Noise Impact Assessment for Auto Recycling Facility

1533 McAdoo's Lane, Kingston, ON

Report Prepared for:

AIM Canada

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1 Introduction

AIM has contacted Soft dB to conduct a study on the environmental noise impact prediction for the installation of a car crusher in a new auto recycling facility for Kenny U-PULL and AIM. The site is located at 1533 McAdoo's Lane, Kingston, ON. In this study, we will analyze the impact of the noise generated by the diesel-powered engine and the hydraulic mechanism of the car crusher (See Figure 1) to be installed at the proposed site for auto recycling facility.

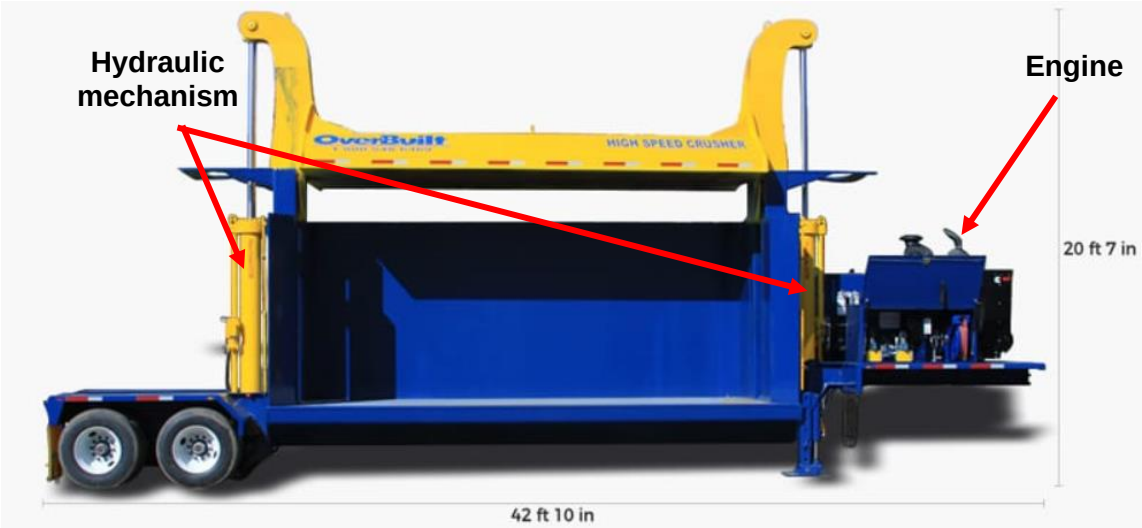


Figure 1: Layout of the crusher to be installed (source: Overbuilt)

This study was conducted and evaluated as per the specifications mentioned in Ontario Regulation 85/16 (O. Reg. 85/16: Registrations Under Part II.2 of the Act – End-of-Life Vehicles), the City of Kingston's noise by-law (2004-52) and the environmental noise control guidelines NPC-300 of the Ontario Ministry of Environment and Climate Change (MOECC).

The principal objective of this study was to provide detailed modelling of noise impacts at sensitive receptors points and to describe, if necessary, specific mitigation measures that are required to meet or exceed municipal and provincial guidelines. The particular objectives for this study were to:

- Simulate sound levels generated by the car crusher that will be installed at AIM's newly proposed auto recycling facility in the City of Kingston;
- Evaluate acoustical compliance with respect to the noise regulation of the City of Kingston, the provincial guidelines NPC-300 and Ontario Regulation 85/16.

2 Methodology

The methodology followed to perform the acoustical study is as follows:

1. Establish the revised sound level limits after measuring the background sound levels along with the criteria provided by the NPC-300, O. Reg. 85/16 and City of Kingston's noise by-law 2004-52;
2. Predict noise levels of the car crusher that will be installed at the auto recycling facility by utilizing the advanced acoustic modelling software CadnaA;
3. Evaluate compliance with respect to the established criteria from applicable guidelines and by-laws.

2.1 Noise Sources

According to the NPC-300 guidelines, a stationary source of noise is defined as "a source of sound or combination of sources of sound that are included and normally operated within the property lines of a facility, and includes the premises of a person as one stationary source, unless the dominant source of sound on those premises is construction."

The car crusher to be installed in the proposed auto recycling facility classifies as a stationary source and the sensitive receptor points (*i.e.* residential buildings, schools, parks, etc.) surrounding the site are thus vulnerable to the noise radiated from the car crusher.

The diesel-powered engine and the hydraulic mechanism of the car crusher are the two main noise sources responsible for the nuisance caused from the proposed auto recycling facility. For the simulation purposes, the car crusher engine and the car crusher mechanism will be denoted as **CCE** and **CCM** respectively. Figure 2 depicts a general location of the noise sources according to the site layout of the auto recycling facility.

2.2 Noise Sensitive Points of Reception

According to the NPC-300, a noise sensitive point of reception means "any location on a noise sensitive land use where noise from a stationary source is received." According to O. Reg. 85/16, a noise receptor is a "permanent or seasonal residence, hotel, motel, long-term care home, retirement home, hospital, campground, child care facility, educational facility or place of worship and includes a vacant lot that has been zoned to permit such a building or campground"

The following noise sensitive receptors, shown in Figure 2, have been identified for this study:

- **NSR1** represents the plane of the window (POW) for a private, single storied dwelling located at 1510 McAdoo's Lane, located northwest from the facility;

- **NSR2** represents the outdoor living area (OLA) for a private, single storied dwelling located at 1510 McAdoo's Lane, located northwest of the facility;
- **NSR3** represents the plane of window (POW) for a private, single storied dwelling located at 1514 McAdoo's Lane, located northwest from the facility;
- **NSR4** represents the outdoor living area (OLA) for a private, single storied dwelling located at 1514 McAdoo's Lane, located northwest of the facility;

