less fuel will be combusted No significant impact anticipated to point of impingement air quality <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic could generate dust plumes 	<u>Advantages</u> <ul style="list-style-type: none"> As Alternative C results in a slightly longer length around the project compared to the existing Highway 600, there would be a slight increase in fuel combustion emissions released during transit No significant impact anticipated to point of impingement air quality <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic could generate dust plumes 	<u>Advantages</u> <ul style="list-style-type: none"> As Alternative D creates a route slightly shorter than the existing Highway 600, less fuel combustion emissions will be released during transit No significant impact anticipated to point of impingement air quality <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic could generate dust plumes
	Emission rates of GHGs	Differences in the four routings are too small to meaningfully affect GHG emissions	Differences in the four routings are too small to meaningfully affect GHG emissions	Differences in the four routings are too small to meaningfully affect GHG emissions	Differences in the four routings are too small to meaningfully affect GHG emissions
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> No significant impacts to fish habitat anticipated Only requires 1 water crossing of the Pinewood River Crosses at Habitat Type 1 <u>Disadvantages</u> <ul style="list-style-type: none"> Culverts/bridges could degrade fish habitat 	<u>Advantages</u> <ul style="list-style-type: none"> No significant impacts to fish habitat anticipated Only requires 1 water crossing of the Pinewood River <u>Disadvantages</u> <ul style="list-style-type: none"> Culverts/bridges could degrade fish habitat Crosses at Habitat Type 2 	<u>Advantages</u> <ul style="list-style-type: none"> No significant impacts to fish habitat anticipated Only requires 1 water crossing of the Pinewood River Crosses at Habitat Type 1 <u>Disadvantages</u> <ul style="list-style-type: none"> Culverts/bridges could degrade fish habitat 	<u>Advantages</u> <ul style="list-style-type: none"> No significant impacts to fish habitat anticipated Crosses at Habitat Type 1 <u>Disadvantages</u> <ul style="list-style-type: none"> Requires crossing of both the Pinewood River as well as a smaller tributary Culverts/bridges could degrade fish habitat
	Maintenance of water flows or conditions suitable for fish passage	<u>Advantages</u> <ul style="list-style-type: none"> Crossings can be designed to maintain fish passage in high and low flow conditions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Crossings can be designed to maintain fish passage in high and low flow conditions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Crossings can be designed to maintain fish passage in high and low flow conditions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Crossings can be designed to maintain fish passage in high and low flow conditions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> No impact to water quality is expected <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No impact to water quality is expected <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No impact to water quality is expected <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No impact to water quality is expected <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Slightly over half of the new road will occur over wetland (primarily coniferous swamp, with small areas of treed fen and meadow marsh) 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Slightly under half of the new road will occur over wetland (primarily coniferous swamp with a small areas of treed fen) 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Majority of the new road occurs over wetland (primarily coniferous swamp, with small areas of treed fen, shrub shore fen, and thicket swamp) 	<u>Advantages</u> <ul style="list-style-type: none"> Generally avoids wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> Small areas of new road will cross wetland (coniferous swamp, thicket swamp and meadow marsh)

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
	Maintenance of wetland connectivity	<u>Advantages</u> <ul style="list-style-type: none"> Culverts may be used to maintain wetland drainage properties <u>Disadvantages</u> <ul style="list-style-type: none"> Mitigation (culverts) is only for water flow and does not assist movement of wetland species 	<u>Advantages</u> <ul style="list-style-type: none"> Culverts may be used to maintain wetland drainage properties <u>Disadvantages</u> <ul style="list-style-type: none"> Mitigation (culverts) is only for water flow and does not assist movement of wetland species 	<u>Advantages</u> <ul style="list-style-type: none"> Culverts may be used to maintain wetland drainage properties <u>Disadvantages</u> <ul style="list-style-type: none"> Mitigation (culverts) is only for water flow and does not assist movement of wetland species 	<u>Advantages</u> <ul style="list-style-type: none"> Culverts may be used to maintain wetland drainage properties <u>Disadvantages</u> <ul style="list-style-type: none"> Mitigation (culverts) is only for water flow and does not assist movement of wetland species
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Most of the road re-alignment would occur in coniferous swamp, with aspen – birch hardwood forest as the second largest land cover Smaller areas of treed fen and meadow marsh cover the remainder 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Most of the road re-alignment would occur in aspen – birch hardwood forest, with coniferous swamp as the second largest land cover Smaller areas of cultural meadow and treed fen make up the remainder 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Most of the road re-alignment would occur in coniferous swamp Smaller areas of aspen – birch hardwood forest, treed fen, shrub shore fen and thicket swamp make up the remainder 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Most of the road re-alignment would occur in aspen – birch hardwood forest Smaller areas of coniferous swamp, thicket swamp and meadow marsh
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic will generate noise that can disturb local species 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic will generate noise that can disturb local species 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic will generate noise that can disturb local species 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Traffic will generate noise that can disturb local species
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Will create new edge effects Could fragment forest pieces Could create a corridor along Highway 600 for some species 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Will create new edge effects Could fragment forest pieces Could create a corridor along Highway 600 for some species 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Will create new edge effects Could fragment forest pieces Could create a corridor along Highway 600 for some species 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Will create new edge effects Could fragment forest pieces Could create a corridor along Highway 600 for some species

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Effect on SAR	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Some SAR affected by the RRP (Whip-poor-will and Bobolink) are most commonly found alongside roads and fields <u>Disadvantages</u> <ul style="list-style-type: none"> Impacts to SAR could occur if SAR habitat is overprinted by the re-alignment Golden-winged warbler spotted along route during 2012 studies 	<u>Advantages</u> <ul style="list-style-type: none"> Some SAR affected by the RRP (Whip-poor-will and Bobolink) are most commonly found alongside roads and fields <u>Disadvantages</u> <ul style="list-style-type: none"> Impacts to SAR could occur if SAR habitat is overprinted by the re-alignment Golden-winged warbler spotted along route during 2012 studies 	<u>Advantages</u> <ul style="list-style-type: none"> Some SAR affected by the RRP (Whip-poor-will and Bobolink) are most commonly found alongside roads and fields <u>Disadvantages</u> <ul style="list-style-type: none"> Impacts to SAR could occur if SAR habitat is overprinted by the re-alignment Golden-winged warbler spotted along route during 2012 studies 	<u>Advantages</u> <ul style="list-style-type: none"> Some SAR affected by the RRP (Whip-poor-will and Bobolink) are most commonly found alongside roads and fields <u>Disadvantages</u> <ul style="list-style-type: none"> Impacts to SAR could occur if SAR habitat is overprinted by the re-alignment
Summary evaluation and rating		Each alternative will generate impacts to the natural environment that are typical of two-lane gravel highways in northern Ontario, and some mitigation is required. Alternative A is rated as acceptable. Summary Rating: Acceptable	Each alternative will generate impacts to the natural environment that are typical of two-lane gravel highways in northern Ontario, and some mitigation is required. Alternative B is rated as acceptable. Summary Rating: Acceptable	Each alternative will generate impacts to the natural environment that are typical of two-lane gravel highways in northern Ontario, and some mitigation is required. Alternative C is rated as acceptable. Summary Rating: Acceptable	Each alternative will generate impacts to the natural environment that are typical of two-lane gravel highways in northern Ontario, and some mitigation is required. Alternative D is rated as acceptable. Summary Rating: Acceptable
Effects to the Human Environment					
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> Potential impacts along Tait Road <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Potential impacts along Tait Road <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Potential impacts along Tait Road <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Potential impacts along Tait Road <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Local construction companies can bid on Highway 600 re-alignment construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Local construction companies can bid on Highway 600 re-alignment construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Local construction companies can bid on Highway 600 re-alignment construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Local construction companies can bid on Highway 600 re-alignment construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of local access	<u>Advantages</u> <ul style="list-style-type: none"> Effectively maintains local access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Effectively maintains local access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Effectively maintains local access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Effectively maintains local access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> Highway 600 re-alignment will comply with Ministry of Transportation (MTO) highway requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Noise will be generated by traffic along the re-alignment 	<u>Advantages</u> <ul style="list-style-type: none"> Highway 600 re-alignment will comply with MTO highway requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Noise will be generated by traffic along the re-alignment 	<u>Advantages</u> <ul style="list-style-type: none"> Highway 600 re-alignment will comply with MTO highway requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Noise will be generated by traffic along the re-alignment 	<u>Advantages</u> <ul style="list-style-type: none"> Highway 600 re-alignment will comply with MTO highway requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Noise will be generated by traffic along the re-alignment
	Non-interference with water well supply systems	NA	NA	NA	NA
	Potential for general disturbance and adverse affects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> Route sufficiently set back from RRP to avoid some aesthetic impacts <u>Disadvantages</u> <ul style="list-style-type: none"> Potential impacts along Tait Road to local residents 	<u>Advantages</u> <ul style="list-style-type: none"> Route sufficiently set back from RRP to avoid some aesthetic impacts <u>Disadvantages</u> <ul style="list-style-type: none"> Potential impacts along Tait Road to local residents 	<u>Advantages</u> <ul style="list-style-type: none"> Located furthest from RRP Route sufficiently set back from RRP to avoid some aesthetic impacts <u>Disadvantages</u> <ul style="list-style-type: none"> Potential impacts along Tait Road to local residents 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Located near RRP and aesthetic impacts will occur along re-alignment Potential impacts along Tait Road to local residents
	Potential for adverse health and safety effects	<u>Advantages</u> <ul style="list-style-type: none"> Re-alignment will be designed and constructed with safety standards that meet or exceed MTO requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Turns and bends in highway can increase potential for accidents 	<u>Advantages</u> <ul style="list-style-type: none"> Re-alignment will be designed and constructed with safety standards that meet or exceed MTO requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Turns and bends in highway can increase potential for accidents 	<u>Advantages</u> <ul style="list-style-type: none"> Re-alignment will be designed and constructed with safety standards that meet or exceed MTO requirements Least amount of turns and bends <u>Disadvantages</u> <ul style="list-style-type: none"> Turns and bends in highway can increase potential for accidents 	<u>Advantages</u> <ul style="list-style-type: none"> Re-alignment will be designed and constructed with safety standards that meet or exceed MTO requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Turns and bends in highway can increase potential for accidents
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> Improves local road access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Improves local road access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Improves local road access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Improves local road access <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance and reliability of power supply systems	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Low traffic along Highway 600 should not significantly impact air quality Fuel combustion and dust emissions will exist, regardless of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> Dust plumes from traffic 	<u>Advantages</u> <ul style="list-style-type: none"> Low traffic along Highway 600 should not significantly impact air quality Fuel combustion and dust emissions will exist, regardless of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> Dust plumes from traffic 	<u>Advantages</u> <ul style="list-style-type: none"> Low traffic along Highway 600 should not significantly impact air quality Fuel combustion and dust emissions will exist, regardless of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> Dust plumes from traffic 	<u>Advantages</u> <ul style="list-style-type: none"> Low traffic along Highway 600 should not significantly impact air quality Fuel combustion and dust emissions will exist, regardless of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> Dust plumes from traffic
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	<u>Advantages</u> <ul style="list-style-type: none"> Will keep Highway 600 traffic away from RRP and reduce potential for incidents at the site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will keep Highway 600 traffic away from RRP and reduce potential for incidents at the site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will keep Highway 600 traffic away from RRP and reduce potential for incidents at the site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will keep Highway 600 traffic away from RRP and reduce potential for incidents at the site <u>Disadvantages</u> <ul style="list-style-type: none"> Minor potential for RRP interference if the Project was ever to be expanded south of the Pinewood River (no such plans currently exist)
	Maintenance or provision of health services	<u>Advantages</u> <ul style="list-style-type: none"> Will provide better access than existing Highway 600 route for emergency medical services <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will provide better access than existing Highway 600 route for emergency medical services <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will provide better access than existing Highway 600 route for emergency medical services <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will provide better access than existing Highway 600 route for emergency medical services <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Will provide improved road conditions along the Highway 600 re-alignment Opportunity to bid on construction of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will provide improved road conditions along the Highway 600 re-alignment Opportunity to bid on construction of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will provide improved road conditions along the Highway 600 re-alignment Opportunity to bid on construction of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will provide improved road conditions along the Highway 600 re-alignment Opportunity to bid on construction of re-alignment <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on tourism and recreation	All indicators	NA	NA	NA	NA
Effect on agricultural lands	Potential loss of agricultural lands	<u>Advantages</u> <ul style="list-style-type: none"> Does not overprint agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Does not overprint agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Does not overprint agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Does not overprint agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential loss of agricultural productivity	NA	NA	NA	NA
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional construction companies to bid on Highway 600 re-alignment construction Improved access for regional businesses, such as forestry <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional construction companies to bid on Highway 600 re-alignment construction Improved access for regional businesses, such as forestry <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional construction companies to bid on Highway 600 re-alignment construction Improved access for regional businesses, such as forestry <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional construction companies to bid on Highway 600 re-alignment construction Improved access for regional businesses, such as forestry <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on government services	Maintenance or improvement of the capacity of existing health, education and family support, and other services	<u>Advantages</u> <ul style="list-style-type: none"> MTO prefers a Highway 600 re-alignment to the southwest of the RRP Will reduce road maintenance costs as the re-alignment will be newly constructed and not initially require major maintenance Shorter than existing route, thereby reducing road maintenance costs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> MTO prefers a Highway 600 re-alignment to the southwest of the RRP Will reduce road maintenance costs as the re-alignment will be newly constructed and not initially require major maintenance Shorter than existing route, thereby reducing road maintenance costs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Preferred route of Township of Chapple Reeve and council MTO prefers a Highway 600 re-alignment to the southwest of the RRP Will reduce road maintenance costs as the re-alignment will be newly constructed and not initially require major maintenance <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> MTO prefers a Highway 600 re-alignment to the southwest of the RRP Will reduce road maintenance costs as the re-alignment will be newly constructed and not initially require major maintenance Shorter than existing route, thereby reducing road maintenance costs <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Effect on resource management objectives	Consistency with established and planned resource management objectives	<u>Advantages</u> <ul style="list-style-type: none"> Road development for resource extraction is consistent with MNR Crown land use policies for the area Will assist with RRP development and enhance the regional natural resource dependent economy <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Road development for resource extraction is consistent with MNR Crown land use policies for the area Will assist with RRP development and enhance the regional natural resource dependent economy <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Road development for resource extraction is consistent with MNR Crown land use policies for the area Will assist with RRP development and enhance the regional natural resource dependent economy <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Road development for resource extraction is consistent with MNR Crown land use policies for the area Will assist with RRP development and enhance the regional natural resource dependent economy <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Excessive waste materials	All indicators	NA	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damaged, or relocation cannot reasonably be avoided	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May indirectly affect built heritage and cultural heritage landscapes along Tait Road 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May indirectly affect built heritage and cultural heritage landscapes along Tait Road 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May indirectly affect built heritage and cultural heritage landscapes along Tait Road 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May indirectly affect built heritage and cultural heritage landscapes along Tait Road
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject limitations of Company capacity and community members' personal choice)	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms of protection/preservation supported by local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-12: Highway 600 Re-alignment

