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August 27, 2019

Attention: Patrick Dzijacky
Environmental Specialist
Newmont Goldcorp
T 705.235.6255
M 705.465.0943
4315 Gold Mine Road,
South Porcupine, P0N 1H0
patrick.dzijacky@newmont.com

Re: Acoustic Audit in support of ECA (9699-8QWSNZ) Terms and Conditions - Goldcorp Hollinger Project

Dear Mr. Dzijacky,

Please find enclosed an acoustic audit report with supporting information in support of the terms and conditions for ECA (9699-8QWSNZ). This report is an assessment of the noise levels measured on August 20/21, 2019 at the nearest sensitive receptors to the mine operations.

I trust that the enclosed information meets your requirements. Please do not hesitate to contact me if you have any questions.

Sincerely,

Colin Novak PhD, PEng.

2019-08-27
Revision: 00

Third Party Acoustic Audit Report for Goldcorp Porcupine Gold Mine located at 4315 Gold Mine Rd, Timmins, Ontario

akoustik engineering limited

Submitted to:

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Statement of Liability

Akoustik Engineering Limited prepared this report for Newmont Goldcorp. The material in it reflects Colin Novak's judgement in light of the information available to them and Akoustik Engineering Limited. Any use that a Third Party makes of this report (other than Newmont Goldcorp), or any reliance on decisions made based on it, is the responsibility of such Third Parties. Akoustik Engineering Limited accepts no responsibility for damages, if any, suffered by any Third Party resulting from decisions made or actions based on this report.

Introduction

This report is a third-party acoustic audit prepared for Newmont Goldcorp, Hollinger Pit operations (Goldcorp). This acoustic audit was performed in accordance to the procedures for noise outlined by the Ministry of the Environment, Conservation and Parks (MECP) Noise Pollution Control (NPC) Guidelines in support of applications for Environmental Compliance Approval (ECA). This audit report has been prepared to document, assess and verify the sources of noise located at the site and determine their impacts at the nearby sensitive receptors. The approach taken for this study was to conduct measurements at the nearest identified sensitive receptors and determine the representative noise levels resulting from the operations at the facility. This document provides a comparison of those noise measurements with the allowable noise levels specified by the MECP in the applicable NPC documents.

Ministry of the Environment, Conservation and Parks Noise Criteria

In accordance with the MECP Noise Pollution Control (NPC) Guideline, NPC-300, the allowable sound level limits are the higher of either the established day, evening and nighttime noise levels at a receptor location, or the applicable MECP exclusion limits. The sound level limits given in Table 1 are the MECP exclusion levels for residential developments of Class 2. The area surrounding the Hollinger project are classified as a Class 2 area, given that the region exhibits features of both a Class 1 and a Class 3 area based on the environmental noise characteristics.

Table 1: Ministry of the Environment Noise Criteria for a Class 2 Area – Stationary Sources

Point of Reception Location	Daytime LA_{eq} [dBA]	Evening LA_{eq} [dBA]	Nighttime LA_{eq} [dBA]
Outdoor	50	45	--
Plane of Window	50	50	45

From Table 1, daytime refers to the period from 07:00 to 19:00, evening refers to the period from 19:00 to 23:00 and nighttime refers to the period from 23:00 to 07:00 hours. It should be noted that these exclusion limits differ from those in the original acoustic assessment report(s) (June 05, 2013 and August 14, 2013) as the NPC-300 guideline had not yet been released. For reference, the exclusion limits used in the original report were 50 dBA for the daytime and 45 for the nighttime for all PORs except POR03. The noise limits for POR03 were determined to be 58 and 51 dBA for the day and night times respectively. It should also be noted that the Hollinger Pit mine operates on a continuous 24/7 basis, with no change in its operations from the daytime to evening to

nighttime periods, and thus any time of day can be used to assess an equally worst-case operating scenario.

Evaluation of Points of Reception

The Ministry of the Environment defines a Point of Reception (POR) as an existing, or zoned for future use, residence, hotel, nursing or retirement home, hospital, campground or other sensitive building/area within 500 metres of the facility. A scaled aerial photo has been included in Appendix A, which provides an illustration of the current land use surrounding the site, including the nearby PORs. For this industrial site, 14 representative sensitive receptors were identified in the Valcoustic's acoustic assessment report(s) and are used again for this acoustic audit report. The location of each receptor is detailed as follows:

