

Appendix XX Electrical Power Sources				
<u>Cost Effectiveness</u>				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Goliath Gold Project Financing	Investor desirability and/or risk	Advantages: - Lowest cost option for both Capital cost and operating cost	Advantages: - Owned, operated and controlled by Treasury Metals	Advantages: - None Apparent
		Disadvantages: - None Apparent	Disadvantages: - Capital required for development. - Additional Project footprint required. - Additional Closure costs required.	Disadvantages: - Extremely Capital intensive for initial construction. - Extremely high footprint needed for power generation.
Return on Investment (ROI)	Provides a competitive and acceptable ROI	Advantages: - Long term stability in purchase price/contract	Advantages: - None Apparent	Advantages: - Low operating cost once in production.
		Disadvantages: - None Apparent	Disadvantages: - None Apparent	Disadvantages: - Extremely high payback period and low ROI
Financial Risk	Provides a manageable or acceptable financial risk	Advantages: - Long term stability in purchase price/contract	Advantages: - None Apparent.	Advantages: - Large capital investment required.
		Disadvantages: - None Apparent	Disadvantages: - None Apparent.	Disadvantages: - Large capital investment required and associated long term payback period.
Cost Effectiveness	Summary Evaluation and Rating	Option 1 creates the lowest cost over the life of mine of the project with the lowest capital outlay. Summary Rating: Preferred	On site electrical generation provides reliable electrical power at a reasonable cost. Summary Rating: Acceptable	Alternative energy sources do not provide a reliable electrical power source at a reasonable cost for the project. Summary Rating: Unacceptable

<u>Technical feasibility and technical reliability</u>				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			

Readily Available Technology	Has been successfully implemented in similar mining Projects and can be relied upon for sufficient performance over an extended period of time.	Advantages: - Proven technology used at other mine locations. - Infrastructure in place and currently operating.	Advantages: - Proven technology used at other mine locations, albeit at mines in remote operations.	Advantages: - None apparent
		Disadvantages: - None Apparent.	Disadvantages: - None apparent.	Disadvantages: - Has not been applied to a known mining operation as the sole source of power.
	New technologies must be supported by sufficient investigations and technical study to provide confidence in their performance abilities	N/A	N/A	N/A
Technical feasibility and technical reliability	Summary Evaluation and Rating	Alternative is applicable and acceptable. Summary Rating: Preferred	Alternative is applicable and acceptable. Summary Rating: Acceptable	Not a proven technology for similar mine project. Summary Rating: Unacceptable

<u>Ability to Service Site Effectively</u>				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and contingencies available.	Advantages: - Transformer infrastructure is operated by Treasury Metals, eliminating service disruption risks - Using major electrical power line with very high mechanical availability	Advantages: - Operated by Treasury Metals, eliminating service disruption risks	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - Lower availability of power generators with a higher probability of downtime.	Disadvantages: - Dependent on external environmental factors not with the company's control.
Accessibility	Accessible land base or infrastructure needed to support component development and operation.	Advantages: - Smallest footprint needed.	Advantages: - Some additional footprint needed for power generating stations.	Advantages: - None Apparent.
		Disadvantages: - None Apparent.	Disadvantages: - None Apparent.	Disadvantages: - Very large footprint needed for sufficient power generation.
Ability to Service Site Effectively	Summary Evaluation and Rating	A reliable option with limited disruption risks.	A reliable option with limited disruption risks, however additional construction and potential permits required.	Dependent on external service, however accessible.

Ability to Service Site Effectively				
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		Summary Rating: Preferred	Summary Rating: Acceptable	Summary Rating: Unacceptable

Effects to the Human Environment				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Local residents and recreational users	Effect on property values	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on employment opportunities	Advantages: - None apparent.	Advantages: - Potential for employment opportunities.	Advantages: - Employment opportunities for third party.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on local access points	N/A	N/A	Advantages: - None apparent.
				Disadvantages: - Very large footprint needed for project.
	Effect on current noise levels	Advantages: - Quietest option available.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - Loudest option.	Disadvantages: - Reasonable concern for high pitched noise living near windmills.
	Effect on water supply for both well water and drinking water	N/A	N/A	N/A
	Effect on visual disturbance	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - Large visual disturbance using windmills.
	Potential for adverse health effects	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Infrastructure	Effect on local access	Advantages: - None apparent.	Advantages: - None apparent.
Disadvantages: - None apparent.			Disadvantages: - None apparent.	Disadvantages: - Very large footprint needed for project.
	Effect on power supply systems	Using load as approved and purchased from existing power supply.	N/A	N/A
Public Health and Safety	Attainment of air quality point of impingement standards or scientifically	Advantages: - None Apparent.	Advantages: - None Apparent.	Advantages: - None Apparent.
		Disadvantages: - None Apparent.	Disadvantages: - Increased	Disadvantages: - None apparent.