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A	Alternative B	Alternative C	Alternative D
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Summary evaluation and rating		Negative impacts to the human environment can be mitigated. Summary Rating: Acceptable	Negative impacts to the human environment can be mitigated. Summary Rating: Acceptable	Negative impacts to the human environment can be mitigated. Preferred choice of the Township of Chapple Reeve and Council. Summary Rating: Preferred	Negative impacts to the human environment can be mitigated. Summary Rating: Acceptable
Amenability to Reclamation – NA					
Overall Summary Rating – see text for details		Acceptable	Acceptable	Preferred	Acceptable

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
Cost Effectiveness			
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Higher overall costs are a disincentive to investment 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Transmission line can potentially be affected by storm events or other natural occurrences, which would in turn affect site operations.
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • High operating cost (cost of fuel, maintenance) • Capital costs include generating units, fuel tanks and fuel delivery 	<u>Advantages</u> <ul style="list-style-type: none"> • Low operating cost (cost of electricity with industry rebates and occasional inspections/maintenance) <u>Disadvantages</u> <ul style="list-style-type: none"> • Capital costs include private land purchase/rental, ROW clearing and transmission line construction
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Price of fuel is somewhat unstable without futures 	<u>Advantages</u> <ul style="list-style-type: none"> • Price of electricity from Provincial grid is relatively stable <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Summary evaluation and rating		<p>Onsite diesel-fired generation is expected to have comparable capital costs with the transmission line, but has much higher operating costs and an inherent financial risk with the fluctuating price of diesel fuel.</p> <p>Summary Rating: Unacceptable</p>	<p>A transmission line connected to the Provincial grid has slightly higher capital costs but much lower operating costs compared to diesel generation. Overall a transmission line can supply power to the site for less cost and less risk than diesel-fired generators.</p> <p>Summary Rating: Preferred</p>
Technical Applicability and/or System Integrity and Reliability			
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> • Diesel power generation is used across many industries as a portable power source (for example, the proposed for Eagle's Nest Project with 20 megawatts (MW) output) and other remote environments • Additional generators can be brought online in the event of a generator failure or scheduled maintenance <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Building transmission lines to connect to the Provincial grid is common for mines in northern Ontario and has been implemented successfully many time (for example, Victor Mine, Detour Gold Project) <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
Summary evaluation and rating		<p>Diesel generators are regularly used in very remote sites for power generation. Diesel generators are very reliable so long as sufficient backup generation capacity exists and sufficient fuel is available.</p> <p>Summary Rating: Preferred</p>	<p>A transmission line connecting to the Provincial grid can provide power to the RRP in a generally predictable way. Transmission line connections are used by most mines in Ontario when surplus energy is available in a nearby high-voltage transmission line.</p> <p>Summary Rating: Preferred</p>
Ability to Service the Site Effectively			
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Power supply not disrupted by Provincial grid outages <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Often requires excess generating capacity (i.e., an additional generator above design load) 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Kenora / Fort Frances line has sufficient spare capacity <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Any grid blackouts are outside of RRR control
Accessibility	Accessible land base or infrastructure needed to support component development or operation	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Can be placed on available land at the RRP site <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Additional land will need to be purchased for ROW on private lands, or land use permit/work permit sought for Crown lands More difficult to access transmission line as it is farther from the site
Summary evaluation and rating		<p>Diesel generators are very reliable so long as sufficient backup generation capacity exists and sufficient fuel is available.</p> <p>Summary Rating: Preferred</p>	<p>A transmission line connecting to the Provincial grid can provide power to the RRP in a generally predictable way. Occasional blackouts are expected because of extreme weather and other unforeseen events that could interrupt the Provincial power grid.</p> <p>Summary Rating: Acceptable</p>
Effects to the Natural Environment			
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Easier to control a point source emission with scrubbers and equivalent technology than minor emissions over a larger area <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Emits particulate matter, SO₂, NO_x, CO₂. Minor air emissions generated during fuel tank farm construction. 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Minimal emissions generated during the transmission line operation (line maintenance) <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Minor air emissions generated by ROW clearing and transmission line construction (CO₂) Provincial grid power generated in part by fossil fuels

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
	Emission rates of GHGs	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Large amount of GHG emissions. Gagnon et al. (2002) estimates the life cycle of diesel generation causes the approximately production of 0.778 t of CO₂ equivalent per megawatt hour. At maximum usage (54 MW), this equates to 42 tonnes per hour of CO₂ equivalent emissions. As this is a life cycle estimate for diesel generation in eastern North America, direct generator CO₂ emissions at site would be less. 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Minimal emissions during operations. • Only emissions are during the construction phase and are relatively minor <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Provincial grid power generated in part by fossil fuels
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • No apparent effects - fuel would be stored in secondary containment such as a bermed and lined facility - any facility discharge would proceed through an oil water separator to meet discharge criteria <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Risk of diesel fuel spill 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • No potential for water quality effects post construction <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Construction activities have the potential to introduce sediment loadings into local watercourse, if not properly managed
	Maintenance or provision of fish habitat	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • No effects to fish habitat apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Risk of diesel fuel spill 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • No potential for water quality effects post construction • Only major watercourse crossing along preferred transmission line route can be accessed relatively easily by road on each side <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Potential fish habitat disruption from watercourse fording and vegetation clearing during construction if best construction practices are not followed
	Maintenance of water flows or conditions suitable for fish passage	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • No surface water flow effect apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • None apparent
	Maintenance of groundwater flows, levels and quality	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • None apparent <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Potential for disturbance to wetlands during construction

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Potential for disturbance to wetlands during construction, however, this effect would be mitigated by winter construction - therefore the functionality of the wetland will not be affected
	Maintenance of wetland connectivity	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Creation of forest edge habitat, preferred by some wildlife species including Whip-poor-will, which is a SAR species <u>Disadvantages</u> <ul style="list-style-type: none"> • Woodland species would be displaced as ROW is cleared • Could act as a corridor for large predators, thereby affecting species such as Moose and White-tailed Deer
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Generator sound emissions would contribute to overall site sound emissions 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Transmission line ROW could create access for hunters, increasing human pressures on game species
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Generator and fuel tank farm footprint could overprint SAR habitat 	<u>Advantages</u> <ul style="list-style-type: none"> • Creation of habitats suitable for SAR species such Whip-poor-will <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Generator sound emissions would contribute to overall site sound emissions 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Transmission line ROW could create access to wildlife areas
	Maintenance or provision of wildlife movement corridors	NA	NA

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
Summary evaluation and rating		Overall, the diesel-fired generators will create far more air, GHG, sound, vibration pollution, with a greater potential for water pollution than the transmission line; all of which can negatively affect the natural environment. All impacts can be mitigated at site with the exception of GHG emissions. Summary Rating: Acceptable	Pollution in significant quantities will not be generated by the transmission line. The greatest impacts would result from forest clearing for line construction, which could change species composition and provide corridor access for larger predators and hunters. There is potential to develop forest edge habitat that would be suitable for Whip-poor-will, a SAR species. Summary Rating: Preferred
Effects to the Human Environment			
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> Any property values that could be impacted by the diesel-fired generators will likely be more impacted by the mine site <u>Disadvantages</u> <ul style="list-style-type: none"> Increased fuel haul truck traffic could impact property values along trucking route 	<u>Advantages</u> <ul style="list-style-type: none"> Much of the proposed transmission line route is located away from populated areas and should not have an impact on property values for much of the route <u>Disadvantages</u> <ul style="list-style-type: none"> Increases the Project footprint relative to diesel-fired generators and therefore could impact property values away from the mine site
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Local construction companies could bid on construction of larger fuel tanks and provide local employment Will likely employ a local fuel contractor to haul fuel to site requiring local truck drivers <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Local construction companies could bid on construction of the transmission line Maintenance on the transmission line will be required post mine closure if transferred to another owner <u>Disadvantages</u> <ul style="list-style-type: none"> Few required jobs during mine operations compared to diesel-fired generation
	Maintenance or provision of local access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Additional fuel haul trucking could hasten wear and tear on Highway 600 	<u>Advantages</u> <ul style="list-style-type: none"> Will create a new corridor along transmission line that could be used by hunters, ATV's, snowmobiles, <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> Local residents will be sufficiently set back from the mine site to not be impacted by generator sound <u>Disadvantages</u> <ul style="list-style-type: none"> Fuel haul trucks will increase traffic sound 	<u>Advantages</u> <ul style="list-style-type: none"> No sound emissions during the operations phase <u>Disadvantages</u> <ul style="list-style-type: none"> Sound could impact nearby residents during ROW clearing and transmission line construction
	Non-interference with water well supply systems	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Fuel spills could contaminate groundwater if not promptly remediated 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
	Potential for general disturbance and adverse affects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> Generator emissions will comply with any environmental compliance approval requirements, including particulate matter, and should not pose as an adverse impact on aesthetics <u>Disadvantages</u> <ul style="list-style-type: none"> Increased fuel haul truck traffic along roadways where most residents are located is an adverse aesthetics impact 	<u>Advantages</u> <ul style="list-style-type: none"> Most aesthetic impacts are located away from populated areas <u>Disadvantages</u> <ul style="list-style-type: none"> Cleared ROW and transmission line is an adverse impact on natural aesthetics
	Potential for adverse health and safety effects	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Increased traffic along regional roads poses an increased traffic accident risk for everyone on the roadway 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> Operations will require large amounts of fuel and purchasing of fuel could improve regional fuel distribution infrastructure Additional employment from fuel haul truck employers could lead to increased spending on local goods and services, strengthening the local economy <u>Disadvantages</u> <ul style="list-style-type: none"> Highway 600 may wear and tear faster from fuel haul truck traffic 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance and reliability of power supply systems	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will reinforce the local power grid if transferred to Hydro One Networks Inc. (HONI) <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance and reliability of pipeline systems	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Diesel-fired generators would be a primary source of air emissions at the RRP; point of impingement air quality standards could be maintained 	<u>Advantages</u> <ul style="list-style-type: none"> Transmission line and ROW will not contribute to air emissions <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
	Maintenance or attainment of the quality of drinking water supply systems	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Fuel spills that are not promptly remediated could degrade downstream water quality and local groundwater quality 	<u>Advantages</u> <ul style="list-style-type: none"> • None Apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None Apparent
	Managing the potential for adverse electromagnetic exposure	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • 230 kilovolt (kV) transmission line will generate electric and magnetic fields along the ROW; although electric and magnetic fields loose strength exponentially with distance, the transmission line will be set back from residential areas such that there would be no health risk associated with electromagnetic fields
	Maintaining safe road traffic conditions that are within the domain of RRR control	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Increased fuel haul traffic, despite operational safeguards onsite roads, could increase the chance of an accident 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
	Maintenance or provision of health services	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Effect on agricultural lands	Potential loss of agricultural lands	<u>Advantages</u> <ul style="list-style-type: none"> • Small footprint <u>Disadvantages</u> <ul style="list-style-type: none"> • Minor footprint 	<u>Advantages</u> <ul style="list-style-type: none"> • Proposed transmission line routing will be situated along high ground ridges and low lying areas and would generally avoid agricultural land <u>Disadvantages</u> <ul style="list-style-type: none"> • If required to cross agricultural land, transmission line impacts should be limited to a small area around the transmission line poles
	Potential loss of agricultural productivity	NA	NA

