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February 26, 2016

Attention: Stephanie Thibeault
Senior Environmental Coordinator
Goldcorp Canada Ltd.
T: +1.705.235.6581
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4315 Gold Mine Road,
South Porcupine, P0N 1H0
stephanie.thibeault@goldcorp.com

Re: 3rd Party Acoustic Audit in support of ECA (9699-8QWSNZ) Terms and Conditions - GoldCorp Hollinger Project

Dear Ms. Thibeault,

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 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.

2016-02-26
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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Ontario Representative
Brüel & Kjær

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Statement of Liability

Akoustik Engineering Limited prepared this report for GoldCorp Canada Ltd. The material in it reflects Peter D'Angela and 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 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 GoldCorp Canada Ltd., Hollinger Pit operations (GoldCorp). This acoustic audit was performed in accordance to the procedures for noise outlined by the Ministry of the Environment and Climate Change (MOECC) 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 MOECC in the applicable NPC documents.

Ministry of the Environment and Climate Change Noise Criteria

In accordance with the MOECC Noise Pollution Control (NPC) Guideline, NPC-300, the allowable sound level limits are the higher of either the established day, evening and night time noise levels at a receptor location, or the applicable MOECC exclusion limits. The sound level limits given in Table 1 are the MOECC 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 exhibite 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 MOECC 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 January 25th to the early morning hours on January 26th for a period of approximately one hour (ranging from 53 minutes to 1 hour and 5 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. It should be noted that the measurement time period for six of the PORs overlapped during a 30 minute scheduled break time for the GoldCorp operations (12:00 AM to 12:30 AM). This information was discovered after the data was collected. To ensure that the worst case operating scenario was used for this evaluation, the noise data collected during the break period was omitted from the reported Leq values.

For the noise measurements, a Brüel & Kjær (B&K) Type 2250/2270 single channel noise analyzer using either a Type 4952 outdoor microphone or a Type 4189 microphone was deployed at each POR location to log the one-hour equivalent A-weighted sound levels (one hour 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 also remained within the acceptable levels during the measuring period. The meteorological conditions were monitored during the measurement period for which the wind speed did not exceed 7 km/hr and the relative humidity was 82 percent. Additional details for the measurement equipment are given in Appendix B. Photographs of the measurement setups are given in Appendix C.

Each receptor location was manned during the measurement period to enable the recording of detailed observation notes of the acoustical environment, including identification of dominant sources, periodic/occasional sources, roadway traffic observations, etc. Provided below in the subsequent paragraphs are the results of the observation notes for each of the 14 POR locations.

POR01 – Mining activity continuously audible (reverse backup noise of vehicles and dumping activity) during measurement period. Snowmobiles occasionally passed through measurement area with insignificant roadway traffic (< 5 vehicles per hour).

POR02 – Mining activity audible (reverse backup noise of vehicles and dumping activity) during measurement period. Periodic HVAC exhaust noise from nearby building (approximately 6 min cycles and multiple cycles per hour). Traffic from Algonquin Blvd audible throughout measurement period and low roadway traffic near measurement location.

POR03 – Continuous and industrial noise from the nearby Imerys facility (industrial source) was a dominate source of noise at this location during periods of time when vehicles are not passing-by on Algonquin Blvd. Other noise sources included roadway traffic (mix of cars and heavy trucks) from Algonquin Blvd and noise from the adjacent Shell gas station (vehicles arriving/exiting and engines starting). No noise was audible at this location due to the Hollinger operations. Noise recordings were made which support these observations.

POR04 – Roadway traffic dominant on nearby major roads (including Algonquin Blvd). Approximately 6 vehicle pass-bys on residential roads close to the measurement location during the measurement period. Mining activity, specifically moving mining vehicle noise, was occasionally audible.

POR05 – Ambient hum dominant (not from mine operations) throughout measurement period. No roadway traffic within 100 metres; approximately 20 vehicle pass-bys on nearby road. Roadway traffic from major nearby roads audible as well as snowmobile engine noise. Exhaust fan noise from nearby Praxair facility was periodic (10 min periods) and dominant noise source when active. Various mining activity, specifically haul trucks and dumping operations was occasionally audible but most often masked by other noise sources within surrounding area.