1. POR01 – a residential dwelling located at approximately 50 Vipond Road
2. POR02 – a Long Term Care facility to the east of Hollinger pit, located at 6 Hollinger Lane; see Note 1 below
3. POR03 – a nine-storey apartment building located at 585 Algonquin Boulevard; see Note 2 Below
4. POR04 – a residential dwelling located at approximately 216 Laidlaw Street
5. POR05 – a residential dwelling located at approximately 359 Dale Avenue
6. POR06 – a trailer located at approximately 111 Bogey Drive
7. POR07 – a trailer located at approximately 41 Eagle Crescent
8. POR08 – a residential dwelling located at approximately 800 Gold Mine Road
9. POR09 – a residential dwelling located at approximately 45 Cook Road
10. POR10 – a residential dwelling located at approximately 178 Claimpost Trail
11. POR11 – a residential dwelling located at approximately 19 Prospector's Street
12. POR12 – a residential dwelling located at approximately 6 Quebec Avenue
13. POR13 – a residential dwelling located at approximately 10 Dunn Avenue
14. POR14 – The Comfort Inn, located at 939 Algonquin Boulevard

Note 1: Prior to this assessment, the long-term care facility (POR02) was purchased and subsequently demolished by Goldcorp. For the purpose of this assessment, POR02 was relocated to the residential area immediately adjacent to the former long term facility.

Note 2: In the original acoustic assessment report, POR03 was found to exhibit minimum background noise levels above the exclusion limits, and as a result, the daytime and nighttime limits were determined to be 58 and 51 dBA, respectively. The limits for all other receptor locations are the MECP exclusion limits.

To measure the present noise impacts at the PORs due to the Hollinger project operations, monitoring equipment was deployed at each of the 14 receptor locations during the late-night hours on August 20, 2019 to the early morning hours on August 21, 2019 for a period of approximately 20 to 30 minutes. The nighttime period was chosen given that the community background noise levels are lowest during this time and thus is representative of the worst-case impacts from the Hollinger Pit activities.

For the noise measurements, a Brüel & Kjær (B&K) Type 2250/2270 noise analyzer using a Type 4952 outdoor microphone was deployed at each POR location to log the twenty-minute equivalent A-weighted sound levels (twenty-minute LA_{eq}). All measurement systems were checked for calibration before and after the measurement period and were found to be within the acceptable calibration limits. The battery levels were also monitored to ensure that they remained within the acceptable levels during the measuring period. The meteorological conditions were monitored during the measurement period for which the wind speed was measured to be in the range of 1.4 to 4.9 km/hr. Additional details for the measurement equipment are given in Appendix B. Photographs of typical measurement setups are given in Appendix C.

With the exception of POR3, the receptor locations were manned during the measurements periods, and sound recordings were taken at all locations for later review, if necessary to identify specific sources of noise. As the locations were manned, the occasional nearby roadway noise close to the measurement locations were removed in real time by momentarily pausing and resuming the measurements. This was to ensure that the sources measured were from the mining operations. Care was taken to ensure that at least 20 minutes of data was collected, as permitted by the MECP and that the operation of pausing the sound level meter was performed only for confirmed roadway noise not associated with the Hollinger operations. A representative two-storey microphone height of 4.5 m was used at all the PORs except POR03. POR03 was measured at the height of the ninth storey of the adjacent apartment building by putting the microphone on a manlift and elevating it. Provided below in the subsequent paragraphs are the results of the observation notes taken either during the data collection or from the sound recordings made at each of the 14 POR locations.

POR01 – Movement of haul trucks audible during measurement period. Insignificant roadway traffic.

POR02 – Machine track noise and back-up alarm beeps audible from the pit. Traffic from Algonquin Blvd audible throughout measurement period.

POR03 – The noise at this location was dominated by a continuous source from the nearby Imerys facility (industrial source). Vehicle noise from Algonquin Blvd. was also very loud with a mix of cars and heavy trucks. No noise was audible at this location due to the Hollinger operations.

POR04 – Dominant source of noise is from road traffic on nearby major roads including Algonquin Blvd. Back-up alarm beeps audible from the pit.

POR05 – Dominant noise source was electrical transformer noise. No audible noise from mining operations.

POR06 – Light distant traffic noise. Several distant bangs from the pit operations. Ambient level low at this location. In summary a low noise level location.

POR07 – Continuous electric hum from nearby hydro switch yard is the dominant noise source with some light traffic noise. Mining activity is not audible.

POR08 – Very low ambient noise with high speed vehicle pass-byes which were removed via pausing the measurement.

POR09 – Low ambient noise with high speed vehicle pass-byes which were removed via pausing the measurement. Haul truck noise audible.

POR10 – Haul truck pass-by noise audible at this location. Occasional distant banging from the pit.

POR11 – Haul truck pass-by noise audible at this location. Backup alarm beeping and machine tracks can be heard and the occasional banging.

POR12 – Movement of haul trucks are clearly audible.

POR13 – Ambient noise level low at this location. Movement of haul trucks are clearly audible.