Effects to the Human Environment				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
	defensible alternatives		greenhouse gas emissions from burning fossil fuels.	
	Effect on drinking water supply	N/A	N/A	N/A
	Effect on local health services	N/A	N/A	N/A
Local Economy	Effect on local businesses and economic opportunities	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on access for tourism operators and/or natural resource harvesters	N/A	N/A	N/A
Tourism	Effect on local tourism	N/A	N/A	N/A
Regional Economy	Effect on regional businesses and economic opportunities	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Government Services	Effect on local government services and capacities	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Resource management objectives	Effect on established resource management plans	N/A	N/A	N/A
Built heritage and cultural heritage	Effect on any built heritage resource or cultural heritage features	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Alteration that is not sympathetic or is incompatible with the historic fabric and appearance of cultural heritage resources	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Isolation of a built heritage resource or heritage attribute from it surrounding environment, context or a significant relationship	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Direct or indirect obstruction of significant views or vistas within, from or of built heritage resources or cultural heritage landscapes	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - Large visual change by installation of windmills.
	A change in land use	Advantages:	Advantages:	Advantages:

<u>Effects to the Human Environment</u>				
	Alternative	1	2	3
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		- None apparent.	- None apparent.	- None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Avoidance of damage to built heritage resources or cultural heritage landscapes, or document cultural resources if damage or relocation cannot be reasonably avoided	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Archaeological resources	Effect on land disturbances	Advantages: - Same as above.	Advantages: - Same as above.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Avoidance of archaeological sites or mitigation by excavation if avoidance is not possible, as per the Standards and Guidelines for Consultant Archaeologists (2010).	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
First Nation Reserves and communities	Effect on conditions of community on First Nation reserves	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Spiritual and ceremonial sites	Avoidance of damage or disturbance to known spiritual and/or ceremonial sites	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Traditional Land use	Effect on Traditional Land use as caused by the project	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Aboriginal and Treaty Rights	Effect on Aboriginal and Treaty rights	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Effects to Human Environment	Summary Evaluation and Rating	There is no appreciable or predicted effect or benefit to the human environment. Summary Rating: Acceptable	There is no appreciable or predicted effect or benefit to the human environment. Summary Rating: Acceptable	There is no appreciable or predicted effect or benefit to the human environment. Summary Rating: Unacceptable

<u>Effects to the Physical and Biological Environments</u>				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			

Effects to the Physical and Biological Environments				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Effect on Air Quality and Climate	Maintain air quality point of impingement standards or defensible alternatives	Advantages: - No effect on local air quality.	Advantages: - None apparent.	Advantages: - No effect on local air quality.
		Disadvantages: - None apparent.	Disadvantages: - Highest emissions option.	Disadvantages: - None apparent.
	Emission rates of greenhouse gases (GHGs)	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - Highest emissions option.	Disadvantages: - None apparent.
Effect on aquatic life and habitat	Fulfilment of water quality standards and guidelines for protection of aquatic life or ensuring no further degradation of water quality if current conditions do not match PWQO	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Management of water level in effected water bodies and streams to maintain aquatic life	N/A	N/A	N/A
	Maintenance of fish population	N/A	N/A	N/A
	Maintenance of groundwater levels for both flows and quality	N/A	N/A	N/A
	Effect on wetlands	Fulfilment of water quality standards and guidelines for protection of aquatic life or ensuring no further degradation of water quality if current conditions do not match PWQO	N/A	N/A
Area, type and quality (functionality) of wetlands that would be displaced or altered		N/A	N/A	N/A
Maintenance of wetland connectivity		N/A	N/A	N/A
Effect on terrestrial species and habitat	Area, type and quality of terrestrial habitat that would be displaced or altered	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effects of noise disturbance generated by the project	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - Minimal noise from generating station.	Disadvantages: - Unknown effects of high pitched noise of wind turbines.
Maintenance of wildlife movement corridors and plant dispersion	N/A	N/A	N/A	

Effects to the Physical and Biological Environments				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
	Effect on overall wildlife population	N/A	N/A	N/A
Effect on Species at Risk (SAR)	Sensitivity level of effected SAR (Endangered, Threatened, Special Concern)	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - Can cause damage to specific bird and bat species by collisions.
	Area, type and quality of SAR that would be displaced or altered	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
	Effects of noise disturbance generated by the project	Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Maintenance of wildlife movement corridors and plant dispersion	N/A	N/A	Disadvantages: - Can cause damage to specific bird and bat species by collisions.
Effects to Physical and Biological Environments	Summary Evaluation and Rating	No significant effects. Summary Rating: Preferred	Some minimal effects. Summary Rating: Acceptable	Some minimal effects. Summary Rating: Unacceptable

Potential ability for future closure/reclamation processes				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Public Safety and Security	Effect on safety and security risks to the community and general public	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Environmental Health and Long Term Sustainability	Effect on long term air quality and the ability to meet point of impingement standards	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on long term water quality and the ability to meet water quality guidelines	N/A	N/A	N/A
	Restoration of passive drainage systems	N/A	N/A	N/A
	Effect on long term wildlife habitats including SARs	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Land Use	Effect on long term land uses	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on long term visual appearance of	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.

Potential ability for future closure/reclamation processes				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
	Project Site	Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Closure and Reclamation	Summary Evaluation and Rating	Least obtrusive option in regards to closure and reclamation. Summary rating: Preferred	Minimal work for closure and reclamation. Summary rating: Acceptable	Largest amount of work to create closure and reclamation at the end of the project life. Summary rating: Acceptable
Overall Summary Rating		Using existing infrastructure to provide electrical power is the most cost effective option with no environmental disadvantages over other options. Preferred	On site power generation is technically feasible but at a higher cost than using current infrastructure. Acceptable	Use of alternative means of power generation come at a much higher cost and do not provide a consistent and reliable power source sufficient for the project. Unacceptable