POR06 – Industrial noise on Moneta Ave dominant (including fan noise and impulsive truck shunt noise from other industrial facilities; not from mine operations). Direct heater vent exhaust noise at nearby houses audible. Very low ambient noise and no roadway traffic on nearby residential roads. Mining activity was occasionally audible but most often masked.

POR07 – Industrial noise on Moneta Ave dominant (including impulse noise, e.g. shunting) and low-moderate roadway noise from Moneta Ave, approximately 20 vehicles per hour. Direct heater vent exhaust noise at nearby houses audible. Mining activity not audible at any point throughout measurement period.

POR08 – Very low ambient noise, occasional vehicle pass-bys at high speeds dominant source of noise. Dog barking audible for short time (under one minute) during measurement period. Mining activity not audible during any point throughout measurement period.

POR09 – Low ambient noise at this location, occasional vehicle pass-bys at high speeds dominant noise source. Mining activity not audible during any point throughout measurement period.

POR10 – Direct heater vent exhaust noise at nearby houses dominant source. Approximately three car pass-bys during the measurement period. Haul truck noise occasionally barely audible.

POR11 – Direct heater vent exhaust noise at nearby houses dominant source. Approximately four car pass-bys during the measurement period. Dog barking audible for short time (under one minute) during measurement period. Haul truck noise occasionally audible but very faint.

POR12 – Ambient noise dominant at this measurement location. Approximately five car pass-bys during the measurement period. Haul truck vehicles and dome processing activity occasionally audible but faint.

POR13 – Ambient noise dominant at this measurement location. Approximately six car pass-bys during the measurement period. Unknown continuous ‘buzz’ noise audible throughout

measurement period (assumed to be from electrical transformer – no association with mine operations). Mining activity not audible at any point throughout measurement period.

POR14 – Roadway traffic from Algonquin Blvd dominant throughout measurement period; meter was positioned approximately 75 metres from Algonquin Blvd. Mining activity not audible during any point throughout measurement period.

Provided in

Table 2 are the measured one-hour LAeq measured at each POR, including a summary of the observations for each location. Additional details of the measurements, including start time, end time, etc. are given in Appendix D. Based on the noise measurement data shown in Table 2, only receptor POR03 resulted in measured noise levels which exceed the limits given in the acoustic assessment report(s). However, given the detailed observation notes which have been provided, it is concluded that the higher noise levels are attributed to sources other than the Hollinger Pit mining activities, and are instead the result of nearby industrial noise and road traffic noise. Select pages from the NPC-300 guideline document which contain the exclusion limits have been included in Appendix E for reference.

Table 2: Results of 1-hour Noise Monitoring

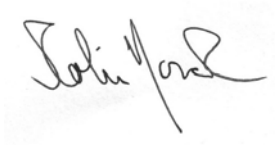
POR	LAeq [dBA]	Summary of Observations
01	34.6	Mining activity audible (reverse backup noise of vehicles and dumping activity) during measurement period.
02	40.8	Mining activity audible (reverse backup noise of vehicles and dumping activity) during measurement period, HVAC noise from nearby building periodic.
03	60.3*	Industrial noise from nearby Imerys, noise from Shell gas station (vehicles), and roadway traffic (mix of cars and heavy trucks) from Algonquin Blvd dominant, mining activity seldom audible. Noise recordings were made which support these observations.
04	41.1	Roadway traffic dominant on nearby city roads and low residential roadway traffic, mining activity occasionally audible.
05	29.1	Ambient hum dominant, periodic exhaust noise from Praxair facility is dominant when active, mining activity occasionally audible but often masked by other noise.
06	34.7*	Industrial noise on Moneta Ave dominant (including impulse noise, e.g. shunting), mining activity occasionally audible but often masked.
07	42.1*	Industrial noise on Moneta Ave dominant (including impulse noise, e.g. shunting), low-moderate roadway noise on Moneta Ave, mining activity not audible.
08	30.1*	Very low ambient noise, occasional vehicle pass-bys at high speeds dominant, mining activity not audible during any point throughout measurement period.
09	44.6	Low ambient noise, occasional vehicle pass-bys at high speeds dominant, mining activity not audible during any point throughout measurement period.
10	35.9*	Direct vent exhaust noise at nearby houses dominant, low roadway noise, occasional haul truck noise audible.
11	36.6*	Direct vent exhaust noise at nearby houses dominant, low roadway noise, occasional haul truck noise audible but very faint.

