AIRD BERLIS

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September 27, 2018

SENT VIA EMAIL, COURIER AND RESS

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street
27th Floor, P.O. Box 2319
Toronto, ON M4P 1E4

Re: EB-2018-0191
Application for Leave to Construct
IAMGOLD Corporation

We are counsel to IAMGOLD Corporation in this matter.

Further to our letter of August 14, 2018, it appears there was a printing error and our Customer Impact Assessment was not included in the additional evidence we filed. Enclosed is a copy of the Customer Impact Assessment.

If there are any questions, please contact the undersigned at your earliest opportunity.

Yours truly,

AIRD & BERLIS LLP

Scott Stoll

SAS/ar
Encl.

33805289.1

Hydro One Networks Inc.
483 Bay Street
Toronto, Ontario
M5G 2P5

CUSTOMER IMPACT ASSESSMENT

Iamgold – Cote Lake Mine Connection

Revision: **FINAL**
Date: **June 25, 2018**
AR#: **24322**

Issued by: **Transmission Planning Department**
System Development Division
Hydro One Networks Inc.

Prepared by:

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Disclaimer

This Customer Impact Assessment was prepared based on customer information available about the connection of the proposed project. It is intended to highlight significant impacts, if any, to affected transmission customers early in the project development process and thus allow an opportunity for these parties to bring forward any concerns that they may have. Subsequent changes to the required modifications or the implementation plan may affect the impacts of the proposed connection identified in Customer Impact Assessment. The results of this Customer Impact Assessment are also subject to change to accommodate the requirements of the IESO and other regulatory or municipal authority requirements.

Hydro One shall not be liable to any third party which uses the results of the Customer Impact Assessment under any circumstances whatsoever for any indirect or consequential damages, loss of profit or revenues, business interruption losses, loss of contract or loss of goodwill, special damages, punitive or exemplary damages, whether any of the said liability, loss or damages arises in contract, tort or otherwise.

1.0 Project Description

Iamgold Corp is developing a 72MW gold mine located 25km southwest of Gogama, Ontario. (See map in figure 1 below). To supply power to this new mine, Hydro One's idle T2R circuit will be rebuilt and energized from Timmins TS to Shiningtree JCT (115km in length) and connected to Timmins TS at 115kV. A new 44km circuit will then be built from Shiningtree JCT to the customer substation which will be constructed and owned by the customer (Iamgold).
(See Appendix A – figure 1) The proposed In-Service date for the mine is June 30, 2020.