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> Construction of fuel tanks could be awarded to a regional construction company Fuel could be purchased through a regional supply hub in Fort Frances <u>Disadvantages</u> <ul style="list-style-type: none"> Purchase of generators and fuel tanks may be from outside the regional economy 	<u>Advantages</u> <ul style="list-style-type: none"> Clearing of the ROW could be awarded to a regional forestry company Construction of the transmission line could be awarded to a regional construction company <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on government services	All indicators	NA	NA
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Commercial hydro development is consistent with MNR Crown land use policies for the area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Excessive waste materials	All indicators	NA	NA
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damaged, or relocation cannot reasonably be avoided	<u>Advantages</u> <ul style="list-style-type: none"> No effect on built heritage and cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May directly or indirectly affect built heritage and cultural heritage landscapes depending on route chosen
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject limitations of Company capacity and community members' personal choice)	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms of protection/preservation supported by local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Archaeological sites along transmission line route may be discovered <u>Disadvantages</u> <ul style="list-style-type: none"> Archaeological sites discovered along transmission line route will need to be avoided
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Increased access along ROW <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
Summary evaluation and rating		<p>Diesel-fired generation has the potential to boost the regional economy through construction of the fuel tanks and purchase/delivery of diesel fuel, thereby creating a larger economic benefit than the transmission line.</p> <p>This option will contribute to greater air, sound and aesthetic pollution on nearby residents and has the potential for greater water pollution through fuel spills. Increased traffic over local roads for fuel transport. Overall, the negative impacts of increased traffic and pollution will outweigh the economic benefits to nearby residents and diesel-fired generation is not considered the preferred option.</p> <p>Summary Rating: Acceptable</p>	<p>A high voltage transmission line can boost the regional economy through clearing of the ROW and construction of the transmission line. The ROW will also provide access to outdoor enthusiasts and can be seen as a benefit to local residents.</p> <p>The electromagnetic radiation effects expected to be limited to the immediate vicinity of the line, and are not expected to affect area residences. High voltage transmission lines are routinely used in populated areas. Archaeological sites will need to be monitored during construction and avoided.</p> <p>Summary Rating: Preferred</p>
Amenability to Reclamation			
Effect on public safety and security	All indicators	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> • Upon cessation of power generation, air quality at the RRP project would improve as generators will be a primary source of air emissions <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Potential to discover hydrocarbon contamination in soils underlying generators or fuel tank farm - if such contamination exists, soil will need to be removed and remediated at closure 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
	Restoration of passive drainage systems	NA	NA

Table O-13: Power Supply

Performance Objective / Criteria	Indicator	Alternative Method	
		Onsite Diesel-fired Generation	Transmission Line to Provincial Grid
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> Rehabilitated generator pad and fuel tank farm will return to terrestrial habitat <u>Disadvantages</u> <ul style="list-style-type: none"> Rehabilitation will be relatively slow 	<u>Advantages</u> <ul style="list-style-type: none"> Potential for development of forest edge habitats suited to species such as Whip-poor-will, which are a SAR Advantages will depend on whether transmission line ROW is rehabilitated as part of final reclamation or transferred to the HONI to reinforce the Provincial electrical grid (or another owner) If rehabilitated the cleared ROW will return as terrestrial habitat <u>Disadvantages</u> <ul style="list-style-type: none"> If used to reinforce the Provincial electrical grid, ROW habitat will remain a corridor that is cleared of larger trees
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	<u>Advantages</u> <ul style="list-style-type: none"> Restored footprint will provide terrestrial habitat <u>Disadvantages</u> <ul style="list-style-type: none"> Reclaimed generator pad will likely be scarified, possibly with a thin layer of overburden placed over top and seeded or revegetated; it will not likely be useable as farmland 	<u>Advantages</u> <ul style="list-style-type: none"> If the transmission line is removed and ROW rehabilitated, it should return to former habitat relatively quick once ROW maintenance ceases If line transferred to the Province to reinforce the Provincial grid, ROW will become part of Provincial infrastructure <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Provide for an aesthetically pleasing site	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> It would take time for the ROW to regrow following decommissioning of the transmission line
Summary evaluation and rating		Diesel-fired generators are amenable to reclamation. Any associated fuel spill areas could be readily remediated. Summary Rating: Preferred	ROW may be transferred to the Provincial government which would virtually eliminate rehabilitation costs. If transmission line is to be pulled and rehabilitated, it may be comparable to the use of diesel-fired generators in amenability to reclamation. Summary Rating: Preferred
Overall Summary Rating – see text for details		Unacceptable	Preferred

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Cost Effectiveness					
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Located on lands to which RRR already has access, or to which access can be readily attained Alternative avoids populated areas <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Largely avoids populated areas, but still crosses private lands <u>Disadvantages</u> <ul style="list-style-type: none"> Portions of the alignment pass within the general proximity of a small number of residences 	<u>Advantages</u> <ul style="list-style-type: none"> Largely avoids populated areas, but still crosses private lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Local residents are unlikely to support a high voltage transmission line route that passes close to their residences, which could delay EA and permitting processes, and thereby adversely affect investor attractiveness
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Provides a competitive return on investment Ground stability in upland areas may reduce construction costs relative to other options Upland areas are sparsely vegetated, reducing clearing costs as well as costs for vegetation maintenance <u>Disadvantages</u> <ul style="list-style-type: none"> Cost to access remote upland areas may be greater than cost to access other options 	<u>Advantages</u> <ul style="list-style-type: none"> Provides a competitive return on investment Shortest route <u>Disadvantages</u> <ul style="list-style-type: none"> Significant ROW clearing during both construction and maintenance 	<u>Advantages</u> <ul style="list-style-type: none"> Provides a competitive return on investment Short route <u>Disadvantages</u> <ul style="list-style-type: none"> Significant ROW clearing during both construction and maintenance 	<u>Advantages</u> <ul style="list-style-type: none"> Provides a competitive return on investment Low cost of transmission line access as route generally follows existing road network <u>Disadvantages</u> <ul style="list-style-type: none"> Longer transmission line increases construction and maintenance costs
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> Avoids populated areas which in turn decreases risk of Project delays from affected property owners Preferred financial risk <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Acceptable financial risk <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Acceptable financial risk <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Local residents are unlikely to support a high voltage transmission line route that passes close to their residences, which could delay EA and permitting processes

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Summary evaluation and rating		The northern route is a preferred option for cost effectiveness as it is expected to be similar in costs as the other options, is located on lands to which RRR has access, or can reasonably attain access, and carries more limited risks regarding potential conflicts with existing residents. Summary Rating: Preferred	The direct route is preferred from a construction cost perspective, but has some potential for conflict with local residents. Land access to substantive portions of the ROW is not currently available, but is possibly attainable. Summary Rating: Acceptable	The eastern route is preferred from a construction cost perspective, and generally avoids potential for conflict with local residents. Land access to substantive portions of the ROW is not currently available, but is possibly attainable. Summary Rating: Acceptable	The route along existing roads provides ease of access for construction; but also carries a high risk of resident opposition, and is unlikely to be supported by local landowners. Land access is likely to be highly problematic. Summary Rating: Unacceptable
Technical Applicability and/or System Integrity and Reliability					
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> • Predictively effective <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Predictively effective <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Predictively effective <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Predictively effective <u>Disadvantages</u> • 230 kV transmission lines typically run straight when possible, and generally do not curve alongside roads
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA
Summary evaluation and rating		The northern route is preferred as it is effective as most other options. Summary Rating: Preferred	The direct route is preferred as it is effective as most other options. Summary Rating: Preferred	The eastern route is preferred as it is effective as most other options. Summary Rating: Preferred	Routing a 230 kV transmission line along existing roads is not as common as more direct routes, but appears to be as effective as the other options. Summary Rating: Acceptable
Ability to Service the Site Effectively					
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	<u>Advantages</u> • Appears to be able to provide power to the site effectively <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Appears to be able to provide power to the site effectively <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Appears to be able to provide power to the site effectively <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Appears to be able to provide power to the site effectively <u>Disadvantages</u> • None apparent

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Accessibility	Accessible land base or infrastructure needed to support component development or operation	<u>Advantages</u> <ul style="list-style-type: none"> Entire route passes through lands to which RRR holds surface rights, or through Crown lands to which RRR can gain access through Provincial land use permits or easements Fully accessible in winter conditions Intersected by several roads which can provide access all year <u>Disadvantages</u> <ul style="list-style-type: none"> Much of the transmission line is not accessible all year by road 	<u>Advantages</u> <ul style="list-style-type: none"> Fully accessible in winter conditions Intersected by several roads which can provide access all year <u>Disadvantages</u> <ul style="list-style-type: none"> Approximately 50% of the ROW passes through private lands to which RRR does not hold surface rights A reasonable potential exists to obtain surface rights currently held by others Much of the transmission line is not accessible all year by road 	<u>Advantages</u> <ul style="list-style-type: none"> Fully accessible in winter conditions Intersected by several roads which can provide access all year <u>Disadvantages</u> <ul style="list-style-type: none"> Approximately 50% of the ROW passes through private lands to which RRR does not hold surface rights A reasonable potential exists to obtain surface rights currently held by others Much of the transmission line is not accessible all year by road 	<u>Advantages</u> <ul style="list-style-type: none"> Fully accessible year round <u>Disadvantages</u> <ul style="list-style-type: none"> Approximately 50% of the ROW passes through private lands to which RRR does not hold surface rights Obtaining surface rights or easements to construct a 230 kV transmission line across private lands held by others, where there are existing residences, is highly problematic None apparent
Summary evaluation and rating		The northern route is preferred because RRR holds, or can obtain through the Province, surface rights to construct the line. Summary Rating: Preferred	It may be possible to obtain property rights, or easements, to portions of the ROW currently held by others. Summary Rating: Acceptable	It may be possible to obtain property rights, or easements, to portions of the ROW currently held by others. Summary Rating: Acceptable	The route along existing roads is physically accessible; but is unlikely to be made available in terms of property rights. Summary Rating: Unacceptable
Effects to the Natural Environment					
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Construction of the transmission line will generate minimal air emissions No emissions generated by the transmission line during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels 	<u>Advantages</u> <ul style="list-style-type: none"> Construction of the transmission line will generate minimal air emissions No emissions generated by the transmission line during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels 	<u>Advantages</u> <ul style="list-style-type: none"> Construction of the transmission line will generate minimal air emissions No emissions generated by the transmission line during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels 	<u>Advantages</u> <ul style="list-style-type: none"> Construction of the transmission line will generate minimal air emissions No emissions generated by the transmission line during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
	Emission rates of GHGs	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels 	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels 	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels 	<u>Advantages</u> <ul style="list-style-type: none"> Minor GHGs emitted during construction Negligible GHGs emitted during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Provincial grid power generated in part by fossil fuels
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> No potential for water quality degradation during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction could result in fuel spills and erosion which would harm fish if entered into a watercourse; potential effect can be mitigated through use of sound construction practices 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for water quality degradation during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction could result in fuel spills and erosion which would harm fish if entered into a watercourse; potential effect can be mitigated through use of sound construction practices 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for water quality degradation during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction could result in fuel spills and erosion which would harm fish if entered into a watercourse; potential effect can be mitigated through use of sound construction practices 	<u>Advantages</u> <ul style="list-style-type: none"> No potential for water quality degradation during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction could result in fuel spills and erosion which would harm fish if entered into a watercourse; potential effect can be mitigated through use of sound construction practices
	Maintenance or provision of fish habitat	NA	NA	NA	NA
	Maintenance of water flows or conditions suitable for fish passage	NA	NA	NA	NA
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Winter construction will help maintain water quality where the transmission line route crosses low lying areas <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Winter construction will help maintain water quality where the transmission line route crosses low lying areas <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Winter construction will help maintain water quality where the transmission line route crosses low lying areas <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Winter construction will help maintain water quality where the transmission line route crosses low lying areas <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> Area impacted is negligible and will be limited to transmission line poles and guy wires <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Area impacted is negligible and will be limited to transmission line poles and guy wires <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Area impacted is negligible and will be limited to transmission line poles and guy wires <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Area impacted is negligible and will be limited to transmission line poles and guy wires <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance of wetland connectivity	NA	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> Although forested habitat will be removed, it will be replaced by grassland or shrubland Additional forest edge habitat may benefit some species <u>Disadvantages</u> <ul style="list-style-type: none"> Clearing of ROW will remove forested terrestrial habitat (each kilometre of transmission line through woodlands would result in the loss of 4 ha of forest) ROW clearing can fragment forests 	<u>Advantages</u> <ul style="list-style-type: none"> Although forested habitat will be removed, it will be replaced by grassland or shrubland Additional forest edge habitat may benefit some species <u>Disadvantages</u> <ul style="list-style-type: none"> Clearing of ROW will remove forested terrestrial habitat (each kilometre of transmission line through woodlands would result in the loss of 4 ha of forest) ROW clearing can fragment forests 	<u>Advantages</u> <ul style="list-style-type: none"> Although forested habitat will be removed, it will be replaced by grassland or shrubland Additional forest edge habitat may benefit some species <u>Disadvantages</u> <ul style="list-style-type: none"> Clearing of ROW will remove forested terrestrial habitat (each kilometer of transmission line through woodlands would result in the loss of 4 ha of forest) ROW clearing can fragment forests 	<u>Advantages</u> <ul style="list-style-type: none"> Although forested habitat will be removed, it will be replaced by grassland or shrubland Additional forest edge habitat may benefit some species ROW may not be cleared as wide as other options because it will be located adjacent to a road network <u>Disadvantages</u> <ul style="list-style-type: none"> Clearing of ROW will remove forested terrestrial habitat
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbances during construction 	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbances during construction 	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbances during construction 	<u>Advantages</u> <ul style="list-style-type: none"> Impacts limited to construction window <u>Disadvantages</u> <ul style="list-style-type: none"> Potential for sound disturbances during construction
	Maintenance or provision of plant dispersion and wildlife movement corridors	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Will create a new wildlife corridor Could fragment existing terrestrial habitat corridors 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Will create a new wildlife corridor Could fragment existing terrestrial habitat corridors 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Will create a new wildlife corridor Could fragment existing terrestrial habitat corridors 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> • ROW clearing could create new Whip-poor-will habitat <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • ROW clearing could create new Whip-poor-will habitat <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • ROW clearing could create new Whip-poor-will habitat <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • ROW clearing could create new Whip-poor-will habitat <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> • Limited potential for disturbance because of winter construction <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Limited potential for disturbance because of winter construction <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Limited potential for disturbance because of winter construction <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Limited potential for disturbance if winter construction <u>Disadvantages</u> <ul style="list-style-type: none"> • Non-winter construction would be possible with this alternative
	Maintenance or provision of wildlife movement corridors	NA	NA	NA	NA
Summary evaluation and rating		Most northern route environmental impacts occur during the construction phase and can be mitigated. Habitat changes/fragmentation expected to adversely affect some species, and benefit others, such as Whip-poor-will. Summary Rating: Acceptable	Most direct route environmental impacts occur during the construction phase and can be mitigated. Habitat changes/fragmentation expected to adversely affect some species, and benefit others, such as Whip-poor-will. Summary Rating: Acceptable	Most eastern route environmental impacts occur during the construction phase and can be mitigated. Habitat changes / fragmentation expected to adversely affect some species, and benefit others, such as Whip-poor-will. Summary Rating: Acceptable	Most environmental impacts for the route along existing roads occur during the construction phase and can be mitigated. Habitat changes / fragmentation expected to adversely affect some species, and benefit others, such as Whip-poor-will. This option has the added advantage of being located along existing roads where habitat is marginal compared to forest interior areas through which the other routes would cross. Summary Rating: Preferred