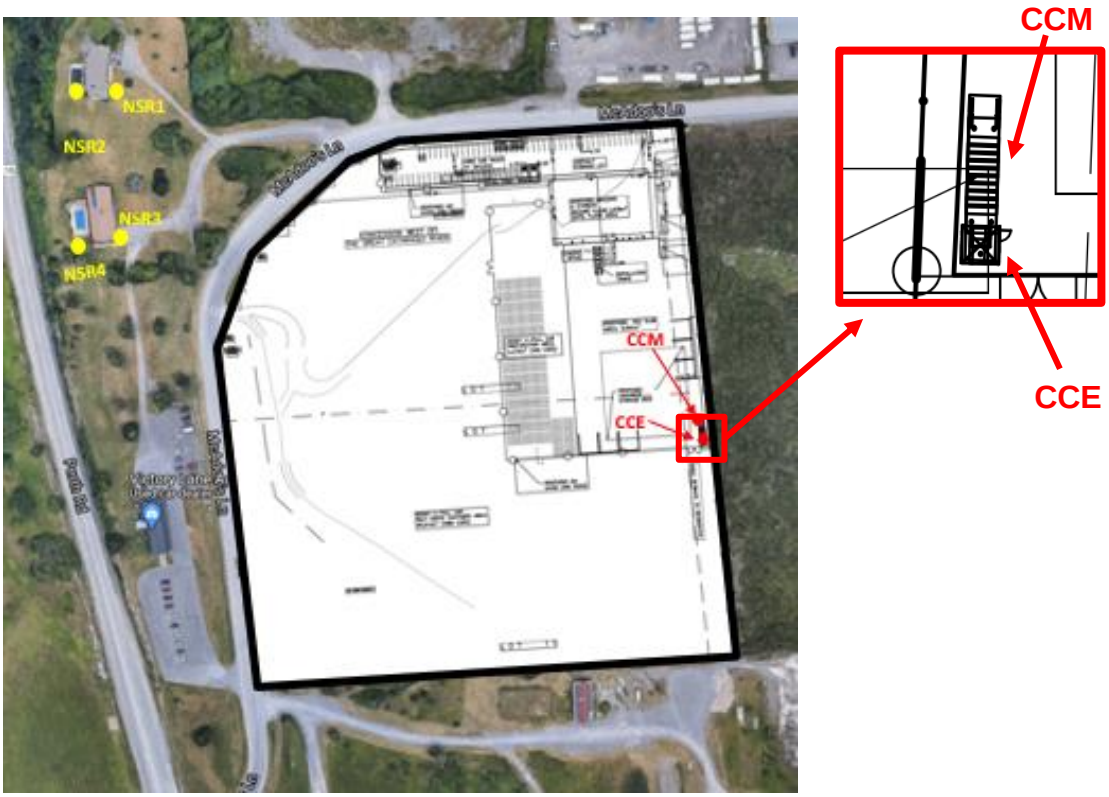


Figure 2: Location of noise sources (red dots) and sensitive receptors (yellow dots). (Source: Google Maps and site layout provided by AIM)

The zoning information obtained from the zoning by-law 76-26 of City of Kingston for each noise sensitive receptors is described in Table 1.

Table 1: Zoning Information of Noise Sensitive Receptors

Receptor	Zone	Zoning Description
NSR1	A1-4	Special Agricultural Zone
NSR2	A1-4	Special Agricultural Zone
NSR3	A1	Restricted Agricultural Zone
NSR4	A1	Restricted Agricultural Zone

3 Assessment Criteria

3.1 MOECC— Environmental Noise Guidelines (NPC-300)

Ministry of the Environment and Climate Change (MOECC) Publication NPC-300 contains guidelines to properly address and control noise emissions into the environment from stationary and transportation sources. The noise criteria to be respected by the noise sources largely depends on the background sound levels and the location of the sensitive receptors and noise sources. The provincial guideline NPC-300 defines four separate community class areas which are mainly classified by their ambient sound level, See Table 2.

Table 2: Classification of Areas According To NPC-300

Type	Description
Class 1	Refers to an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as “urban hum”.
Class 2	Refers to an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 areas. These are the suburban areas of the City outside of the busy core that has sound level characteristics of Class 1 area during the daytime and low evening and night background sound levels, dominated by natural activity and infrequent human activities.
Class 3	Refers to a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as: A. a small community or village; B. agricultural area; C. a rural recreational area such as a cottage or a resort area; or D. a wilderness area. Within the City, Class 3 areas are found in the rural area, Greenbelt and within small residential oriented villages.
Class 4	Refers to an area or specific site that would otherwise be defined as Class 1 or 2 and which: A. is an area intended for development with new noise sensitive land use(s) that are not yet built; B. is in proximity to existing, lawfully established stationary source(s); and C. has formal confirmation (designation) from the City of the Class 4 area classification through Council approval.

For noise sensitive area, compliance with the sound level limits is typically established at the points of reception either in:

- **Plane of Window (POW):** It corresponds to the point in space corresponding with the location of the centre of a window of a noise sensitive space. If the noise sensitive area is just affected by noise from stationary sources, point of reception is placed at POW;

- **Outdoor Living Area (OLA):** It corresponds to the part of a noise sensitive land use that is intended and designed for the quiet enjoyment of the outdoor environment and readily accessible from the building environment, such as backyards, balconies, parks, etc. If the noise sensitive area is just affected by transportation noise or by combined noise from transportation and stationary sources, point of reception is placed at OLA.

Additionally, the noise criteria are classified based on the time of day:

- **Daytime** is the 12-hour period between 7 am and 7 pm;
- **Evening** is the 4-hour period between 7 pm and 11 pm;
- **Nighttime** is the 8-hour period between 11 pm and 7 am.

For sound generated from a stationary source, the sound level limits at a sensitive point of reception, expressed in terms of the One-Hour Equivalent Sound Level (*LAeq,1h*), are shown in Table 3.

Table 3: Exclusion Limit Values for Stationary Noise - Steady and Varying Sound

Time of Day	Exclusion Limit Values of LAeq,1h (dBA)							
	Class 1 Area		Class 2 Area		Class 3 Area		Class 4 Area	
	OLA	POW	OLA	POW	OLA	POW	OLA	POW
7 am - 7 pm	50	50	50	50	45	45	55	60
7 pm - 11 pm	50	50	45	50	40	40	55	60
11 pm - 7 am	-	45	-	45	-	40	-	55

All the *sensitive receptors* for this study are considered to be located in *Class 3 Noise Sensitive Area* because their acoustical environment is mainly dominated by natural sounds and infrequent manmade sounds and the area is zoned as agricultural zone by the City of Kingston.

3.2 Ontario Regulation 85/16 (Registrations Under Part II.2 of the Act — End-of-Life Vehicles)

This regulation provides the guidelines for registering an end-of-life vehicle (ELV) waste disposal site in the Environmental Activity and Sector Registry (EASR). ELV waste disposal site manages motor vehicles that have been abandoned or is being managed for the purpose of recycling, reusing the parts or for its disposal.