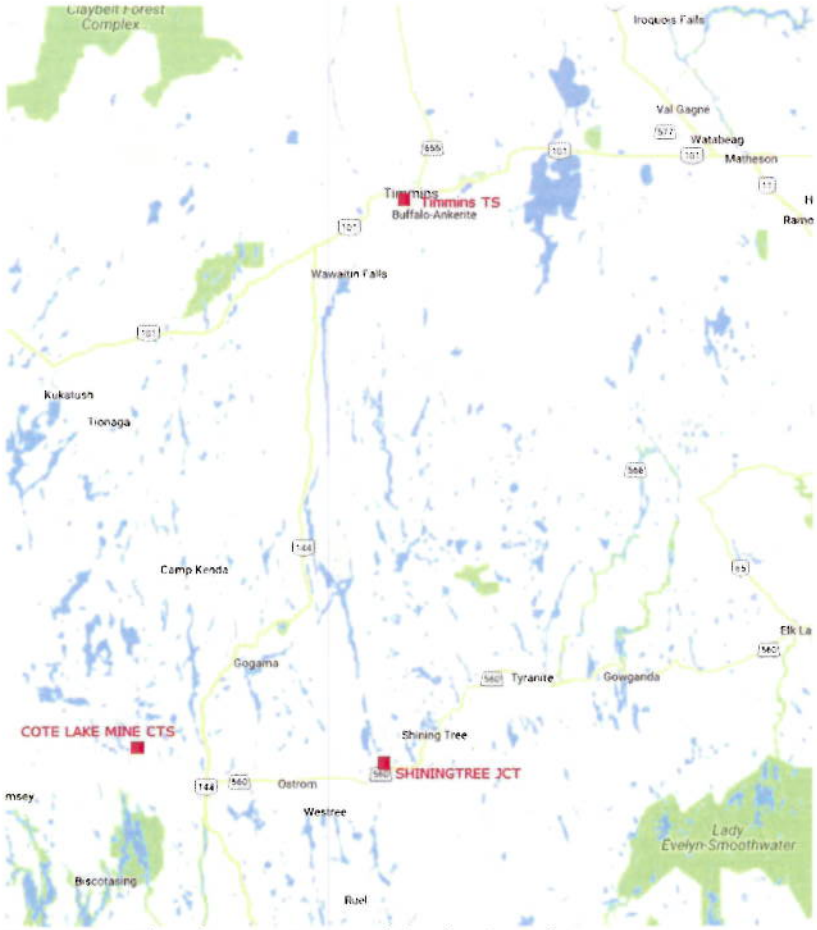

Figure 1 – Timmins area Map and Station Locations

Area Customers

The following are area customers that may be impacted by the permanent operation of the proposed mining facility or work on Hydro One's station/line assets to connect the proposed project.

Table 1 – Area customers

Station	Circuit	Customer
Timmins TS Weston Lake DS Shiningtree DS	- T61S T61S	Hydro One Distribution
Timmins West Mine CTS	T61S	Lake Shore Gold

2.0 Technical Studies

Hydro One conducted short circuit, voltage performance and reliability assessment on the impact of the proposed project on area customer busses. Note: Voltage performance assessment for high voltage area busses can be found in the IESO System Impact Assessment which can be found on the IESO website. (CAA ID: 2017-623 Cote Gold Project)

Short-Circuit Study Analysis

The Cote Lake site will be equipped with two 7MVA synchronous condensers which will be used to help increase the short circuit level to support mining operations. During fault conditions, these condensers act as a source of short circuit current and will contribute to a marginal increase in the short circuit levels. This increase is minimal and final values remain within the allowable limits specific in the Transmission System Code, and within Hydro One equipment short circuit ratings. See Appendix B – Short Circuit Analysis

The incorporation of the proposed project into the Hydro One transmission system does not have any adverse impact on area short circuit levels, and remain within the limits described the Transmission System Code – Appendix 2. See Table 2 below

Table 2: Transmission System Code: Transmission System Connection Point Performance Standards

Nominal Voltage (kV)	Maximum 3ph Fault (kA)	Maximum SLG Fault (kA)
230	63	80 (usually limited to 63)
115	50	50
44	20	19 (usually limited to 8)
27.6	17	12

Voltage Performance

The Cote Lake main substation will install 2 x 20MVar SVC on the 13.8kV bus and a 115kV 7MVar shunt line reactor to help maintain acceptable voltages during both operation and contingencies assessed by the IESO. Voltage performance at Hydro One busses will also remain within the limits specified by the Transmission System Code, and Market Rules. The 115kV system in northern Ontario can reach voltages as high 132kV. Timmins TS also has a system control order which can allow Hydro One Timmins TS to operate up to voltages of 138kV if required by the IESO and Hydro One operations. The incorporation of Cote Lake mining facility does not have an adverse impact on area voltages. See Appendix B

3.0 Reliability Impact

Station Facilities

The Cote Lake substation will be radially supplied from Timmins TS via a newly rebuilt T2R circuit. The substation will be equipped with a high voltage circuit breaker which will be used to provide isolation of the customer substation from the transmission system for faults within the customer facility or on the Hydro One network. Furthermore, the station will be equipped with a 115kV motorized disconnect switch to provide electrical isolation and operating flexibility for maintenance activities which may occur at the customer site.

New station facilities will also be required at Timmins TS to provide electrical connection of the T2R circuit to Hydro One network. New station equipment will include a 115kV circuit breaker and motorized line disconnect switch to provide isolation of the 115kV network for faults or maintenance activities which may occur on the T2R transmission line or Cote Lake substation. The incorporation of these facilities is not expected to have a reliability impact to area customers.