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Effects to the Human Environment					
Effect on local residents	Maintenance of property values	<u>Advantages</u> <ul style="list-style-type: none"> Most remote option and will have the least impact on property values <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Moderately remote option but could have some impact on property values 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Moderately remote option but could have some impact on property values 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> ROW will encroach on more properties than other options Will be located along roadways, with high visibility and could impact property values
	Maintenance or improvement of income opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Labour and materials are required to clear ROW and construct transmission line Merchantable timber to be provided to the local forestry licence holder Could encourage future resource development in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Labour and materials are required to clear ROW and construct transmission line Merchantable timber to be provided to the local forestry licence holder Could encourage future resource development in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Labour and materials are required to clear ROW and construct transmission line Merchantable timber to be provided to the local forestry licence holder Could encourage future resource development in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Labour and materials are required to clear ROW and construct transmission line Merchantable timber to be provided to the local forestry licence holder Could encourage future resource development in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of local access	<u>Advantages</u> <ul style="list-style-type: none"> Could potentially improve hunter, angler and recreational vehicle access to highlands to the northeast of the RRP site <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> <ul style="list-style-type: none"> Construction will comply with by-law requirements Located in a remote area with few local residents <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Construction will comply with by-law requirements <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Construction will comply with by-law requirements <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Construction will comply with by-law requirements <u>Disadvantages</u> <ul style="list-style-type: none"> Construction could cause a disturbance as it is a relatively high traffic area compared to other routes

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
	Non-interference with water well supply systems	NA	NA	NA	NA
	Potential for general disturbance and adverse affects on aesthetics	<u>Advantages</u> <ul style="list-style-type: none"> Located in a remote area and should not impact aesthetics <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Transmission line will generally be located away from roads, but still near settled areas causing aesthetic impacts 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Transmission line will generally be located away from roads, but still near settled areas causing aesthetic impacts 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Transmission line will be located along roads and highly visible and will result in impacts to the aesthetic environment
	Potential for adverse health and safety effects	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Equivocal data from some studies suggest that potential health effects could be encountered within distances of likely <100 m from 230 kV transmission lines (Moulder 2006)
Effect on infrastructure	Maintenance or provision of local and regional access	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Possible minor interference with local traffic during construction 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Possible minor interference with local traffic during construction 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Highest potential for interference with local traffic during construction
	Maintenance and reliability of power supply systems	<u>Advantages</u> <ul style="list-style-type: none"> Will reinforce the local electrical grid <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will reinforce the local electrical grid <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will reinforce the local electrical grid <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will reinforce the local electrical grid <u>Disadvantages</u> <ul style="list-style-type: none"> May hinder expansion of roadways, and placement of local medium voltage electrical lines located along transmission line route
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA	NA
	Managing the potential for adverse electromagnetic exposure	<u>Advantages</u> <ul style="list-style-type: none"> Located in a remote area and away from most roads <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Generally located away from roads <u>Disadvantages</u> <ul style="list-style-type: none"> Close to some dwellings 	<u>Advantages</u> <ul style="list-style-type: none"> Generally located away from roads <u>Disadvantages</u> <ul style="list-style-type: none"> Close to some dwellings 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Located entirely along roads Close to some dwellings Equivocal data from some studies suggest that potential health effects could be encountered within distances of likely <100 m from 230 kV transmission lines (Moulder 2006)
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA	NA
Effect on local businesses	Maintenance or improvement of business opportunities	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for local companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for local companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for local companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for local companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	NA	NA	NA	NA
Effect on agricultural lands	Potential loss of agricultural lands	<u>Advantages</u> <ul style="list-style-type: none"> Located away from agricultural lands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May have a minimal impact on agricultural lands from pole placement and heavy equipment causing soil compaction during construction 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May have a minimal impact on agricultural lands from pole placement and heavy equipment causing soil compaction during construction 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> May have a minimal impact on agricultural lands from pole placement and heavy equipment causing soil compaction during construction
	Potential loss of agricultural productivity	NA	NA	NA	NA
Regional economy	Maintenance or improvement of the regional economy	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Opportunity for regional companies to bid on ROW clearing and transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on government services	Maintenance or improvement of the capacity of existing health, education and family support services	<u>Advantages</u> <ul style="list-style-type: none"> Construction of transmission line will stimulate local and regional economy, boosting tax revenues <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Construction of transmission line will stimulate local and regional economy, boosting tax revenues <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Construction of transmission line will stimulate local and regional economy, boosting tax revenues <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Construction of transmission line will stimulate local and regional economy, boosting tax revenues <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Effect on resource management objectives	Consistency with established and planned resource management objectives	<u>Advantages</u> <ul style="list-style-type: none"> Commercial hydro development is consistent with MNR Crown land use policies for the area Township of Chapple is a resource based economy and mine development is recognized in the official plan for contributions to the economic and social well being of its residents and is a highly anticipated component of its official plan Transmission line construction will have a positive impact on mining in the local area May provide additional access for approved hunting in the area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Commercial hydro development is consistent with MNR Crown land use policies for the area Township of Chapple is a resource based economy and mine development is recognized in the official plan for contributions to the economic and social well being of its residents and is a highly anticipated component of its official plan Transmission line construction will have a positive impact on mining in the local area May provide additional access for approved hunting in the area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Commercial hydro development is consistent with MNR Crown land use policies for the area Township of Chapple is a resource based economy and mine development is recognized in the official plan for contributions to the economic and social well being of its residents and is a highly anticipated component of its official plan Transmission line construction will have a positive impact on mining in the local area May provide additional access for approved hunting in the area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Commercial hydro development is consistent with MNR Crown land use policies for the area Township of Chapple is a resource based economy and mine development is recognized in the official plan for contributions to the economic and social well being of its residents and is a highly anticipated component of its official plan Transmission line construction will have a positive impact on mining in the local area May provide additional access for approved hunting in the area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Excessive waste materials	Limiting the generation of unnecessary waste materials	<u>Advantages</u> <ul style="list-style-type: none"> All merchantable timber will be provided to the local forestry licence holder No waste streams generated during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction wastes (not anticipated to be very significant) will be deposited in a municipal landfill 	<u>Advantages</u> <ul style="list-style-type: none"> All merchantable timber will be provided to the local forestry licence holder No waste streams generated during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction wastes (not anticipated to be very significant) will be deposited in a municipal landfill 	<u>Advantages</u> <ul style="list-style-type: none"> All merchantable timber will be provided to the local forestry licence holder No waste streams generated during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction wastes (not anticipated to be very significant) will be deposited in a municipal landfill 	<u>Advantages</u> <ul style="list-style-type: none"> All merchantable timber will be provided to the local forestry licence holder No waste streams generated during operations <u>Disadvantages</u> <ul style="list-style-type: none"> Construction wastes (not anticipated to be very significant) will be deposited in a municipal landfill

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damaged, or relocation cannot reasonably be avoided	<u>Advantages</u> <ul style="list-style-type: none"> Will not disturb any built heritage or cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> Will be visible from some viewpoints as the transmission line will be routed over high ground 	<u>Advantages</u> <ul style="list-style-type: none"> Will not disturb any built heritage or cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will not disturb any built heritage or cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Will not disturb any built heritage or cultural heritage landscapes <u>Disadvantages</u> <ul style="list-style-type: none"> Will be visible though the community of Finland
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject limitations of Company capacity and community members' personal choice)	<u>Advantages</u> <ul style="list-style-type: none"> Employment opportunities during construction First Nations construction companies will have an opportunity to bid on transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Employment opportunities during construction First Nations construction companies will have an opportunity to bid on transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Employment opportunities during construction First Nations construction companies will have an opportunity to bid on transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Employment opportunities during construction First Nations construction companies will have an opportunity to bid on transmission line construction <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms of protection/preservation supported by local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Spiritual, ceremonial, cultural heritage and archaeological sites will be identified through TK/TLU and archaeological studies and will be avoided Any sites discovered during construction can be protected and avoided <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> May improve access to interior areas <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Any impacts would be managed and mitigated through impact benefit agreements or equivalent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		The northern route is preferred as it avoids more populated areas and therefore has fewer impacts to the human environment. Summary Rating: Preferred	The direct route is acceptable as impacts to the human environment can be mitigated. Summary Rating: Acceptable	The eastern route is acceptable as impacts to the human environment can be mitigated. Summary Rating: Acceptable	Local residents are unlikely to be comfortable with positioning a high voltage transmission line within close proximity to their residences because of possible health risks and aesthetics. Summary Rating Unacceptable
Amenability to Reclamation					
Effect on public safety and security	Avoidance of safety and security risks to the general public	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA
	Restoration of passive drainage systems	NA	NA	NA	NA

Table O-14: Transmission Line Routing

Performance Objective / Criteria	Indicator	Alternative Method			
		Alternative A (Northern Route)	Alternative B (Direct Route)	Alternative C (Eastern Route)	Alternative D (Along Existing Roads)
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> ROW may increase SAR habitat (Whip-poor-will and Bobolink) Habitats will revert to forested communities if allowed to <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> ROW may increase SAR habitat (Whip-poor-will and Bobolink) Habitats will revert to forested communities if allowed to <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> ROW may increase SAR habitat (Whip-poor-will and Bobolink) Habitats will revert to forested communities if allowed to <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> ROW may increase SAR habitat (Whip-poor-will and Bobolink) Habitats will revert to forested communities if allowed to <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	<u>Advantages</u> <ul style="list-style-type: none"> May allow hunting, fishing, and recreational vehicle use along reclaimed ROW if not transferred to HONI on closure If transferred to HONI on closure, it will reinforce the Provincial electrical grid in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> One close out option does not allow for ROW forest regeneration 	<u>Advantages</u> <ul style="list-style-type: none"> May allow hunting, fishing, and recreational vehicle use along reclaimed ROW if not transferred to HONI on closure If transferred to HONI on closure, it will reinforce the Provincial electrical grid in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> One close out option does not allow for ROW forest regeneration 	<u>Advantages</u> <ul style="list-style-type: none"> May allow hunting, fishing, and recreational vehicle use along reclaimed ROW if not transferred to HONI on closure If transferred to HONI on closure, it will reinforce the Provincial electrical grid in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> One close out option does not allow for ROW forest regeneration 	<u>Advantages</u> <ul style="list-style-type: none"> May allow fishing, and recreational vehicle use along portions of reclaimed ROW, away from residences, if not transferred to HONI on closure If transferred to HONI on closure, it will reinforce the Provincial electrical grid in the local area <u>Disadvantages</u> <ul style="list-style-type: none"> One close out option does not allow for ROW forest regeneration
	Provide for an aesthetically pleasing site	<u>Advantages</u> <ul style="list-style-type: none"> Remote location <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> ROW would be visible at selected locations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> ROW would be visible at selected locations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		All alternatives are amenable to reclamation. Summary Rating: Preferred	All alternatives are amenable to reclamation. Summary Rating: Preferred	All alternatives are amenable to reclamation. Summary Rating: Preferred	All alternatives are amenable to reclamation. Summary Rating Preferred
Overall Summary Rating – see text for details		Preferred	Acceptable	Acceptable	Unacceptable