POR14 – Roadway traffic from Algonquin Blvd dominant throughout measurement period. Located behind the Comfort Inn on Algonquin Blvd. Multiple HVAC unit noise during the entire measurement period was the dominate source of noise. Mining activity was not audible during any point throughout measurement period.

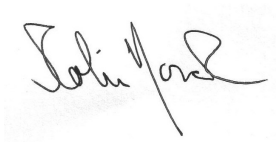
The twenty-minute LAeq measured at each POR are given in Table 2. Upon review of the data, only POR3 and POR14 resulted in measured noise levels which exceed the noise limits given in the operations ECA. The measured noise levels, and resulting exceedance at POR3 is attributed mostly to the nearby Imerys facility, as well as road traffic travelling on Algonquin Blvd. There was no audible sources of noise from the Hollinger mine operations at this POR location The noise at POR14 was observed to be attributed to the multiple HVAC units located at the ground level of the hotel, as well as the traffic noise from Algonquin Blvd. There was no audible noise from the mine operations at this location. Select pages from the NPC-300 guideline document which contain the exclusion limits have been included in Appendix D for reference.

Table 2: Measured 20-minute LAeq for each POR Location

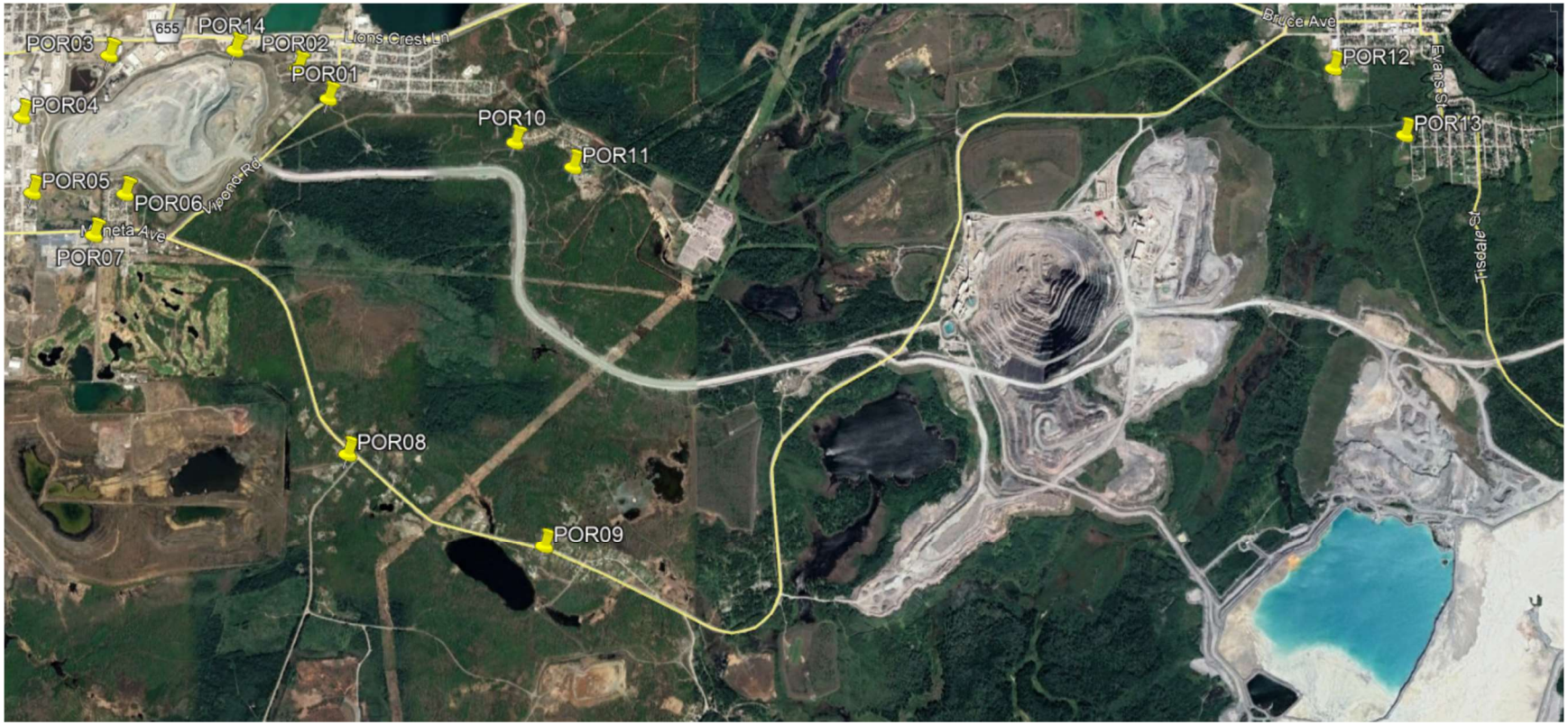
POR	LAeq [dBA]
1	41.7
2	43.3
3	56.4
4	42.0
5	40.9
6	42.4
7	41.7
8	32.9
9	38.9
10	44.6
11	44.0
12	40.4
13	38.8
14	49.6