Line Facilities

Hydro One will be rebuilding approximately 115km of T2R circuit from Timmins TS x Shiningtree JCT. This circuit is presently idle and shares a common line route and structures with an energized T61S circuit. A motorized disconnect switch at Shiningtree JCT will service as a demarcation point between the Hydro One and customer owned transmission line and substation. Iamgold will build a new 44km single circuit line from this demarcation point to the mine site.
Interruptions due to forced and planned outages on the line will not impact area customers as this will be a radially supplied customer terminating directly onto a Hydro One network bus at Timmins TS.

Outage Requirements

Outages on T61S circuit may be required during line construction on the T2R as both circuits share common towers along the line route from Timmins to Shiningtree. Hydro One outage planning will coordinate with area customers to minimize supply interruption frequency and duration.

4.0 Conclusions and Recommendations

Hydro One system and customers will not be adversely impacted by the connection of the Cote Lake Mine. It is recommended that area customers review the impact of the short circuit change on their facilities and take appropriate and timely action to address any safety/technical issues arising out of the changes which will result following incorporation of Cote Lake mining facility.

Appendix A – Diagrams

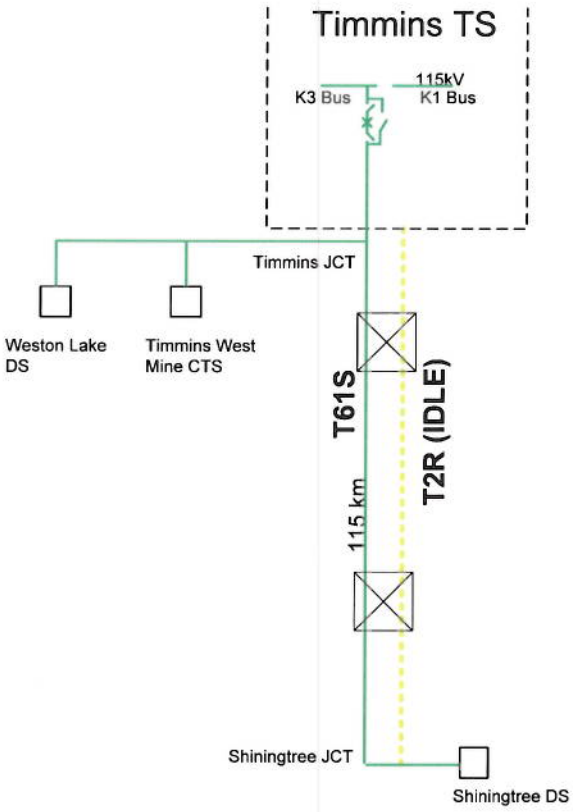

Figure 1 – Existing Configuration T2R/T61S Right of Way

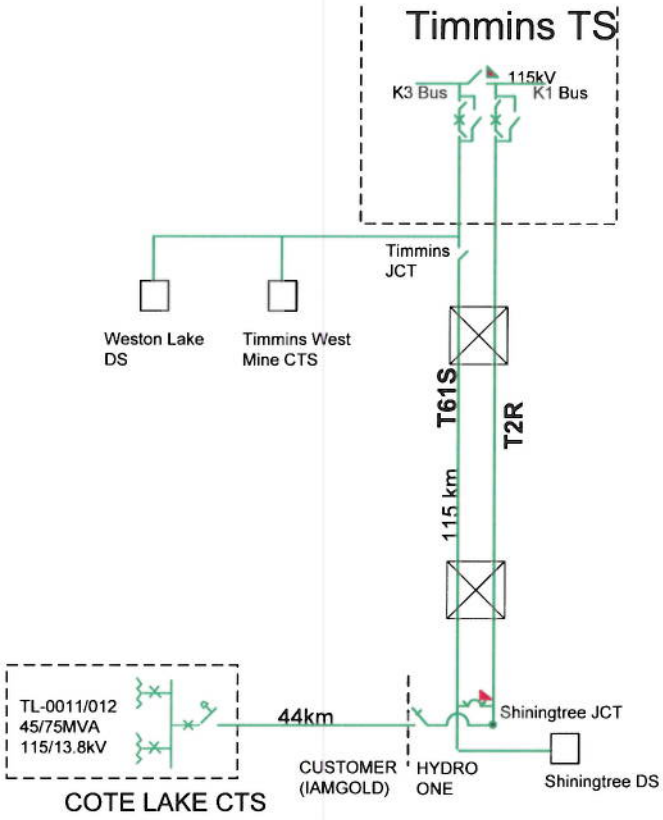

Figure 2 – Proposed Configuration with Connection of Cote Lake Mining facility

Appendix B – Voltage & Short Circuit Study Results

Table 3 – Voltage Performance with Proposed Project

Station	Nominal Bus Voltage (kV)	Existing System (kV)[1]	Cote Lake CTS In Service Pre-Contingency (kV)	Voltage Change (%)	Loss of Cote Lake CTS Load (pre-ULTC) (kV)	Voltage Change % (pre-ULTC) (%)[2]