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
Cost Effectiveness					
Project financing	Investor attractiveness or risk	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Pit can be flooded passively for a small direct cost <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Natural flooding on its own would take an estimated approximately 98 years, during which time the site would have to be managed Fencing, berming or other safety protection would be required, and need to be maintained until the pit is fully flooded Pit walls would have more time to geochemically react, potentially aggravating pit water quality 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Utilizing all available water sources, the pit could be flooded in as little as 25 years, thereby reducing longer term site management liabilities Available time for the pit walls to react geochemically would be reduced Pit flooding can be achieved at reasonable costs, which would include maintaining, and/ or setting up, several pumping stations around the site, including one station on the Pinewood River (most of these would already be in place as part of mine operations) <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Fencing, berming or other safety protection would be required, and need to be maintained until the pit is fully flooded Possible longer term fish habitat compensation concerns regarding Pinewood River flow effects 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Discharge of tailings to the open pit, once open pit mining is complete at approximately year 10, could save on conventional tailings disposal costs, provided that the underground workings can be secured against the potential for inadvertent flooding <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Securing the underground workings may be difficult and costly 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Pit infilling time could potentially be reduced to less than 15 years, depending on filling rates <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Approximately 200 Mm³ of material (ore, mine rock and overburden) will be removed from the pit; at \$5/m³ placed, the backfilling cost would be approximately \$1B.

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Protracted flooding of the open pit would increase long term site management costs 	<u>Advantages</u> <ul style="list-style-type: none"> • Flooding the open pit in as little time as reasonably practicable would reduce long term site management costs <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Discharge of tailings to the open pit, once open pit mining is complete at approximately year 10, could save on conventional tailings disposal costs, provided that the underground workings can be secured against the potential for inadvertent flooding <u>Disadvantages</u> <ul style="list-style-type: none"> • A substantive crown pillar (of gold bearing ore) may have to be left to secure the underground workings • Failsafe bulkheads and other measures would be required to secure the underground workings against catastrophic flooding 	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • A \$ 1B cost for backfilling is prohibitive and cannot be supported by the RRP
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	NA	NA	<u>Advantages</u> <ul style="list-style-type: none"> • Financial risks would be attractive provided that the underground workings can be secured against the potential for inadvertent flooding (requires more detailed assessment) <u>Disadvantages</u> <ul style="list-style-type: none"> • If the underground were to become flooded during operations, the financial and human risk could be catastrophic 	NA

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
Summary evaluation and rating		Natural flooding of the open pit would extend long term site management costs to an unnecessarily long timeframe, which would raise both costs and uncertainties. Summary Rating: Acceptable	Enhanced flooding of the open pit in as little time as reasonably practicable would reduce long term site management costs. Summary Rating: Preferred	Partial backfilling of the open pit with tailings coupled with enhanced flooding is the most attractive investment and overall financially viable alternative, provided that the health and safety risks associated with the potential for catastrophic flooding can be remedied with certainty. Summary Rating: Preferred provided that security of the underground workings can be guaranteed	The approximate \$1B cost to backfill the open pit by conventional means cannot be supported by the Project. Summary Rating: Unacceptable
Technical Applicability and/or System Integrity and Reliability					
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> • Standard technology with predictable success <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Standard technology with predictable success <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Standard technology <u>Disadvantages</u> • The security of the underground workings must be guaranteed to protect worker health and safety	<u>Advantages</u> • Standard technology with predictable success <u>Disadvantages</u> • None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA
Summary evaluation and rating		Natural flooding of open pits is common practice in the industry. Summary Rating: Preferred	Enhanced flooding of open pits is common practice in the industry. Summary Rating: Preferred	The technology of backfilling open pits with tailings is standard practice, as is the leaving of crown pillars and the construction of bulkheads, but the risk to health and safety requires careful evaluation. Summary Rating: Preferred providing that security of the underground workings can be guaranteed	Backfilling of open pits is standard technology with no undue risks. Summary Rating: Preferred

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
Ability to Service the Site Effectively					
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption and/or contingencies available	NA	NA	NA	NA
Accessibility	Accessible land base or infrastructure needed to support component development and operation	NA	NA	NA	NA
Summary evaluation and rating		NA	NA	NA	NA
Effects to the Natural Environment					
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Emission rates of GHGs	NA	NA	NA	NA
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Allowing the open pit to flood more slowly means that any problematic site effluents can be directed to the open pit and held without release for timelines for approximately 100 years <u>Disadvantages</u> <ul style="list-style-type: none"> Flooding the pit slowly will allow the pit walls more time to oxidize, thereby further aggravating pit water quality Flooding the pit slowly will increase the timeline to achieve overall site passive water quality management 	<u>Advantages</u> <ul style="list-style-type: none"> Flooding the pit more quickly will decrease the timeline to achieve overall site passive water quality management, recognizing that seepage from the Potentially Acid Generating (PAG) mine rock stockpile may have to be collected and managed <u>Disadvantages</u> <ul style="list-style-type: none"> Allowing the open pit to flood more quickly means that any problematic site effluents will need to be treated and managed to a quality suitable for discharge over a shorter timeframe 	<u>Advantages</u> <ul style="list-style-type: none"> Partially backfilling the open pit with tailings would allow the TMA to be closed out and stabilized sooner, with the expectation that passive runoff control could be achieved <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent, as only about 10-15% of the total pit volume would be occupied with tailings solids,; hence water management timelines for the site, other than for the TMA, would not be appreciably affected 	<u>Advantages</u> <ul style="list-style-type: none"> Placing all PAG rock in the pit, together with additional NPAG rock and/or overburden would remove long term ARD potentials, especially if the material was capped with clay till <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> Allowing closed out portions of the RRP site to drain naturally to the Pinewood River, including the TMA and West Creek, would be optimal for maintaining downstream river flows and associated fish habitat, provided that runoff quality is acceptable <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent, depending on the extent to which site catchments are diverted to accelerate flooding of the open pit A more balanced approach could be used, where some portion of local catchments would be diverted to the open pit, along with a smaller portion of Pinewood River flows <u>Disadvantages</u> <ul style="list-style-type: none"> Diverting site catchments and a larger portion of the Pinewood River flow to the open pit would adversely affect West Creek and Pinewood River flows, and hence fish habitat 	<u>Advantages</u> <ul style="list-style-type: none"> Partially backfilling the open pit with tailings would assist with a balanced approach to accelerated flooding of the pit <u>Disadvantages</u> <ul style="list-style-type: none"> Only about 10 to 15% of the total pit volume would be occupied with tailings solids, which would have a limited net effect on pit flooding times 	<u>Advantages</u> <ul style="list-style-type: none"> Backfilling the pit with mine rock and overburden solids would allow site drainages to operate in a more natural condition, within a comparatively short time frame, provided that water runoff quality is acceptable <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent, provided that runoff quality is acceptable
	Maintenance of water flows or conditions suitable for fish passage	See above	See above	See above	See above
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA
Effect on wetlands	All indicators	NA	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative does not generate terrestrial habitat at closure, nor does it accelerate reclamation of the TMA 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative does not generate terrestrial habitat at closure, nor does it accelerate reclamation of the TMA 	<u>Advantages</u> <ul style="list-style-type: none"> Partially backfilling the open pit with tailings would allow the TMA to be closed out and stabilized sooner, including the development of terrestrial habitat around the TMA margin <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Backfilling the open pit with mine rock and overburden would allow terrestrial habitats suitable for wildlife to be redeveloped within the open pit area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
	Potential for noise (or other harm and harassment) related disturbance	NA	NA	NA	NA
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA	NA	NA
Effect on SAR	All indicators	NA	NA	NA	NA
Summary evaluation and rating		<p>Allowing the pit to flood more slowly would provide for longer term effluent containment without release (mainly the pit and PAG mine rock stockpile seepage), and would also divert less runoff away from site area watercourses, thereby more effectively maintaining fish habitat. The disadvantages would longer term exposure of the pit walls to oxidation, and a longer timeline, to establish passive site drainage for the open pit.</p> <p>Summary Rating: Acceptable</p>	<p>Flooding the pit more quickly would accelerate the time line to establish passive site drainage from all parts of the site and would reduce the period of pit wall exposure to oxidation; but an aggressive pit flooding approach would have adverse effects on downstream flows and fish habitat.</p> <p>Summary Rating: Acceptable</p>	<p>The principal advantage of discharging tailings to the open pit during the final years of operation would be to accelerate reclamation of the TMA which would provide for more rapid stabilization of passive TMA drainage, and more rapid establishment of terrestrial habitat reclamation around the TMA perimeter. Effects of pit filling, itself, would be modest.</p> <p>Summary Rating: Acceptable</p>	<p>Placing all of the PAG rock back in the pit and covering this PAG rock with NPAG rock and clay till overburden would remove any long term ARD potential once the system stabilizes. Backfilling the pit would also allow for the re-establishment of terrestrial habitats to support wildlife.</p> <p>Summary Rating: Preferred</p>
Effects to the Human Environment					
Effect on local residents	All indicators	NA	NA	NA	NA
Effect on infrastructure	All indicators	NA	NA	NA	NA
Public health and safety	All indicators	NA	NA	NA	NA
Effect on local businesses	All indicators	NA	NA	NA	NA
Effect on tourism and recreation	All indicators	NA	NA	NA	NA
Effect on agricultural lands	All indicators	NA	NA	NA	NA
Regional economy	All indicators	NA	NA	NA	NA

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
Effect on government services	All indicators	NA	NA	NA	NA
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Excessive waste materials	All indicators	NA	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effects on First Nation reserves and communities, and Métis	All indicators	No known potential for adverse effects	No known potential for adverse effects	No known potential for adverse effects	No known potential for adverse effects
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	NA	NA	NA	NA
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA	NA
Summary evaluation and rating		NA	NA	NA	NA

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
Amenability to Reclamation					
Effect on public safety and security	Avoidance of safety and security risks to the general public	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Open pit would have to be fenced, bermed, or otherwise protected against inadvertent public access for a several decades 	<u>Advantages</u> <ul style="list-style-type: none"> The need for long term fencing or other access protection is greatly diminished compared with the natural flooding alternative <u>Disadvantages</u> <ul style="list-style-type: none"> Fencing or other access protection still required until the pit is flooded 	<u>Advantages</u> <ul style="list-style-type: none"> Modest reduction in the timeline during which inadvertent access protection would be required <u>Disadvantages</u> <ul style="list-style-type: none"> Fencing or other access protection still required until the pit is flooded 	<u>Advantages</u> <ul style="list-style-type: none"> Provides the best alternative for inadvertent access protection, as the open pit can be filled within a period of less than 15 years <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	See equivalent criterion in the "Effects to the Natural Environment" section	See equivalent criterion in the "Effects to the Natural Environment" section	See equivalent criterion in the "Effects to the Natural Environment" section	See equivalent criterion in the "Effects to the Natural Environment" section
	Restoration of passive drainage systems	NA	NA	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative does not generate terrestrial habitat at closure, nor does it accelerate reclamation of the TMA 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative does not generate terrestrial habitat at closure, nor does it accelerate reclamation of the TMA 	<u>Advantages</u> <ul style="list-style-type: none"> Partially backfilling the open pit with tailings would allow the TMA to be closed out and stabilized sooner, including the development of terrestrial habitat around the TMA margin <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Backfilling the open pit with mine rock and overburden would allow terrestrial habitats suitable for wildlife to be redeveloped within the open pit area <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on land use	All indicators	NA	NA	NA	NA

Table O-15: Closure – Open Pit

Performance Objective / Criteria	Indicator	Alternative Method			
		Natural Flooding	Enhanced Flooding	Partially Backfill with Tailings and Flood	Backfill with Mine Rock and Overburden
Summary evaluation and rating	Allowing the pit to flood more slowly would provide for longer term effluent containment without release (mainly the pit and PAG mine rock stockpile seepage), and would also divert less runoff away from site area watercourses, thereby more effectively maintaining fish habitat. The disadvantages would be longer term exposure of the pit walls to oxidation, and a longer timeline, to establish passive site drainage for the open pit. Summary Rating: Acceptable	Flooding the pit more quickly would accelerate the time line to establish passive site drainage from all parts of the site and would reduce the period of pit wall exposure to oxidation; but an aggressive pit flooding approach would have adverse effects on downstream flows and fish habitat. Summary Rating: Acceptable	The principal environmental advantage of discharging tailings to the open pit during the final years of operation would be to accelerate reclamation of the TMA which would provide for more rapid stabilization of passive TMA drainage, and more rapid establishment of terrestrial habitat reclamation around the TMA perimeter. Effects on pit filling, itself, would be modest. Summary Rating: Acceptable	Placing all of the PAG rock back in the pit and covering this PAG rock with NPAG rock and clay till overburden would remove any long term ARD potential once the system stabilizes. Backfilling the pit would also allow for the re-establishment of terrestrial habitats to support wildlife Summary Rating: Preferred	
Overall Summary Rating – see text for details	Acceptable	Preferred provided that fish habitat considerations can be accommodated	Acceptable provided that health and safety risks to underground workers can be guaranteed	Unacceptable	