According to O. Reg. 85/16, a crusher is defined as an equipment, apparatus or a mechanism that is used to crush ELV on a waste disposal site. In order to comply with noise criteria of the O. Reg. 85/16, either one of the following conditions needs to be satisfied:

1. The crusher is at least 250 m from the property boundary of the nearest noise sensitive receptor (See Figure 3) or;
2. If the distance is less than 250 m, install an acoustic barrier (minimum density of 20 kg/m^2) breaking the line of sight between the crusher and the noise receptor (See Figure 4) or;
3. Operate the crusher for no more than 50 days per year.

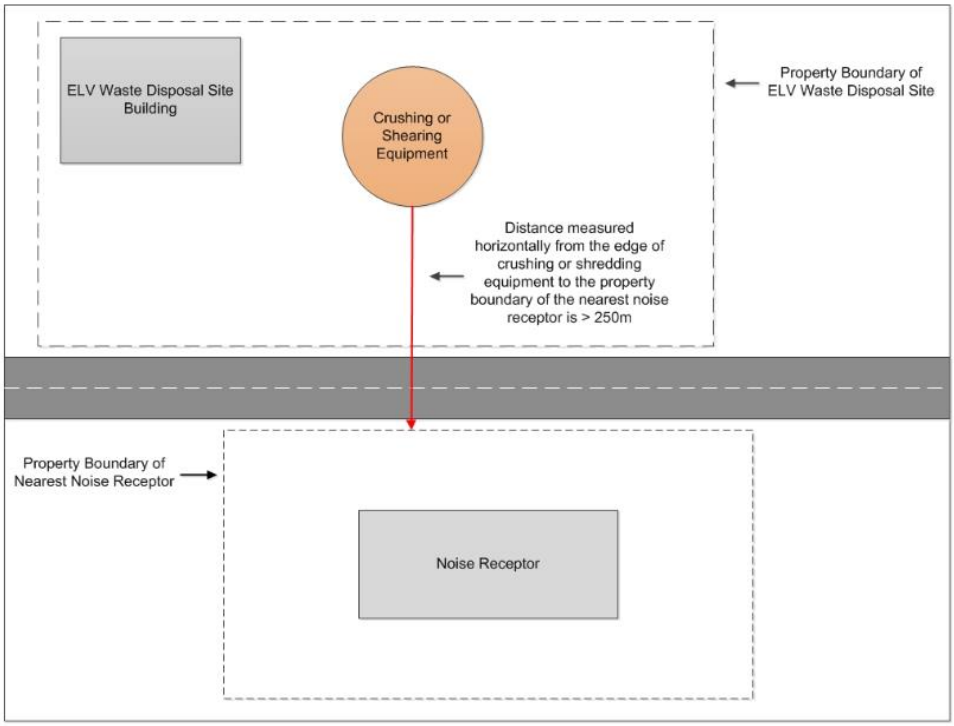


Figure 3: Distance more than 250 m from crusher (source: O. Reg. 85/16)

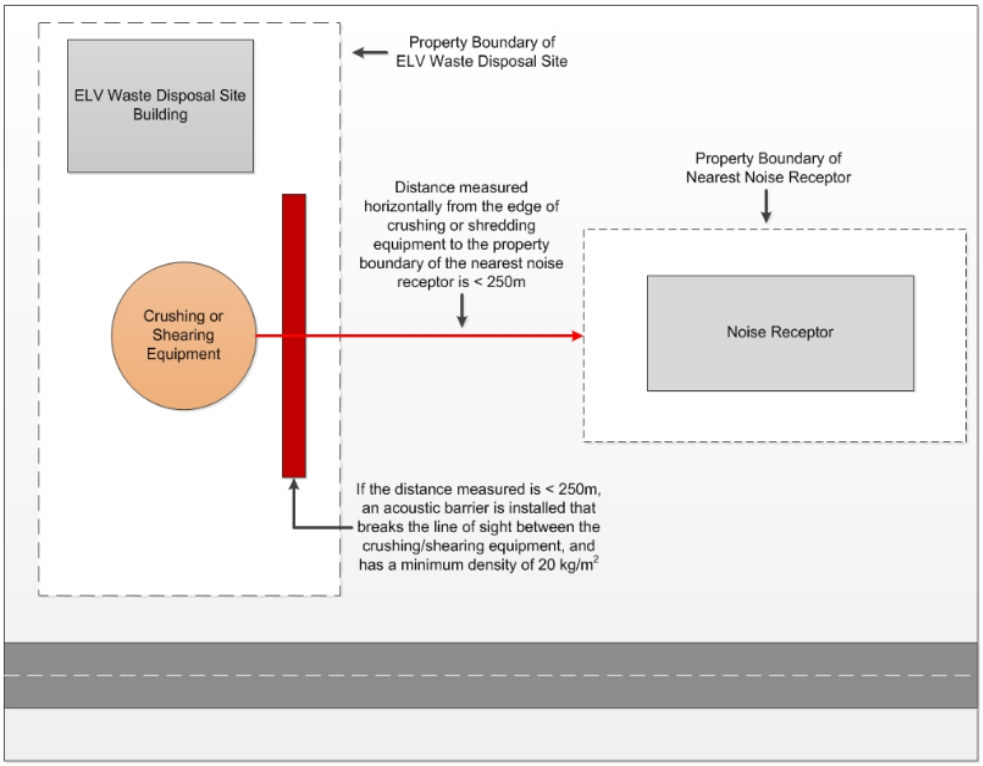


Figure 4: Distance less than 250 m from crusher (source: O. Reg. 85/16)

3.3 City of Kingston Noise By-law 2004-52

The noise by-law of the City of Kingston proposes the guidelines for reducing nuisance related to noise within the city, by implementing restrictions on activities contributing to these excessive noise levels to preserve, protect and promote peace and harmony amongst the inhabitants of the city.

Schedule A and Schedule B of this by-law restricts the operation of noise producing activities during certain times of the day to ensure increased acoustic comfort for the residents of the city. Restrictions pertaining to the activities related to this project are described in the following Table 4.

Table 4: Restrictions Related to Auto Recycling Facility (By-Law 2004-52)

By-Law Section	Description	Prohibited times*
Schedule A	Operation of a combustion engine or pneumatic device without an effective exhaust muffling device that is in good working order and in constant operation	• All
Schedule B	Operation of a solid waste bulk lift or refuse compacting equipment	• 1900 hours (7:00 pm) of one day to 0700 hours of the next day (0900 hours for Sundays)
Schedule B	Loading, unloading, delivering, packing, unpacking or otherwise handling any containers, products, other materials or refuse	• 1900 hours (7:00 pm) of one day to 0700 hours of the next day • All day Sundays and Statutory Holidays

*Prohibited times described above are for the residential zone, as all 4 noise sensitive receptors are located in residential zones as classified by Schedule D of the by-law 2004-52 of the City of Kingston.