Timmins K1 bus	115	127.6	128.9	1.02	126.93	-1.51
Timmins K3 bus	115	127.7	128.6	0.69	127.08	-1.19
Timmins TS DESN	27.6	28.1	28.3	0.83	27.93	-1.32
Shiningtree JCT T61S	115	127.7	128.6	0.70	127.00	-1.21
Weston Lake DS	115	126.7	127.6	0.76	126.09	-1.21
Timmins West Mine CTS	115	126.9	127.8	0.70	126.21	-1.21
Shiningtree JCT T2R	115	-	131.4	-	-	-

1-Voltage based on max area loading
2-Post ULTC scenario results in acceptable voltage change.

Additional Notes
Base voltage for 115kV and 27.6kV system is 118.05 and 27.6kV respectively
Cote Lake CTS modeled at 0.9 pf
Loss of load results in corresponding tripping of T2R circuit
Customer SVC assumed In-Service during normal operation

Table 4 – Existing Short Circuit levels at Area busses

		Existing System(kA)			
		3PH		L-G	
Bus	Voltage (kV)	Symm	Asymm	Symm	Asymm
Timmins K1	115	8.93	9.91	8.82	9.63
Timmins K3	115	8.92	9.91	8.94	9.82
Timmins TS	27.6	12.64	12.80	10.14	11.30
Shiningtree JCT T61S	115	1.09	1.10	0.62	0.62
Weston Lake	115	2.20	2.24	1.33	1.35
Timmins West Mine CTS	115	4.02	4.12	2.74	2.79
Shiningtree JCT T2R	115	1.08	1.08	0.68	0.68

Base voltage for 115kV and 27.6 system is 118.05 and 27.6kV respectively with prefault voltages at 1.076pu

Table 5 – Short Circuit Level with Proposed Project

		With Cote Lake Mining Facility (kA)				Short Circuit Level change (kA)			
		3PH		L-G		3PH		L-G	
Bus	Voltage (kV)	Symm	Asymm	Symm	Asymm	Symm	Asymm	Symm	Asymm
Timmins K1	115	9.20	10.20	8.99	9.81	0.27	0.29	0.17	0.18
Timmins K3	115	9.09	10.08	9.05	9.93	0.17	0.17	0.11	0.11
Timmins TS	27.6	12.75	12.91	10.19	11.36	0.11	0.11	0.05	0.06
Shiningtree JCT T61S	115	1.10	1.10	0.62	0.62	0.01	0.00	0.00	0.00
Weston Lake	115	2.21	2.25	1.33	1.35	0.01	0.01	0.00	0.00
Timmins West Mine CTS	115	4.05	4.15	2.75	2.80	0.03	0.03	0.01	0.01
Shiningtree JCT T2R	115	1.46	1.53	0.76	0.77	0.38	0.45	0.08	0.09

Base voltage for 115kV and 27.6 system is 118.05 and 27.6kV respectively with prefault voltages at 1.076pu