Table O-16: Closure – Underground Mine

Performance Objective / Criteria	Indicator	Alternative Method		
		Natural Flooding	Enhanced Flooding	Backfill with Mineral Wastes
Cost Effectiveness				
Project financing	Investor attractiveness or risk	<u>Advantages</u> <ul style="list-style-type: none"> Passive flooding of underground (underground) workings is standard practice in the industry No added costs to flood the underground workings passively <u>Disadvantages</u> <ul style="list-style-type: none"> Underground workings would be exposed to oxygen for a greater period of time, thereby generating increased acidity and metal leaching compared with a more aggressive flooding scenario – this water would ultimately report to the pit lake and would therefore be contained and managed 	<u>Advantages</u> <ul style="list-style-type: none"> Reduced time would be available for further oxidation of exposed underground tunnels and working faces <u>Disadvantages</u> <ul style="list-style-type: none"> Additional costs would be involved for enhanced flooding of the underground workings Enhanced flooding would only be effective if secured bulkheads were established to hydraulically isolate the underground workings from the open pit, otherwise any water added to the underground workings would simply equilibrate with the open pit water level 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Backfilling the underground workings with mine rock or tailings would be excessively expensive, and would provide no specific benefit Costing for such action would have to be accounted for and posted as part of mine closure financial assurance Access to the underground workings for any future mineral development, beyond the lifespan of the RRP would be impeded (many historic properties are explored at future dates from historic, dewatered underground workings)
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> No added costs to flood the underground working passively <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Added costs would be incurred for limited potential benefit 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Backfilling the underground workings with mine rock or tailings would be excessively expensive, and would provide no specific benefit
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	NA	NA	NA

Table O-16: Closure – Underground Mine

Performance Objective / Criteria	Indicator	Alternative Method		
		Natural Flooding	Enhanced Flooding	Backfill with Mineral Wastes
Summary evaluation and rating		<p>Allowing the underground workings to flood passively is standard industry practice, has no added costs, and does not confer any undue liabilities or risks.</p> <p>Summary Rating: Preferred</p>	<p>Enhanced flooding of the underground workings would only be effective if secured bulkheads were established to hydraulically isolate the underground workings from the open pit, otherwise any water added to the underground workings would simply equilibrate with the open pit water level. Additional costs would be incurred to construct the bulkheads and to pump water to the underground, with little if any benefit</p> <p>Summary Rating: Acceptable</p>	<p>Backfilling the underground workings with mine rock or tailings would be prohibitively expensive, and would provide no specific benefit. Costs for any such action would have to be accounted for and posted as part of mine closure financial assurance.</p> <p>Summary Rating: Unacceptable</p>
Technical Applicability and/or System Integrity and Reliability				
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Passive flooding of underground workings at closure is standard industry practice <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Technologies for developing underground bulkheads and flooding underground workings are readily available <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Underground stopes are commonly backfilled with mine rock or tailings pastes as part of ongoing mining operations, where such techniques are required to support ongoing mining operations, to ensure access to underground ore bodies <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Backfilling underground tunnels would be difficult and expensive The underground workings would likely have to remain dewatered until backfilling was completed in the different zones of the mine
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA

Table O-16: Closure – Underground Mine

Performance Objective / Criteria	Indicator	Alternative Method		
		Natural Flooding	Enhanced Flooding	Backfill with Mineral Wastes
Summary evaluation and rating		Passive flooding of underground workings at closure is standard industry practice. Summary Rating: Preferred	Technologies for developing underground bulkheads and flooding underground workings are readily available. Summary Rating: Preferred	Underground stopes are commonly backfilled with mine rock or tailings pastes as part of ongoing mining operations, where such techniques are required to support ongoing mining operations, to ensure access to underground ore bodies. These technologies are not commonly used at closure, but they can be technically implemented. It would be difficult to backfill the entire volume of the underground workings, especially for access and connecting tunnels. Summary Rating: Unacceptable
Ability to Service the Site Effectively				
Service	All indicators	NA	NA	NA
Accessibility	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA
Effects to the Natural Environment				
Effect on air quality and climate	All indicators	NA	NA	NA
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	Protection of aquatic life guidelines, or scientifically defensible alternatives, would be maintained in the receiving water through management of pit lake water quality discharge, irrespective of the method of underground mine reclamation (flooding or backfilling)		
	Maintenance or provision of fish habitat	The total volume of the underground workings is expected to be in the order of 5 Mm ³ , which represents approximately 2.5% of projected open pit volume. The underground workings would be connected to the open pit, unless bulkheads are put in place to hydraulically isolate the underground workings from the open pit. Therefore, whether or not the underground workings are flooded naturally or aggressively, or backfilled, will have little effect on overall water management at the site during mine closure, and hence little effect on fish habitat. For comparison, 5 Mm ³ represents 20% of the April through June flow in Pinewood River in an average year, measured just downstream of the McCallum Creek outflow.		
	Maintenance of water flows or conditions suitable for fish passage	See above	See above	See above
	Maintenance of groundwater flows, levels and quality	See above	See above	See above
Effect on wetlands	All indicators	NA	NA	NA

Table O-16: Closure – Underground Mine

Performance Objective / Criteria	Indicator	Alternative Method		
		Natural Flooding	Enhanced Flooding	Backfill with Mineral Wastes
Effect on terrestrial species and habitat	All indicators	NA	NA	NA
Effect on SAR	All indicators	NA	NA	NA
Summary evaluation and rating		Whether or not the underground workings are flooded passively or aggressively, or backfilled, would have a negligible effect onsite environmental conditions		
Effects to the Human Environment				
Effect on local residents	All indicators	NA	NA	NA
Effect on infrastructure	All indicators	NA	NA	NA
Public health and safety	All indicators	NA	NA	NA
Effect on local businesses	All indicators	NA	NA	NA
Effect on tourism and recreation	All indicators	NA	NA	NA
Effect on agricultural lands	All indicators	NA	NA	NA
Regional economy	All indicators	NA	NA	NA
Effect on government services	All indicators	NA	NA	NA
Effect on resource management objectives	All indicators	NA	NA	NA
Excessive waste materials	All indicators	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	NA	NA	NA
Effects on First Nation reserves and communities, and Métis	All indicators	NA	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA
Effects on traditional land use	All indicators	NA	NA	NA
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA
Amenability to Reclamation				
Effect on public safety and security	All indicators	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	Protection of aquatic life guidelines, or scientifically defensible alternatives, would be maintained in the receiving water through management of pit lake water quality discharge, irrespective of the method of underground mine reclamation (flooding or backfilling)		
	Restoration of passive drainage systems	NA	NA	NA

Table O-16: Closure – Underground Mine

Performance Objective / Criteria	Indicator	Alternative Method		
		Natural Flooding	Enhanced Flooding	Backfill with Mineral Wastes
	Provision of habitats for vegetation and wildlife species, including SAR	NA	NA	NA
Effect on land use	All indicators	NA	NA	NA
Summary evaluation and rating		Whether or not the underground workings are flooded passively or aggressively, or backfilled, would have a negligible effect onsite environmental conditions		
Overall Summary Rating – see text for details		Preferred	Acceptable	Unacceptable

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Cost Effectiveness					
Project financing	Investor attractiveness or risk	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Cost effective use of overburden and NPAG mine rock <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Only a comparatively small quantity of waste overburden and mine rock are needed for RRP construction, estimated at approximately 5% of the available material 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Applicable to overburden and NPAG mine rock <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Not suitable for PAG mine rock 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Approximately 1.5 to 2 Mt of mine rock will be needed as underground (underground) mine backfill, to support mining, and will be required irrespective of other needs and options Pit flooding time could potentially be reduced if the open pit is backfilled in whole or in part, if fill is pushed over the side of the pit <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Approximately 200 Mm³ of material (ore, mine rock and overburden) will be removed from the pit; at \$5/m³ placed, even backfilling a small portion of the pit would be prohibitively expensive 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Engineered covers in conjunction with runoff and seepage management are regarded as progressive means for managing PAG mine rock, but not other materials; and are likely to attract investor support, so long as costs are manageable Residual PAG drainage volumes requiring treatment and/or management can be considerably reduced <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Development of engineered covers is very expensive
Return on investment	Provides a competitive or acceptable return on investment	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Utilizing waste overburden and NPAG mine rock for construction is cost effective, as these materials will be generated irrespective of construction needs <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Only a comparatively small quantity of waste overburden and mine rock are needed for RRP construction, estimated at approximately 5% of the available material 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Most cost effective alternative for non-reactive bulk mining wastes <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Not preferable for PAG mine rock 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Allows a competitive return on investment for underground backfill needed to support mining operations <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Only a very small quantity of material can be economically disposed of using this method 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Reduces the quantity of ARD runoff and seepage that will need to be treated and/or managed <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Development of engineered covers is very expensive

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	<u>Advantages</u> <ul style="list-style-type: none"> No associated financial risk <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> No associated financial risk for NPAG materials <u>Disadvantages</u> <ul style="list-style-type: none"> Could result in longer term liabilities if used for the management of PAG materials 	<u>Advantages</u> <ul style="list-style-type: none"> No associated financial risk <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Reduces long term liabilities associated with PAG materials <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		Utilizing waste overburden and NPAG mine rock for construction is cost effective, as these materials will be generated irrespective of construction needs. But, only a comparative small quantity of waste overburden and mine rock are needed for construction, estimated at approximately 5% of the materials generated. Summary Rating: Preferred (for the disposal of limited quantities of non-reactive material)	This alternative is cost effective and is suitably protective of the environment (and hence conveys less risk) for non-reactive materials that are not required for construction Summary Rating: Preferred (for non-reactive materials that are not used for construction or underground backfill)	Utilizing mine rock for underground backfill is cost effective, as the generation of such backfill from other sources (for example, quarries) would be unacceptably expensive and unnecessarily disturbing to the environment. However, only a very small amount of material, approximately 1.5 to 2 Mt of mine rock will be needed as underground backfill, to support mining. Backfilling the open pit is uneconomic. Summary Rating: Preferred (for the disposal of limited quantities of mine rock)	Developing engineered covers for mine rock is expensive, but reduces overall Project risk, and is likely to be supported by investors and stakeholders as being proactive. Only suitable for PAG materials that are not used for underground backfill. Summary Rating: Preferred (for PAG materials not used for underground backfill)
Technical Applicability and/or System Integrity and Reliability					
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Mine wastes (overburden and NPAG mine rock) are preferentially used for site construction <u>Disadvantages</u> <ul style="list-style-type: none"> Use of PAG rock for construction to be avoided 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative B is commonly used at mine sites for the reclamation of waste stockpiles and is predictably effective for NPAG materials, and possibly some PAG materials <u>Disadvantages</u> <ul style="list-style-type: none"> May not be suitable for some PAG materials 	<u>Advantages</u> <ul style="list-style-type: none"> Mine rock is commonly used for underground backfill <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Engineered covers are being used increasingly more frequently in the industry <u>Disadvantages</u> <ul style="list-style-type: none"> Some collection and management / treatment of residual PAG stockpile seepage is likely to be required

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA	NA
Summary evaluation and rating		Mine wastes (overburden and NPAG mine rock) are preferentially used for site construction Summary Rating: Preferred (for the disposal of limited quantities of non-reactive material)	Alternative B is commonly used at mine sites for the reclamation of waste stockpiles and is predictably effective for NPAG materials, and possibly some PAG materials Summary Rating: Preferred (for non-reactive materials that are not used for construction or underground backfill)	Mine rock is commonly used for underground backfill. Both NPAG and PAG mine rock may be suitable Summary Rating: Preferred (for the disposal of limited quantities of mine rock)	Engineered covers are being used increasingly in the industry, recognizing that some collection and management / treatment of residual PAG stockpile seepage is likely to be required Summary Rating: Preferred (for PAG materials not used for underground backfill)
Ability to Service the Site Effectively					
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available	<u>Advantages</u> <ul style="list-style-type: none"> Mine wastes (overburden and NPAG mine rock) are preferentially used for site construction <u>Disadvantages</u> <ul style="list-style-type: none"> Mine rock production schedule may not meet construction needs for some materials 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Mine rock is commonly used for underground backfill <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA
Accessibility	Accessible land base or infrastructure needed to support component development or operation	NA	NA	NA	NA