In order to satisfy the condition listed in Schedule A regarding presence of appropriate muffling device, Soft dB assumes that the diesel engine used for crusher is, at all times equipped with properly functioning muffling device provided/attached by the manufacturer OverBuilt. It is AIM's responsibility to verify this information with the engine manufacturer to avoid future discrepancies.

Also, it was understood during the conversation with AIM that the crusher is only to be operated during the daytime on weekdays between 8:00 a.m. to 5:00 p.m. Hence, this facility is in compliance with this by-law as long as the operation occurs during that time and with properly functioning muffling device for car crusher's engine.

4 Analysis

4.1 Background Sound Levels

According to NPC-300, 48 hours background sound level measurements, surrounding the site location, are required for every noise impact study intended for installing new stationary source(s).

In order to calculate the background sound levels of the surroundings, *Soft dB* installed an environmental monitoring station to measure background sound levels from 10:00 a.m. on 29 May 2020 till 11:00 a.m. of 02 June 2020 (See Figure 5). This location was selected in order to accurately measure the noise contribution due to road traffic on McAdoo's Lane.

Figure 5: Location of background sound level measurement (Source: Google Earth)

The acoustic instruments used to measure the background sound levels are shown in following Table 5. The equipment was calibrated before and after the measurement session, and no difference was observed. The microphones were located 1.5 m above the ground, and at least 3 m from any walls.

Table 5: Instruments Used in the Noise Study

Description	Company	Model
1 Environmental Monitoring Station – Class 1	Soft dB	Mezzo
1 Microphone – Class 1	BSWA	MPA201
1 Acquisition System (Tablet)	Soft dB	Mezzo
1 Calibrator – Microphone Class 1	Brüel & Kjaer	Type 4231

Due to space and security constraints the station was installed at 2.5 m from the limits of McAdoo's Lane, the sound levels obtained during the measurement campaign are subjected

to a correction to know the levels at 3 m from the limits of the road. The latter is more representative of the road traffic noise and respect the recommendations from ISO 1996-1.

The correction of the measured sound level is conducted respecting the following equation, that represents the reduction of sound levels based on the distance from the source in free field:

$$L_2 = L_1 - \left|20\ \log\frac{r_1}{r_2}\right| \quad (1)$$

where L_2 and L_1 are the sound pressure levels, and r_1 and r_2 are their respective distance from the source (the road McAdoo's Lane in this case).

During the measurement campaign, for most of the days, the weather conditions satisfied the recommended guideline specifications, as mentioned below:

- Wind-induced sound level shall be less than 10 dB below the measured level;
- Relative humidity shall be below or equal to the maximum for which the sound level meter specification is guaranteed by the manufacturer of the instrumentation (≤98% for the BSWA microphone);
- Temperature shall be within the operating range provided by the manufacturer of the instrumentation (between -20°C and 80°C for the BSWA microphone);
- No precipitation and dry roads.

The meteorological conditions during the day period (7:00 a.m. – 7:00 p.m.) from 29 May 2020 till 02 June 2020 was obtained from Government of Canada's historical weather data and are presented in 1.1.1Annex B. The periods where the above conditions were not satisfied were not taken into the consideration for the analysis of background sound levels.

As stated in NPC-300, the required background sound levels were obtained by first calculating the one-hour equivalent sound level for each hour (during the daytime) with A frequency weighting ($LA_{eq,1h}$) for the 48-hour period. Then, the minimum level, after distance correction, within the periods of interest, was retained and its value is shown in the following Table 6.

Table 6: Background Sound Level Measured for Daytime (7:00 a.m. – 7:00 p.m.)

Period	Time of Day	Lowest Hourly Sound Level - LAeq,1h [dBA]
Daytime	07:00 a.m. – 07:00 p.m.	**57**

The hourly background sound levels measured during a period of 48 hours of measurements are presented in 1.1.1Annex A.

4.2 Revised Noise Criteria

The distance between the noise sources and the nearest property line of the noise sensitive receptor should be **at least 250 m** in order to satisfy the criteria in O. Reg. 85/16 (See 3.2). All the calculations and analysis performed by *Soft dB* were made considering that AIM will install car crusher such that it will respect conditions of O. Reg. 85/16.

To comply with the condition above, property lines of the surrounding properties were reviewed from the zoning map of City of Kingston and then the approximate distance from the crusher's surface to the nearest property lines of the sensitive receptors was estimated using Google Earth and is shown in the following Figure 6.

As per the requirements mentioned NPC 300, "The sound level limit at a point of reception is set as the higher of either the applicable exclusion limit (See Table 3), or the minimum background sound level (See Table 6) that occurs or is likely to occur during the time period corresponding to the operation of the stationary source under impact assessment."

In order to establish the required exclusion limit, the lowest hourly background sound level per time period (daytime, 7:00 a.m. – 7:00 p.m.) and the NPC-300 limit values were compared and the revised noise criteria are then defined and shown in following Table 7 for Class 3 Area.

These revised exclusion limit values shall be respected by the auto recycling facility in order to comply with the NPC-300.

Table 7: Revised Exclusion Limits for The Auto Recycling Facility

Time of Day	Exclusion Limit Values of LAeq,1h (dBA)	
	Class 3 Area	
	OLA	POW
07:00 – 19:00	**57**	**57**

4.3 Sound Power Levels

As discussed in previous sections, the most dominant noise sources at the proposed auto recycling facility will be the diesel-powered engine and the hydraulic mechanism of the crusher.