Conclusions

An acoustic audit of the Newmont Goldcorp Hollinger Pit mining activity was performed as a requirement of the City of Timmins Site Plan Control Agreement (By-Law No. 2012-7286) terms and conditions. Based on the measurements taken at each identified sensitive receptor and the documented observations made during the data acquisition, it has been demonstrated that the noise levels representing the operating noise emissions from the Newmont Goldcorp Hollinger Pit are within compliance to the requirements of the facility's ECA for continuous 24-hour operation at all receptor locations.

For akoustik engineering limited		
	Prepared by: **Colin Novak, Ph.D., PEng**	

Appendix A: Site Location and Identification of Nearby Points of Reception



A 1: Scaled Aerial View of Surrounding Area with PORs Identified

Appendix B: Measurement Equipment List

The following is the list of equipment used to perform the noise measurements:

Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 3001578
Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 2809186
Type 2270 Brüel & Kjær Sound Level Meter	Serial No. 2754292
Type 4952 Brüel & Kjær Outdoor Microphone	Serial No. 2766636
Type 4952 Brüel & Kjær Outdoor Microphone	Serial No. 2730011
Type 4952 Brüel & Kjær Outdoor Microphone	Serial No. 2766623
Type 4231 Brüel & Kjær Acoustic Calibrator	Serial No. 2766967

Appendix C: Photographs of the Measurement Setup

C 1: Manned Measurement Setup Example.

C 2: Measurement Setup Photo: POR03 Before Erected

Appendix D: NPC-300 Reference Pages

for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Note that for Class 1, 2 and 3 areas, the plane of window limits apply to a window that is assumed to be open. For Class 4 areas, the plane of window limits apply to a window which is assumed to be closed. This distinction does not affect the prediction of plane of window sound levels.

Table B-1
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

Table B-2
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

B7.2 Impulsive Sound – Outdoors and Plane of Window

For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source, the sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is the higher of the applicable exclusion limit value given in Table B-3 or Table B-4, or the background sound level for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Notwithstanding Publication NPC-103, Reference [29], the following sound level limits in Table B-3 and Table B-4 below apply to impulsive sound:

D 1: Exclusion Limit Values for Stationary Sources

Table B-3
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

Table B-4
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Plane of Window – Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00–23:00)/ (23:00–07:00)	Class 2 Area (07:00–23:00)/ (23:00–07:00)	Class 3 Area (07:00–19:00)/ (19:00–07:00)	Class 4 Area (07:00–23:00)/ (23:00–07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

B7.3 Sound Level Limits for Emergency Equipment

The sound level limits for noise produced by emergency equipment operating in non-emergency situations, such as testing or maintenance of such equipment, are 5 dB greater than the sound level limits otherwise applicable to stationary sources, described in Sections B7.1 and B7.2.

The noise produced by emergency equipment operating in non-emergency situations should be assessed independently of all other stationary sources of noise. Specifically, the emissions are not required to be included with the overall noise assessment of a stationary source facility.

D 2: Sound Level Limits for Emergency Equipment

In addition, sound level limits do not apply to emergency equipment operating in emergency situations.

B7.4 Sound Level Limits for Layover Sites

The sound level limit for noise from a layover site in any hour, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of either 55 dBA or the background sound level.

B8 Noise Impact Assessment – Multiple Sources

Impulse sources, non-impulse sources and emergency equipment are to be analyzed separately. Where there are multiple, non-impulse sources at a stationary source, the noise assessment needs to be based on the combined effect of all sources comprising the stationary source, added together on an energy basis.

B9 Determination of Area Class

Area classification refers to the receptor location.

B9.1 Class 1, 2 and 3 Areas

Determination of whether an area is Class 1, 2 or 3 can usually be done by determining the proximity of the point of reception to roads, the volumes of road traffic (and associated sound levels), and the nature of land uses and activities (or lack thereof) in the area, as a function of time.

B9.2 Class 4 Area

Class 4 area classification is based on the principle of formal confirmation of the classification by the land use planning authority. Such confirmation would be issued at the discretion of the land use planning authority and under the procedures developed by the land use planning authority, in the exercise of its responsibility and authority under the Planning Act.

The following considerations apply to new noise sensitive land uses proposed in a Class 4 area:

- an appropriate noise impact assessment should be conducted for the land use planning authority as early as possible in the land use planning process that verifies that the applicable sound level limits will be met;
- noise control measures may be required to ensure the stationary source complies with the applicable sound level limits at the new noise sensitive land use;

D 3: Determination of Area Class