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Summary evaluation and rating		Mine wastes (overburden and NPAG mine rock) are preferentially used for site construction. However, the mine rock production schedule may not meet construction needs for some materials. Summary Rating: Preferred (for desired use)	NA Summary Rating: NA	Mine rock is commonly used for underground backfill, and will be readily available when needed, as underground operations will lag behind open pit operations Summary Rating: Preferred (for desired use)	NA Summary Rating: NA
Effects to the Natural Environment					
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA	NA
	Emission rates of GHGs	NA	NA	NA	NA
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent	<u>Advantages</u> • Revegetation will reduce erosion potentials, and hence suspended solids loadings to receiving waters <u>Disadvantages</u> • None apparent	<u>Advantages</u> • None apparent <u>Disadvantages</u> • None apparent	<u>Advantages</u> • An engineered cover will reduce ARD development, and hence the potential for excess metals loadings to receiving waters • Revegetation of the uppermost cover layer will reduce erosion potentials, and hence suspended solids loadings to receiving waters <u>Disadvantages</u> • None apparent
	Maintenance or provision of fish habitat	NA	NA	NA	NA
	Maintenance of water flows or conditions suitable for fish passage	NA	NA	NA	NA
	Maintenance of groundwater flows, levels and quality	NA	NA	NA	NA

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	NA	NA	NA	NA
	Area, type and quality (functionality) of wetlands that would be displaced or altered	NA	NA	NA	NA
	Maintenance of wetland connectivity	NA	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mineral wastes for construction reduces the volume and footprint of mineral waste stockpiles, and reduces disturbance that would otherwise be associated with obtaining construction materials from other sources <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of stockpile surfaces would target the development of habitats previously displaced by mine development; or would target the development of habitats likely to be utilized by SAR species <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mine mineral wastes for underground backfill marginally reduces the volume and footprint of mineral waste stockpiles, and reduces disturbance that would otherwise be associated with obtaining construction materials from other sources <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of stockpile surfaces would target the development of habitats previously displaced by mine development; or would target the development of habitats likely to be utilized by SAR species <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary noise emissions would occur during construction activities 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary noise emissions would occur during reclamation 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Very limited noise emissions during backfilling operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary noise emissions would occur during reclamation
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA	NA	NA
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mine mineral wastes for construction reduces the volume and footprint of mineral waste stockpiles, and reduces potential disturbance that would otherwise be associated with obtaining construction materials from other sources <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of stockpile surfaces could target the development of habitats likely to be utilized by SAR species, especially Whip-poor-will, particularly if bare rock is left available <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mine mineral wastes for underground backfill marginally reduces the volume and footprint of mineral waste stockpiles, and reduces potential disturbance that would otherwise be associated with obtaining construction materials from other sources <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of stockpile surfaces could target the development of habitats likely to be utilized by SAR species, especially Whip-poor-will <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for noise (or other harm and harassment) related disturbance	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary noise emissions would occur during construction activities 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary noise emissions would occur during reclamation 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Very limited noise emissions during backfilling operations 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Temporary noise emissions would occur during reclamation
	Maintenance or provision of wildlife movement corridors	NA	NA	NA	NA

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Summary evaluation and rating		Utilization of a portion of mine mineral wastes for construction reduces the volume and footprint of mineral waste stockpiles, and reduces potential disturbance that would otherwise be associated with obtaining construction materials from other sources. Only a small portion of mineral wastes can be disposed in this manner. Summary Rating: Preferred (recognizing that there are capacity constraints)	Covering and revegetating stockpiles will limit the release of suspended solids loadings to receiving waters and will provide habitat for plant and animal species including SAR species Summary Rating: Preferred (for overburden and NPAG rock stockpiles)	Utilization of a portion of mine mineral wastes for underground backfill reduces the volume and footprint of mineral waste stockpiles, and reduces potential disturbance that would otherwise be associated with obtaining construction materials from other sources. Only a small portion of mineral wastes can be disposed in this manner. Summary Rating: Preferred (recognizing that there are capacity constraints)	Use of an engineered stockpile cover will improve overall site water management, and will limit ARD development and associated metals loadings to receiving waters. Covering and revegetating stockpiles will limit the release of suspended solids loadings to receiving waters and will provide habitat for plant and animal species including SAR species. Summary Rating: Preferred (for PAG rock stockpiles)
Effects to the Human Environment					
Effect on local residents	Maintenance of property values	NA	<u>Advantages</u> • Revegetation of mineral waste stockpiles at closure will improve area aesthetics <u>Disadvantages</u> • None apparent	NA	<u>Advantages</u> • Revegetation of mineral waste stockpiles at closure will improve area aesthetics <u>Disadvantages</u> • None apparent
	Maintenance or improvement of income opportunities	NA	NA	NA	NA
	Maintenance or provision of local access	NA	NA	NA	NA
	Attainment of noise by-law guidelines, and/or background noise levels if already above the guidelines	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Temporary noise emissions would occur during construction activities	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Temporary noise emissions would occur during reclamation	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Very limited noise emissions during backfilling operations	<u>Advantages</u> • None apparent <u>Disadvantages</u> • Temporary noise emissions would occur during reclamation
	Non-interference with water well supply systems	NA	NA	NA	NA

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
	Potential for general disturbance and adverse affects on aesthetics	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of mineral waste stockpiles at closure will improve area aesthetics <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of mineral waste stockpiles at closure will improve area aesthetics <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Potential for adverse health and safety effects	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of the uppermost cover layer will reduce dust emissions, and emissions of any associated metals from mine rock that would otherwise be exposed <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> An engineered cover will reduce ARD development, and hence the potential for excess metals loadings to receiving waters Revegetation of the uppermost cover layer will reduce dust emissions, and emissions of any associated metals from mine rock that would otherwise be exposed <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on infrastructure	Maintenance or provision of local and regional access	NA	NA	NA	NA
	Maintenance and reliability of power supply systems	NA	NA	NA	NA
	Maintenance and reliability of pipeline systems	NA	NA	NA	NA
Public health and safety	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of the uppermost cover layer will reduce dust emissions, and emissions of any associated metals from mine rock that would otherwise be exposed <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of the uppermost cover layer will reduce dust emissions, and emissions of any associated metals from mine rock that would otherwise be exposed <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or attainment of the quality of drinking water supply systems	NA	NA	NA	NA

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
	Managing the potential for adverse electromagnetic exposure	NA	NA	NA	NA
	Maintaining safe road traffic conditions that are within the domain of RRR control	NA	NA	NA	NA
	Maintenance or provision of health services	NA	NA	NA	NA
Effect on local businesses	Maintenance or improvement of business opportunities	NA	NA	NA	NA
Effect on tourism and recreation	Maintenance or improvement of tourism and recreational opportunities	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of mineral waste stockpiles at closure will improve area aesthetics Habitats developed to support wildlife could contribute to hunting opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of mineral waste stockpiles at closure will improve area aesthetics Habitats developed to support wildlife could contribute to hunting opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on agricultural lands	Potential loss of agricultural lands	NA	NA	NA	NA
	Potential loss of agricultural productivity	NA	NA	NA	NA
Regional economy	Maintenance or improvement of the regional economy	NA	NA	NA	NA
Effect on government services	Maintenance or improvement of the capacity of existing health, education and family support, and other services	NA	NA	NA	NA
Effect on resource management objectives	Consistency with established and planned resource management objectives	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Excessive waste materials	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mine mineral wastes for construction reduces the volume and footprint of mineral waste stockpiles <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mine mineral wastes for underground backfill marginally reduces the volume and footprint of mineral waste stockpiles <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA
Effect on built heritage and cultural heritage landscapes	Avoidance of damage to built heritage resources, or document heritage values if damaged, or relocation cannot reasonably be avoided	NA	NA	NA	NA
Effects on First Nation reserves and communities, and Métis	Maintenance or improvement of First Nation reserve and community conditions (subject limitations of Company capacity and community members' personal choice)	NA	NA	NA	NA
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms of protection / preservation supported by local First Nations and Métis	NA	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	NA	<u>Advantages</u> <ul style="list-style-type: none"> Habitats developed to support wildlife could contribute to hunting opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Habitats developed to support wildlife could contribute to hunting opportunities <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Effects on Aboriginal and Treaty Rights	Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Summary evaluation and rating		Use of this alternative will contribute to a reduction in overall mineral wastes that would otherwise need to be stockpiled on surface Summary Rating: Preferred (recognizing that there are capacity constraints)	Revegetation of mineral waste stockpiles at closure will improve area aesthetics, and potentially contribute to hunting opportunities Summary Rating: Preferred (for overburden and NPAG rock stockpiles)	Use of this alternative will contribute to a minor reduction in overall mineral wastes that would otherwise need to be stockpiled on surface Summary Rating: Preferred (recognizing that there are capacity constraints)	Revegetation of mineral waste stockpiles at closure will improve area aesthetics, and potentially contribute to hunting opportunities Summary Rating: Preferred (for PAG rock stockpiles)
Amenability to Reclamation – NA					
Effect on public safety and security	Avoidance of safety and security risks to the general public	NA	NA	NA	NA
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of the uppermost cover layer will reduce dust emissions, and emissions of any associated metals from mine rock that would otherwise be exposed <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of the uppermost cover layer will reduce dust emissions, and emissions of any associated metals from mine rock that would otherwise be exposed <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation will reduce erosion potentials, and hence suspended solids loadings to receiving waters <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> An engineered cover will reduce ARD development, and hence the potential for excess metals loadings to receiving waters Revegetation of the uppermost cover layer will reduce erosion potentials, and hence suspended solids loadings to receiving waters <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
	Restoration of passive drainage systems	NA	NA	NA	NA
	Provision of habitats for vegetation and wildlife species, including SAR	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mine mineral wastes for construction reduces the volume and footprint of mineral waste stockpiles, and reduces disturbance that would otherwise be associated with obtaining construction materials from other sources <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of stockpile surfaces would target the development of habitats previously displaced by mine development; or would target the development of habitats likely to be utilized by SAR species <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Utilization of a portion of mine mineral wastes for underground backfill marginally reduces the volume and footprint of mineral waste stockpiles, and reduces disturbance that would otherwise be associated with obtaining construction materials from other sources <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of stockpile surfaces would target the development of habitats previously displaced by mine development; or would target the development of habitats likely to be utilized by SAR species <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Effect on land use	Provide opportunities for productive land uses following completion of mining activities	NA	<u>Advantages</u> <ul style="list-style-type: none"> Restored sites would be mainly supportive of wildlife habitat functions, and related uses such as hiking, hunting, and other outdoor recreational pursuits <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Restored sites would be mainly supportive of wildlife habitat functions, and related uses such as hiking, hunting, and other outdoor recreational pursuits <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Provide for an aesthetically pleasing site	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of mineral waste stockpiles at closure will improve area aesthetics <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	NA	<u>Advantages</u> <ul style="list-style-type: none"> Revegetation of mineral waste stockpiles at closure will improve area aesthetics <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent

Table O-17: Closure – Stockpiles

Performance Objective / Criteria	Indicator	Alternative Method			
		Re-use During Construction (Alternative A)	Stabilize and Cover / Revegetate (Alternative B)	Use in Backfill (Alternative C)	Engineered Cover (Alternative D)
Summary evaluation and rating		Utilization of a portion of mine mineral wastes for construction reduces the volume and footprint of mineral waste stockpiles. Only a small portion of mineral wastes can be disposed in this manner.	Covering and revegetating stockpiles will limit the release of suspended solids loadings to receiving waters and will provide habitat for plant and animal species including SAR species.	Utilization of a portion of mine mineral wastes for underground backfill reduces the volume and footprint of mineral waste stockpiles. Only a small portion of mineral wastes can be disposed in this manner.	Use of an engineered stockpile cover will improve overall site water management, and will limit ARD development and associated metals loadings to receiving waters. Covering and revegetating stockpiles will limit the release of suspended solids loadings to receiving waters and will provide habitat for plant and animal species including SAR species.
		Summary Rating: Preferred (recognizing that there are capacity constraints)	Summary Rating: Preferred (for overburden and NPAG rock stockpiles)	Summary Rating: Preferred (recognizing that there are capacity constraints)	Summary Rating: Preferred (for PAG rock stockpiles)
Overall Summary Rating – see text for details		Preferred (recognizing that there are capacity constraints)	Preferred (for overburden and NPAG rock stockpiles)	Preferred (recognizing that there are capacity constraints)	Preferred (for PAG rock stockpiles)

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
Cost Effectiveness				
Project financing	Investor attractiveness or risk	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Flooding PAG tailings to maintain the tailings in a saturated state and to provide an effective oxygen barrier, is a standard and well accepted closure strategy for preventing ARD development Cost effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Complete flooding of the tailings at closure would require a very large quantity of water to be impounded within the TMA in perpetuity in order to fully flood all exposed tailings beaches Requires maintenance of substantive water impoundment dams in perpetuity 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> Covering PAG tailings with a sufficiently thick layer of clay till overburden would help to maintain the underlying tailings in a saturated condition, and would also provide an oxygen barrier, both of which would act to prevent ARD development Water impoundment dams would not be required following closure <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> Costs for providing a complete overburden cover would be prohibitive Geometry of the deposited tailings would not be conducive to developing a full overburden cover, as lower areas of the TMA would be under water 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> A combination of technologies would preclude ARD development Alternative more appropriate to overall TMA basin geometry at closure, taking advantage of lower elevation areas for flooding, and exposed tailings beaches for covering with overburden Cost effective <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> None apparent