The manufacturer, Overbuilt Inc., provided the overall sound pressure levels for the car crusher at several locations around the system (See Figure 7). Soft dB has confirmed with AIM Canada that the following sound pressure levels were measured in **dBA and not dB.**

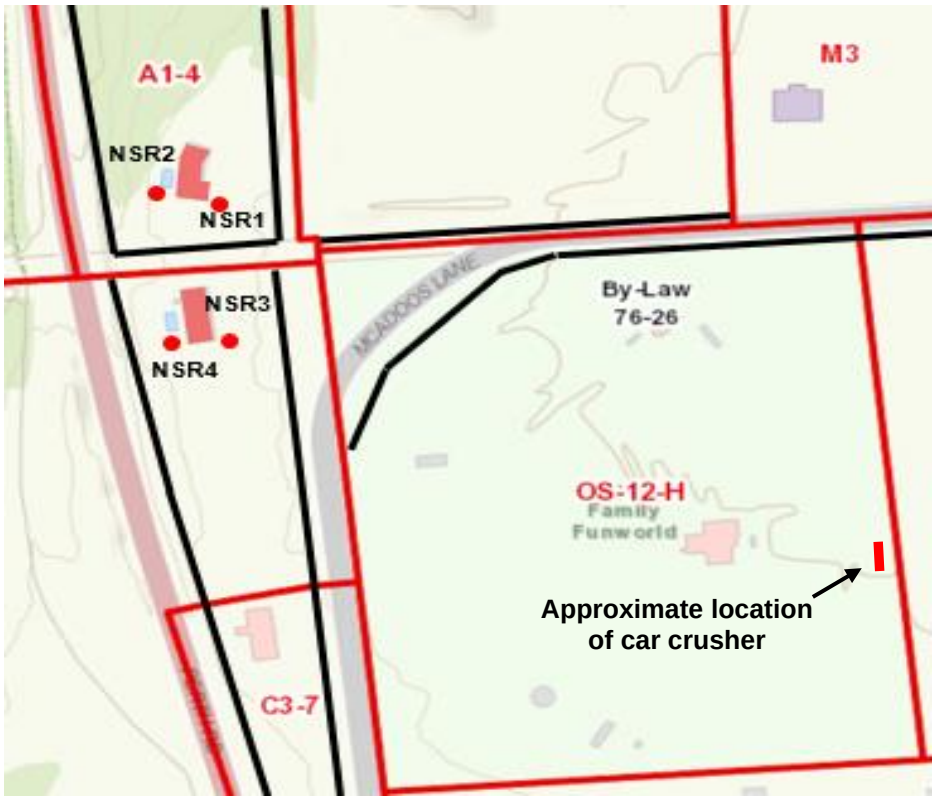


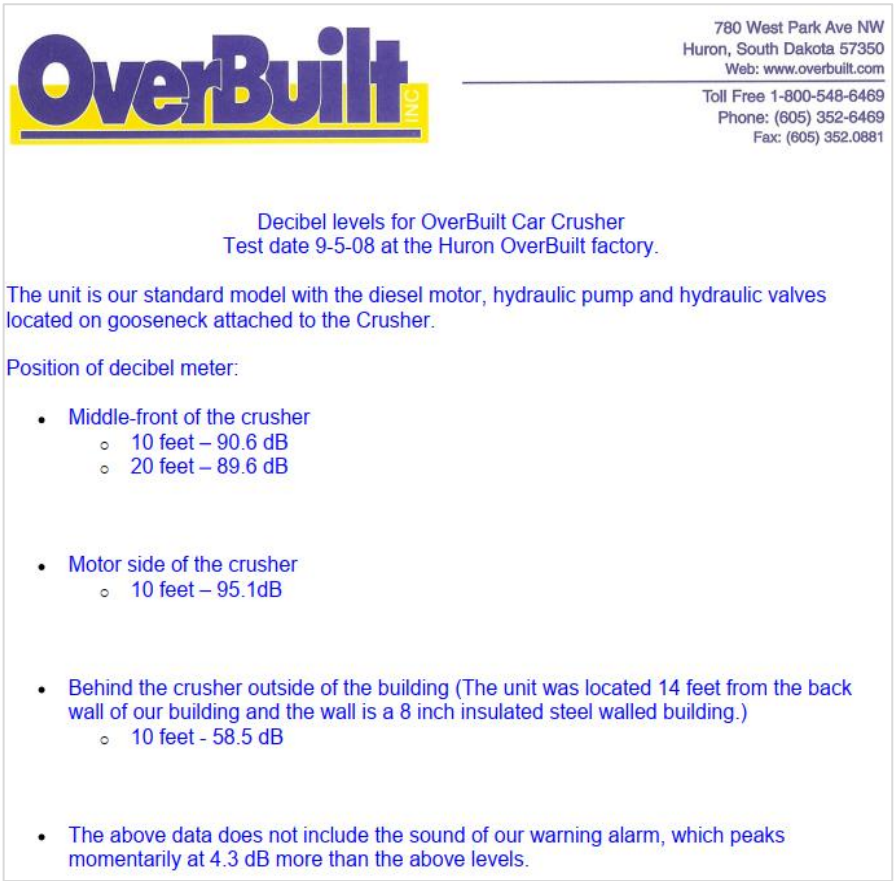
Figure 6: Zoning map (top, showing property lines in black) and approximate distance (bottom) (Source: City of Kingston Zoning By-law 76-26 and Google Earth)

From provided sound pressure levels, it is then possible to calculate the overall sound power level. The sound power level contribution per octave band was then estimated using Soft dB's database, which is composed by several measurement data obtained in previous projects with similar equipment.

Based on the OverBuilt Inc. data presented in Figure 7, the sound power levels for the car crusher engine and the car crusher mechanism of the OverBuilt diesel-powered car crusher are presented in following Table 8.

Table 8: Sound Power Levels of Car Crusher

Noise Sources	Sound Power Level (dBA)									
	Global (dBA)	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Car Crusher Engine (CCE)	**113**	68.2	89.2	105.3	108.8	106.2	105.4	100.6	90.4	80.3
Car Crusher Mechanism (CCM)	**107.3**	62.5	83.5	83.5	83.5	99.6	103.1	100.5	99.7	94.9



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Decibel levels for OverBuilt Car Crusher
Test date 9-5-08 at the Huron OverBuilt factory.

The unit is our standard model with the diesel motor, hydraulic pump and hydraulic valves located on gooseneck attached to the Crusher.

Position of decibel meter:

- Middle-front of the crusher
  - 10 feet – 90.6 dB
  - 20 feet – 89.6 dB
- Motor side of the crusher
  - 10 feet – 95.1dB
- Behind the crusher outside of the building (The unit was located 14 feet from the back wall of our building and the wall is a 8 inch insulated steel walled building.)
  - 10 feet - 58.5 dB
- The above data does not include the sound of our warning alarm, which peaks momentarily at 4.3 dB more than the above levels.

Figure 7: Sound pressure level of diesel-powered car crusher (Source: Overbuilt)

5 Acoustical Model

5.1 Assumptions

According to the technical information provided by AIM, it was understood that the car crusher will be operated for approximately 2 to 3 hours per day for 5 business days a week between 8:00 a.m. to 5:00 p.m.