12	35.8	Ambient noise dominant, low roadway noise, occasional haul truck vehicles and dome processing activity audible.
13	34.1	Ambient noise dominant, low roadway noise, unknown continuous 'buzz' noise audible, mining activity not audible during any point throughout measurement period.
14	37.2	Roadway traffic from Algonquin Blvd dominant, mining activity not audible during any point throughout measurement period.

*Note that for these locations, no noise data during the break period from 12:00 AM to 12:30 AM is included in the given equivalent sound levels (Leq).

Conclusions

An acoustic audit for the GoldCorp Hollinger Pit was performed as a condition of the facility's ECA terms and conditions. Based on noise measurements made at each of the identified sensitive receptors and documented field observations, it has been demonstrated that the worst-case operational noise emissions from the GoldCorp Hollinger Pit operations at the time of assessment comply with all requirements of the applicable NPC documents for continuous 24-hour operation. As such, GoldCorp Canada Ltd. and the Hollinger Pit operations have fulfilled and complied with the applicable conditions pertaining to noise emissions given in their ECA, number 9699-8QWSNZ, issued November 14, 2013.

For akoustik engineering limited		
	Prepared by: **Peter D'Angela, M.A.Sc., EIT**	**Reviewed 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

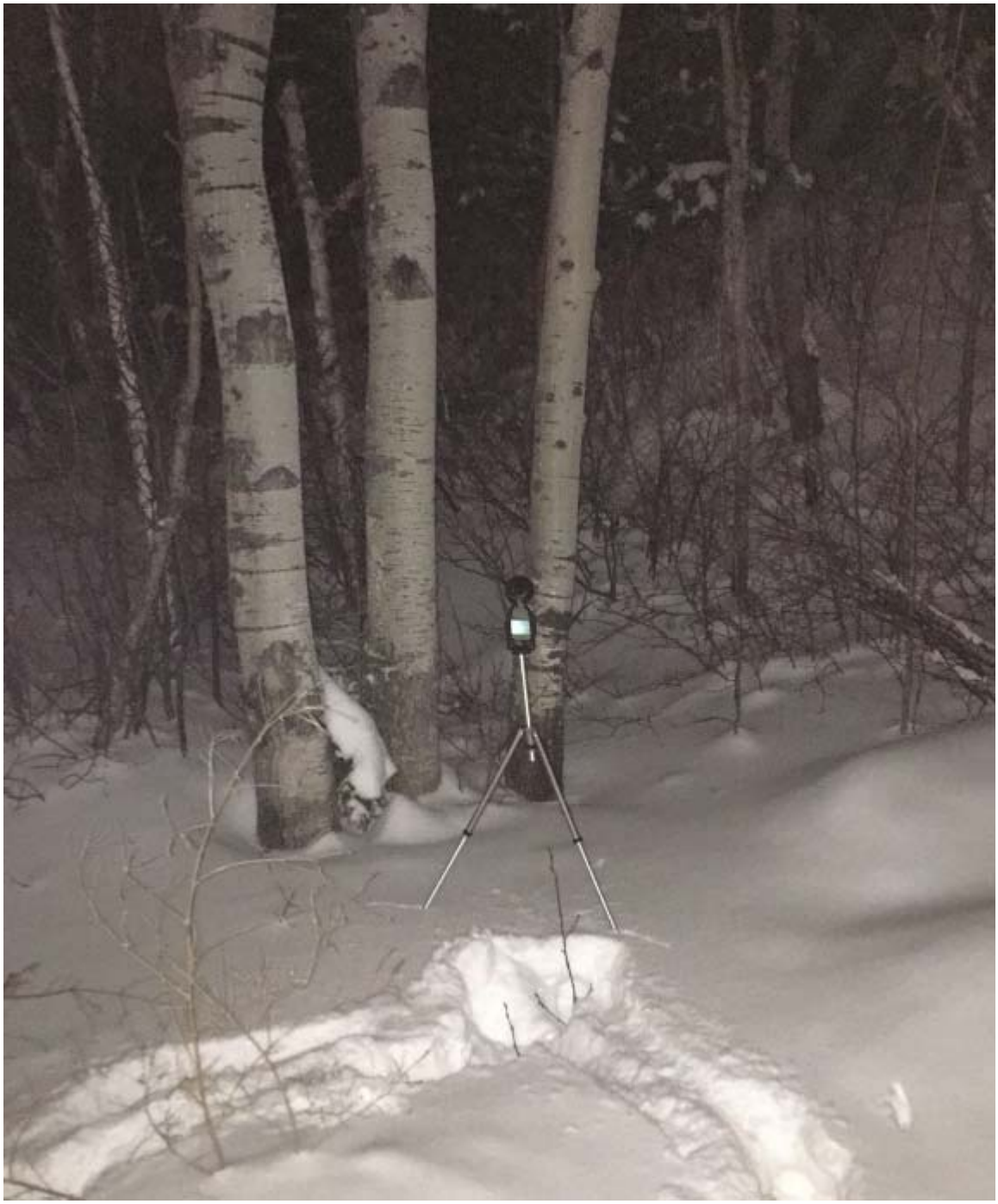
The following is the list of equipment used to perform the noise measurements:

Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 2809180
Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 2809186
Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 2590510
Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 3001552
Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 2818094
Type 2250L Brüel & Kjær Sound Level Meter	Serial No. 2602713
Type 2270 Brüel & Kjær Sound Level Meter	Serial No. 3008206
Type 4952 Brüel & Kjær Outdoor Microphone	Serial No. 2730011
Type 4952 Brüel & Kjær Outdoor Microphone	Serial No. 2667808
Type 4231 Brüel & Kjær Acoustic Calibrator	Serial No. 3006727

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 also remained within the acceptable levels during the measuring period.

It is also worth noting that the meteorological conditions were measured before and after the measurement period and were found to be within the limits set by the Ministry of the Environment and Climate Change.

Appendix C: Photographs of the Measurement Setup



C 1: Measurement Setup Photo: POR01

C 2: Measurement Setup Photo: POR02

C 3: Measurement Setup Photo: POR03 Pre-lift

C 4: Measurement Setup Photo: POR03 – Lift Set in Place

C 5: Measurement Setup Photo: POR04

C 6: Measurement Setup Photo: POR05

C 7: Measurement Setup Photo: POR06

C 8: Measurement Setup Photo: POR07

C 9: Measurement Setup Photo: POR08

C 10: Measurement Setup Photo: POR09

C 11: Measurement Setup Photo: POR10

C 12: Measurement Setup Photo: POR11

C 13: Measurement Setup Photo: POR12

C 14: Measurement Setup Photo: POR13

C 15: Measurement Setup Photo: POR14

Appendix D: Measurement Results

D 1: Measurement Log and Results

POR	Start Date & Time	Start Date & Time	Elapsed Time (hr:min)	LAeq [dBA]
1	2016-01-26 01:36 AM	2016-01-26 02:36 AM	01:00	34.6
2	2016-01-26 01:27 AM	2016-01-26 02:27 AM	00:59	40.8
3	2016-01-26 12:00 AM	2016-01-26 01:00 AM	01:00*	60.3
4	2016-01-26 01:08 AM	2016-01-26 02:08 AM	01:00	41.1
5	2016-01-26 01:13 AM	2016-01-26 02:13 AM	01:00	29.1
6	2016-01-26 12:00 AM	2016-01-26 12:59 AM	00:59*	34.7
7	2016-01-26 12:00 AM	2016-01-26 12:53 AM	00:53*	42.1
8	2016-01-25 11:35 PM	2016-01-26 12:35 AM	01:00*	30.1
9	2016-01-25 11:24 PM	2016-01-26 12:24 AM	01:00*	44.6
10	2016-01-25 11:26 PM	2016-01-26 12:31 AM	01:05*	35.9
11	2016-01-25 11:37 PM	2016-01-26 12:36 AM	00:58*	36.6
12	2016-01-26 12:50 AM	2016-01-26 01:48 AM	00:57	35.8
13	2016-01-26 12:57 AM	2016-01-26 01:58 AM	01:00	34.1
14	2016-01-26 02:46 AM	2016-01-26 03:46 AM	01:00	37.2

*Note that for these locations, no noise data during the break period from 12:00 AM to 12:30 AM is included in the report equivalent sound levels (Leq) given in Table 2 of this report.

Appendix E: 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:

E 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.

E 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;

E 3: Determination of Area Class