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
Return on investment	Provides a competitive or acceptable return on investment	<u>Advantages</u> <ul style="list-style-type: none"> Lower cost alternative compared with full overburden cover <u>Disadvantages</u> <ul style="list-style-type: none"> Complete flooding of the tailings at closure would require a very large quantity of water to be impounded within the TMA in perpetuity in order to fully flood all exposed tailings beaches Requires maintenance of substantive water impoundment dams in perpetuity 	<u>Advantages</u> <ul style="list-style-type: none"> Avoids maintenance of water impoundment dams in perpetuity, but tailings dams would still require regular inspection <u>Disadvantages</u> <ul style="list-style-type: none"> Costs for providing a complete overburden cover would be prohibitive 	<u>Advantages</u> <ul style="list-style-type: none"> Combination of technologies would preclude ARD development Alternative more appropriate to overall TMA basin geometry at closure, taking advantage of lower elevation areas for flooding, and exposed tailings beaches for covering with overburden Cost effective <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Financial risk	Provides, or is associated with, a preferred, manageable or acceptable financial risk	NA	NA	NA
Summary evaluation and rating		<p>Flooding PAG tailings to maintain the tailings in a saturated state and to provide an oxygen barrier to prevent development of ARD is a standard and well accepted closure strategy. The strategy can be cost effective on its own, provided that the geometry of the deposited tailings facilitates such an approach. However, for the RRP the geometry of the TMA basin at closure would not be conducive to developing a full water cover because water levels in the basin would have to be raised by from 10 to 15 m to fully cover the exposed tailings beaches. Impounding such a quantity of water in perpetuity is undesirable.</p> <p>Summary Rating: Unacceptable</p>	<p>Covering PAG tailings with a sufficiently thick layer of clay till overburden would help to maintain the underlying tailings in a saturated condition, and would also provide an oxygen barrier, both of which would act to prevent ARD development. However, the costs associated with providing a complete TMA overburden cover would be prohibitive. The geometry of the deposited tailings would also not be conducive to developing a full overburden cover, as lower elevation areas of the TMA would be under water.</p> <p>Summary Rating: Unacceptable</p>	<p>The combined application of flooding technologies, involving flooding of the major portion of the deposited tailings, coupled with covering the perimeter tailings beaches with clay till overburden, is the most attractive option in terms of overall function, costs and liability.</p> <p>Summary Rating: Preferred</p>

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
Technical Applicability and/or System Integrity and Reliability				
Available technology	Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required	<u>Advantages</u> <ul style="list-style-type: none"> Standard technology with predictable success <u>Disadvantages</u> <ul style="list-style-type: none"> There is some long term risk with holding large volumes of water against tailings dams over the longer term 	<u>Advantages</u> <ul style="list-style-type: none"> Standard technology with predictable success <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Standard technology with predictable success <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required	NA	NA	NA
Summary evaluation and rating		Flooding PAG tailings to prevent ARD development is a standard and well proven technology. There is some long term risk with holding large volumes of water against tailings dams over the longer term. Summary Rating: Acceptable	Covering PAG tailings with a sufficiently thick, low permeability overburden cover is a standard well proven technology. Summary Rating: Preferred	The combined approach of flooding low lying PAG tailings, and covering exposed perimeter PAG tailings beaches with low-permeability overburden, is a standard well proven technology. Summary Rating: Preferred
Ability to Service the Site Effectively				
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption and/or contingencies available	NA	NA	NA
Accessibility	Accessible land base or infrastructure needed to support component development and operation	NA	NA	NA
Summary evaluation and rating		NA	NA	NA
Effects to the Natural Environment				
Effect on air quality and climate	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA
	Emission rates of GHGs	NA	NA	NA

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
Effects on fish and aquatic habitat	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Flooding the PAG tailings will provide an effective means of managing ARD potentials, and attaining a post-closure TMA runoff quality that is protective of the Pinewood River receiver <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Covering the PAG tailings with a sufficiently thick, low-permeability overburden cover will provide an effective means of managing ARD potentials, and attaining a post-closure TMA runoff quality that is protective of the Pinewood River receiver <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Flooding the major portion of the PAG tailings, and covering the perimeter tailings beaches with a sufficiently thick, low-permeability overburden cover, will provide an effective means of managing ARD potentials, and attaining a post-closure TMA runoff quality that is protective of the Pinewood River receiver <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance or provision of fish habitat	<u>Advantages</u> <ul style="list-style-type: none"> Allowing closed out portions of the RRP site to drain naturally to the Pinewood River, including the TMA, would be optimal for maintaining downstream river flows and associated fish habitat, provided that runoff quality is acceptable <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Allowing closed out portions of the RRP site to drain naturally to the Pinewood River, including the TMA, would be optimal for maintaining downstream river flows and associated fish habitat, provided that runoff quality is acceptable <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Allowing closed out portions of the RRP site to drain naturally to the Pinewood River, including the TMA, would be optimal for maintaining downstream river flows and associated fish habitat, provided that runoff quality is acceptable <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance of water flows or conditions suitable for fish passage	See above	See above	See above

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
	Maintenance of groundwater flows, levels and quality	NA	NA	NA
Effect on wetlands	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	<u>Advantages</u> <ul style="list-style-type: none"> Flooding the PAG tailings will provide an effective means of managing ARD potentials, and attaining a post-closure TMA runoff quality that is protective of downstream wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Covering the PAG tailings with a sufficiently thick low-permeability overburden cover will provide an effective means of managing ARD potentials, and attaining a post-closure TMA runoff quality that is protective of downstream wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Flooding the major portion of the PAG tailings, and covering the perimeter tailings beaches with a sufficiently thick low-permeability overburden cover, will provide an effective means of managing ARD potentials, and attaining a post-closure TMA runoff quality that is protective of downstream wetlands <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Area, type and quality (functionality) of wetlands that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> A limited wetland zone would be developed around the TMA basin perimeter <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Use of this alternative would be conducive to developing an extensive post-closure TMA pond perimeter wetland <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
	Maintenance of wetland connectivity	NA	NA	NA
Effect on terrestrial species and habitat	Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered	<u>Advantages</u> <ul style="list-style-type: none"> None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> Alternative does not generate terrestrial habitat at closure 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative would generate the maximum area (approximately 8 km²) of terrestrial habitat <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Alternative would generate a mix of aquatic, wetland and terrestrial habitat <u>Disadvantages</u> <ul style="list-style-type: none"> Generates less terrestrial habitat compared with the full cover alternative
	Potential for noise (or other harm and harassment) related disturbance	NA	NA	NA

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
	Maintenance or provision of plant dispersion and wildlife movement corridors	NA	NA	NA
Effect on SAR	Sensitivity level of involved species (Endangered, Threatened, Special Concern)	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species	Various SAR species are present in the local area of the mine site, with Whip-poor-will being potentially the most sensitive species
	Area, type and quality of SAR territories or habitat that would be displaced	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Alternative does not generate terrestrial habitat at closure 	<u>Advantages</u> <ul style="list-style-type: none"> • Alternative would generate the maximum area of terrestrial habitat • Habitats could be made conducive to selected SAR species such as Nighthawks, Bobolink, Golden-winged Warbler, and Olive-sided Flycatcher <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Alternative would generate an intermediate area of terrestrial habitat • Habitats could be made conducive to selected SAR species such as Nighthawks, Bobolink, Golden-winged Warbler, and Olive-sided Flycatcher <u>Disadvantages</u> <ul style="list-style-type: none"> • Less terrestrial habitat would be generated compared with the full cover alternative
	Potential for noise (or other harm and harassment) related disturbance	NA	NA	NA
	Maintenance or provision of wildlife movement corridors	NA	NA	NA
Summary evaluation and rating		<p>All alternatives are capable of preventing the development of ARD, and of protecting downstream wetlands and receiving waters. The principal limitation to this alternative at closure is that it would not generate terrestrial habitat that would be capable of supporting plant and wildlife species.</p> <p>Summary Rating: Acceptable</p>	<p>All alternatives are capable of preventing the development of ARD, and of protecting downstream wetlands and receiving waters. The full cover alternative would also generate an extensive area of terrestrial habitat (approximately 8 km²), once the site is fully restored, that would be capable of supporting plant and wildlife species.</p> <p>Summary Rating: Preferred</p>	<p>All alternatives are capable of preventing the development of ARD, and of protecting downstream wetlands and receiving waters. The mixed cover alternative (pond and perimeter overburden zone) would be capable of supporting terrestrial and wetland plant and wildlife species.</p> <p>Summary Rating: Preferred</p>

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
Effects to the Human Environment				
Effect on local residents	All indicators	NA	NA	NA
Effect on infrastructure	All indicators	NA	NA	NA
Public health and safety	All indicators	NA	NA	NA
Effect on local businesses	All indicators	NA	NA	NA
Effect on tourism and recreation	All indicators	NA	NA	NA
Effect on agricultural lands	All indicators	NA	NA	NA
Regional economy	All indicators	NA	NA	NA
Effect on government services	All indicators	NA	NA	NA
Effect on resource management objectives	All indicators	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> Closure plans will be consistent with agreed-upon land use plan objectives <u>Disadvantages</u> <ul style="list-style-type: none"> None apparent
Excessive waste materials	All indicators	NA	NA	NA
Effect on built heritage and cultural heritage landscapes	All indicators	NA	NA	NA
Effects on First Nation reserves and communities, and Métis	All indicators	No known potential for adverse effects	No known potential for adverse effects	No known potential for adverse effects
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	All indicators	NA	NA	NA
Effects on traditional land use	Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis	NA	NA	NA
Effects on Aboriginal and Treaty Rights	All indicators	NA	NA	NA
Summary evaluation and rating		NA	NA	NA

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
Amenability to Reclamation				
Effect on public safety and security	Avoidance of safety and security risks to the general public	<u>Advantages</u> <ul style="list-style-type: none"> • None apparent <u>Disadvantages</u> <ul style="list-style-type: none"> • Complete flooding of the tailings at closure would require a very large quantity of water to be impounded within the TMA in perpetuity in order to fully flood all exposed tailings beaches – such an impoundment would carry some potential risk, in the event of a dam failure 	<u>Advantages</u> <ul style="list-style-type: none"> • Limited if any risk of a tailings dam failure <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent 	<u>Advantages</u> <ul style="list-style-type: none"> • Concept proposed to mitigate the potential for a tailings dam failure over the longer term <u>Disadvantages</u> <ul style="list-style-type: none"> • None apparent, or very limited, if any, risk
Effect on environmental health and sustainability	Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives	NA	NA	NA
	Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives	See equivalent criterion in the "Effects to the Natural Environment" section	See equivalent criterion in the "Effects to the Natural Environment" section	See equivalent criterion in the "Effects to the Natural Environment" section
	Restoration of passive drainage systems	All alternatives would provide for the development of passive drainage systems	All alternatives would provide for the development of passive drainage systems	All alternatives would provide for the development of passive drainage systems
	Provision of habitats for vegetation and wildlife species, including SAR	See equivalent criterion in the "Effects to the Natural Environment" section	See equivalent criterion in the "Effects to the Natural Environment" section	See equivalent criterion in the "Effects to the Natural Environment" section
Effect on land use	All indicators	NA	NA	NA

Table O-18: Closure – Tailings Management Area

Performance Objective / Criteria	Indicator	Alternative Method		
		Stabilize and Permanent Flooding	Cover with Overburden and Revegetate	Stabilize and Permanent Flooding / Cover With Overburden and Revegetate
Summary evaluation and rating		<p>All alternatives are capable of preventing the development of ARD, and of protecting downstream wetlands and receiving waters. The principal limitation to this alternative at closure is that it would not generate terrestrial habitat that would be capable of supporting plant and wildlife species. Also, complete flooding of the tailings at closure would require a very large quantity of water to be impounded within the TMA in perpetuity in order to fully flood all exposed tailings beaches; such an impoundment would carry some potential risk, in the event of a dam failure.</p> <p>Summary Rating: Acceptable</p>	<p>All alternatives are capable of preventing the development of ARD, and of protecting downstream wetlands and receiving waters. The full cover alternative would also generate an extensive area of terrestrial habitat (approximately 8 km²), once the site is fully restored, that would be capable of supporting plant and wildlife species.</p> <p>There would be limited, if any, risk of a tailings dam failure with this alternative.</p> <p>Summary Rating: Preferred</p>	<p>All alternatives are capable of preventing the development of ARD, and of protecting downstream wetlands and receiving waters. The mixed cover alternative (pond and perimeter overburden zone) would be capable of supporting terrestrial and wetland plant and wildlife species. The mixed concept was proposed, in part, to mitigate the potential for a tailings dam failure over the longer term.</p> <p>Summary Rating: Preferred</p>
Overall Summary Rating – see text for details		Unacceptable	Unacceptable	Preferred

REFERENCES

- Gagnon, L., Belanger, C. and Y. Uchiyama. 2002. Life-cycle Assessment of Electricity Generation Options: The Status of Research in Year 2001. Energy Policy 30 (2002). pp. 1267-1278.
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