The acoustical model was simulated using acoustic modelling software, CadnaA (based on ISO standard 9613). The model was simulated with an assumption that the car crusher is the only acting source as it dominates all other noise producing activities across the site. Based on this consideration, Soft dB have simulated several scenarios to find the ideal daytime (7:00 a.m. to 7:00 p.m.) operating time (minutes per hour) for the crusher such that it complies with all the applicable by-laws, guidelines and regulations.

The topography of the site has been imported utilizing Geospatial Data Extraction tool of Government of Canada, and the dimensions of the auto recycling facility and the precise location of the sources were provided by AIM (See Figure 2).

5.2 Noise Contour Mapping

Soft dB simulated multiple models to assess the ideal operation time for car crusher per hour. A 3D view of the acoustic model created in CadnaA is shown in Figure 8.

The noise contour map shows the propagation of the noise waves through the surroundings of the site. Figure 9 shows the noise contour map for 30 minutes of crusher operation. This contour map is based on a 4-metre grid at a height of 1.5 m from the ground. Noise contour maps for other scenarios can be found in 1.1.1Annex C.

Figure 8: 3D view of the acoustic model simulated in CadnaA

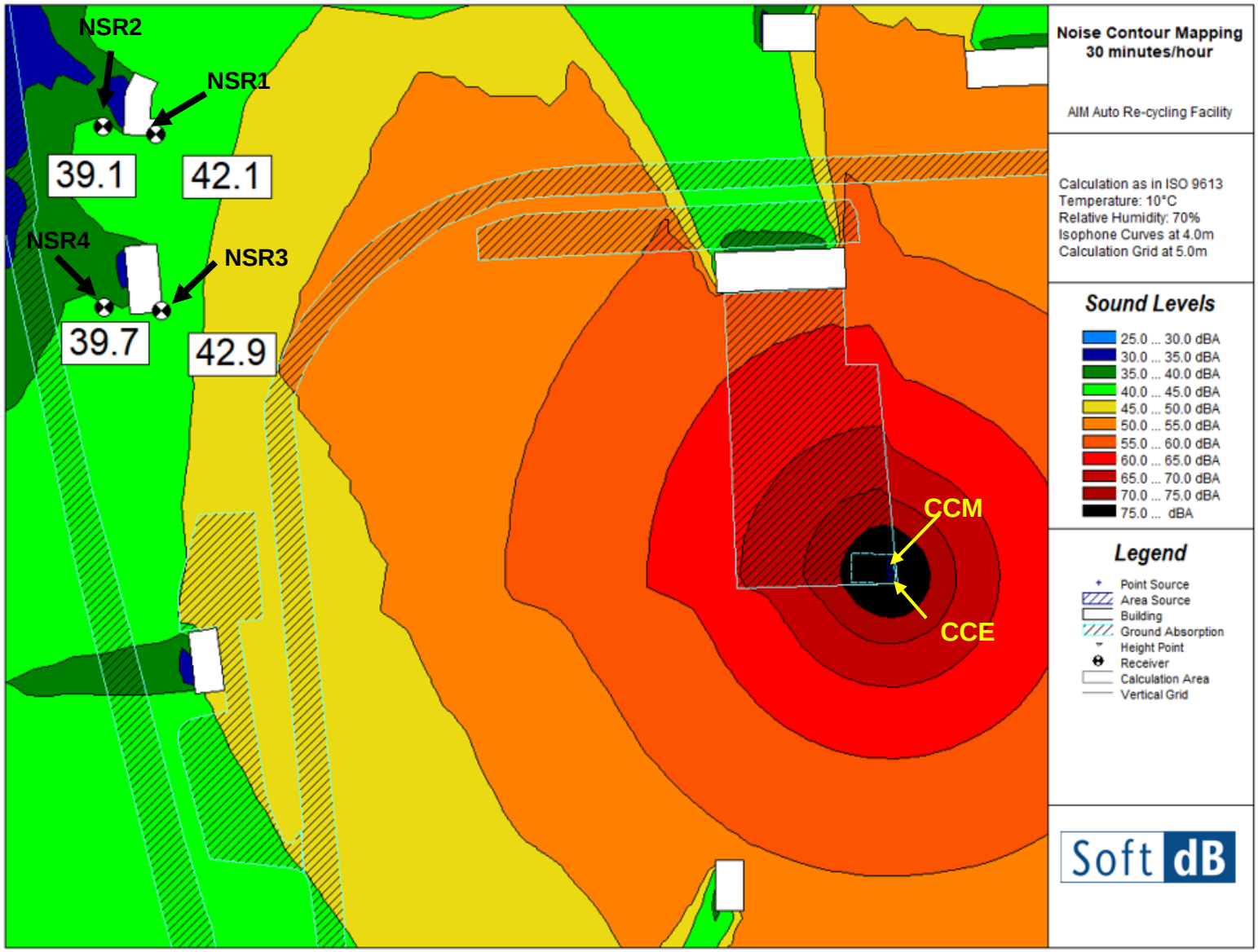


Figure 9: Noise contour mapping of the car crusher operation for 30 min/hour

6 Noise Impact Assessment

Sound pressure levels were simulated for each noise sensitive receptors for various operating time of the crusher during one hour (from 1 min to 60 min) in order to predict and suggest the ideal operating time for crusher that is within the exclusion limits in order to comply with MOECC's *NPC-300* guidelines.

For the location and elevation (height) of the receptors with respect to the ground, the most critical height and distance from the source have been considered that respects the requirements for location of noise sensitive receptors, as mentioned in NPC-300.

Considering that:

- **The exclusion limits for Class 3 areas have been revised after measuring background levels;**
- **The distance from the edges of the crusher to property line of the nearest sensitive receptor is at least 250 metres;**
- **The crusher only operates during the daytime (7:00 a.m. to 7:00 p.m.)**;

the compliance assessment of sensitive receptors for different crusher operation time is presented in Table 9.

Moreover, based on the nature of the sound generated by the noise sources, no further sound level adjustments (due to penalties) to the simulated sound pressure levels are required for the compliance evaluation.

Following a thorough compliance assessment considering newly established exclusion limit after background sound level measurements, all the noise sensitive receptors comply with the criteria mentioned in MOECC's *NPC-300* guidelines during the day period (7:00 a.m. – 7:00 p.m.).

Table 9: Noise Compliance Assessment with New Exclusion Limit for Daytime (7:00 a.m. to 7:00 p.m.)

Car Crusher Operating Time (min/hr)	NSR1 (POW) (X: 18380199.24 m; Y: 4904200.81 m; Z: 119.4 m)			NSR2 (OLA) (X: 18380177.10 m; Y: 4904204.17 m; Z: 115.4 m)			NSR3 (POW) (X: 18380201.82 m; Y: 4904126.54 m; Z: 119.1 m)			NSR4 (OLA) (X: 18380177.65 m; Y: 4904127.91 m; Z: 114.7 m)		
	LAeq, 1hr (dBA)	POW Limit (dBA)*	Compliant	LAeq, 1hr (dBA)	OLA Limit (dBA)*	Compliant	LAeq, 1hr (dBA)	POW Limit (dBA)*	Compliant	LAeq, 1hr (dBA)	OLA Limit (dBA)*	Compliant
1	28	57	Yes	25	57	Yes	28	57	Yes	25	57	Yes
2	31		Yes	28		Yes	31		Yes	28		Yes
3	32		Yes	29		Yes	33		Yes	30		Yes
4	34		Yes	31		Yes	34		Yes	31		Yes
5	35		Yes	32		Yes	35		Yes	32		Yes
10	38		Yes	35		Yes	38		Yes	35		Yes
20	41		Yes	38		Yes	41		Yes	38		Yes
30	42		Yes	39		Yes	43		Yes	40		Yes
40	43		Yes	39		Yes	44		Yes	39		Yes
50	45		Yes	42		Yes	45		Yes	42		Yes
60	45		Yes	42		Yes	46		Yes	43		Yes

*This is the limit established after measuring 48 h background sound level measurements as required by NPC-300 and comparing it with the exclusion limit mentioned in NPC-300 for Class 3 area.

7 Conclusions

This study was prepared to predict and assess the impact of the operation of car crusher at the proposed auto recycling facility at 1533 McAdoo's Lane, Kingston, ON. In this study, only diesel-powered engine and hydraulic mechanism of the car crusher were considered to be the dominant noise sources across the auto recycling facility.

The compliance of the simulated noise levels study was evaluated with respect to:

- **MOECC's NPC-300** Environmental Noise Control Guidelines – mentions criteria to define the noise limits that must be respected by any new noise source;
- **Ontario Regulation 85/16** (Registrations Under Part II.2 of the Act — End-of-Life Vehicles) - specifies minimum horizontal distance between car crusher and nearest property line of noise sensitive receptors;
- **City of Kingston's Noise By-law** (By-law 2004-52) - sets certain general prohibitions and restricted times during day when operation of certain noise producing activities is prohibited across the city.

Several acoustical models were simulated in the acoustic modelling software CadnaA, to predict sound levels at the sensitive receptors for various operating times during an hour and to suggest an ideal operating time for crusher. In order to demonstrate the predicted propagation of sound waves through the surroundings of the auto recycling facility, several noise contour maps were generated (See 1.1.1Annex C) using CadnaA software.

A summary of the compliance assessment is presented in Table 10. The following conclusions have been drawn:

- From this study, Soft dB concludes that, the noise levels due to the operation of car crusher at the proposed auto recycling facility would be in *compliance with MOECC's NPC-300* guidelines under new exclusion limit established after the background sound level measurements without any restrictions on operating time (considering the LAeq,1h metric for noise levels);
- At the present crusher location, according to the updated site plan provided AIM, the auto recycling facility also is in *compliance with the conditions of O. Reg. 85/16* but **AIM is responsible to verify and measure the final distance from the extreme surface of the crusher to the property line of the nearest sensitive receptor to ensure compliance with conditions mentioned in O. Reg. 85/16** (see Section 3.2);
- It was also acknowledged by AIM that the crusher would be operated only on weekdays during the daytime period (7:00 a.m. to 7:00 p.m.), this also *satisfies the conditions described in Schedule A and Schedule B of City of Kingston's Noise By-Law 2004-52* provided that diesel engine is equipped with appropriate muffling device.

Table 10: Summary of the Compliance Assessment for Noise Sensitive Receptors

Crusher Operating Time (min/hr)	NSR1 (POW)		NSR2 (OLA)		NSR3 (POW)		NSR4 (OLA)	
	LAeq, 1hr (dBA)	Compliant	LAeq, 1hr (dBA)	Compliant	LAeq, 1hr (dBA)	Compliant	LAeq, 1hr (dBA)	Compliant
1	28	Yes	25	Yes	28	Yes	25	Yes
2	31	Yes	28	Yes	31	Yes	28	Yes
3	32	Yes	29	Yes	33	Yes	30	Yes
4	34	Yes	31	Yes	34	Yes	31	Yes
5	35	Yes	32	Yes	35	Yes	32	Yes
10	38	Yes	35	Yes	38	Yes	35	Yes
20	41	Yes	38	Yes	41	Yes	38	Yes
30	42	Yes	39	Yes	43	Yes	40	Yes
40	43	Yes	39	Yes	44	Yes	39	Yes
50	45	Yes	42	Yes	45	Yes	42	Yes
60	45	Yes	42	Yes	46	Yes	43	Yes

Annex A Monitoring Station Sheets

PROJECT:	20-03-09-CY	POINT :	
		DATE :	
ZONE:	AIM Kingston (Auto Recycling Facility)	START :	29-May-20
		FIN :	02-Jun-20
SOUND LEVEL METER:	Soft dB - Advantech	INITIAL CALIBRATION :	58.48 mV/Pa
CALIBRATOR:	BSWA - CA111	FINAL CALIBRATION :	58.48 mV/Pa
REMARKS:	BACKGROUND SOUND LEVEL MEASUREMENTS		

LOCATION

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

PROJECT:	20-03-09-CY	POINT	
		DATE:	2020-05-30
ZONE:	AIM Kingston (Auto Recycling Facility)	START:	7:00
	First 24 hours	END:	19:00

RESULTS

PERIOD	$L_{eq,\ h}$ dBA	$L_{1\%}$ dBA	$L_{5\%}$ dBA	$L_{10\%}$ dBA	$L_{50\%}$ dBA	$L_{90\%}$ dBA	$L_{95\%}$ dBA	$L_{99\%}$ dBA
07:00-08:00	63.56	78.12	67.42	58.36	41.76	39	38.48	37.39
08:00-09:00	66.26	78.98	71.45	62.88	43.71	40.48	39.82	38.59
09:00-10:00	65.52	78.4	71.26	63.9	44.86	41.86	41.18	40.13
10:00-11:00	65.93	78.75	71.78	64.47	48.89	44.27	43.28	41.97
11:00-12:00	66.35	78.82	72.52	65.59	51.02	47.35	46.56	45.2
12:00-13:00	65.86	78.44	72.94	67.42	52.69	48.69	47.9	46.88
13:00-14:00	63.41	76.45	69.63	62.42	51.7	48.69	47.99	46.96
14:00-15:00	63.62	76.81	68.25	60.94	51.27	48.57	48.01	47.04
15:00-16:00	64.79	77.19	69.12	62.15	51.51	48.6	48.05	47.11
16:00-17:00	61.2	74.98	65.55	58.16	50.64	47.86	47.22	46.12
17:00-18:00	62.63	76.36	66.78	60.83	49.66	47.01	46.54	45.82
18:00-19:00	59.16	73.5	60.18	53.71	48.17	45.32	44.61	42.78

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

PROJECT:	19-09-13-CY_CIMA+	POINT	Pbg
		DATE:	2020-05-31
ZONE:	AIM Kingston (Auto Recycling Facility)	START:	7:00
	Second 24 hours	END:	19:00

RESULTS

PERIOD	$L_{eq,\ h}$ dBA	$L_{1\%}$ dBA	$L_{5\%}$ dBA	$L_{10\%}$ dBA	$L_{50\%}$ dBA	$L_{90\%}$ dBA	$L_{95\%}$ dBA	$L_{99\%}$ dBA
07:00-08:00	60.94	75.82	58.84	48.12	37.13	33.52	32.77	31.74
08:00-09:00	61.39	76.17	63.6	54	38.31	33.89	32.57	30.69
09:00-10:00	63.96	75.89	68	60.59	42.25	38.16	37.39	36.16
10:00-11:00	62.6	76.43	65.59	56.66	42.71	39.1	38.51	37.71
11:00-12:00	64.09	77.61	70.44	63.14	44.5	40.99	40.28	39.19
12:00-13:00	63.14	77.3	69.1	61.3	43.62	41.15	40.64	39.85
13:00-14:00	64.05	77.47	70.66	63.77	47.28	42.09	41.11	39.99
14:00-15:00	63.8	77.43	68.93	60.83	46.69	43.37	42.79	41.88
15:00-16:00	62.41	76.33	68.11	59.76	45.53	42.67	42.12	41.27
16:00-17:00	60.58	74.59	64.54	56.38	46.43	42.4	41.68	40.63
17:00-18:00	62.49	76.2	66.7	59.21	46.04	42.74	42	40.81
18:00-19:00	67.1	75.14	62.6	54.17	44.76	40.48	39.27	37.58

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

Annex B Meteorological Conditions

PROJECT :	20-03-09-CY	POINT :	
		DATE :	2020-05-29
ZONE :	AIM Kingston	START :	10h00
		END :	24h00

METEOROLOGICAL CONDITIONS

PERIOD	TEMPERATURE °C	RELATIVE HUMIDITY %	WEATHER CONDITIONS	WIND CONDITIONS	
				SPEED (km/h)	DIRECTION (10's deg)
00:00-01:00					
01:00-02:00					
02:00-03:00					
03:00-04:00					
04:00-05:00					
05:00-06:00	15.5	99		12	18
06:00-07:00	18.4	92		8	22
07:00-08:00	17.1	93	Mostly Cloudy	16	18
08:00-09:00	17.9	92		14	19
09:00-10:00	18.6	91		10	21
10:00-11:00	18.6	93	Cloudy	9	21
11:00-12:00	20.6	89		10	23
12:00-13:00	21.4	82	Rain showers	14	24
13:00-14:00	22.7	78	Mostly Cloudy	7	25
14:00-15:00	21.7	87	Rain showers	5	20
15:00-16:00	18.8	93	Rain showers	23	20
16:00-17:00	17.3	98	Rain showers, Fog	15	20
17:00-18:00	16.9	98	Rain showers	13	18
18:00-19:00	15.5	99	Rain showers, Fog	11	21
19:00-20:00	17.6	99	Rain showers	12	24
20:00-21:00	17.1	95		15	23
21:00-22:00	16.6	95		18	23
22:00-23:00	16	96	Mostly Cloudy	18	23
23:00-24:00					

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

PROJECT :	20-03-09-CY	POINT :	
		DATE :	2020-05-30
ZONE :	AIM Kingston	START :	0h00
		END :	24h00

METEOROLOGICAL CONDITIONS

PERIOD	TEMPERATURE °C	RELATIVE HUMIDITY %	WEATHER CONDITIONS	WIND CONDITIONS	
				SPEED (km/h)	DIRECTION (10's deg)
00:00-01:00					
01:00-02:00					
02:00-03:00					
03:00-04:00					
04:00-05:00					
05:00-06:00	11.5	90		9	28
06:00-07:00	13	86		10	28
07:00-08:00	14.8	80	Clear	12	27
08:00-09:00	16.4	71		17	24
09:00-10:00	16.4	73		15	21
10:00-11:00	14.4	88	Mainly Clear	21	18
11:00-12:00	13.9	88		18	19
12:00-13:00	15.5	80		25	19
13:00-14:00	15.3	77	Cloudy	24	20
14:00-15:00	15.4	77		22	20
15:00-16:00	14	88		19	19
16:00-17:00	14.9	85	Rain showers	22	22
17:00-18:00	15.7	78		18	25
18:00-19:00	16	69		19	29
19:00-20:00	13.7	72	Mostly Cloudy	32	33
20:00-21:00	11.3	80		22	32
21:00-22:00	10.2	79		22	33
22:00-23:00	9.2	73	Mainly Clear	20	34
23:00-24:00					

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

PROJECT :	20-03-09-CY	POINT :	
		DATE :	2020-05-31
ZONE :	AIM Kingston	START :	0h00
		END :	24h00

METEOROLOGICAL CONDITIONS

PERIOD	TEMPERATURE °C	RELATIVE HUMIDITY %	WEATHER CONDITIONS	WIND CONDITIONS	
				SPEED (km/h)	DIRECTION (10's deg)
00:00-01:00					
01:00-02:00					
02:00-03:00					
03:00-04:00					
04:00-05:00					
05:00-06:00	5.5	91		10	32
06:00-07:00	6.5	88		10	33
07:00-08:00	8.2	77	Mostly Cloudy	10	34
08:00-09:00	8.5	74		19	33
09:00-10:00	9.8	74		9	30
10:00-11:00	10.4	63	Mostly Cloudy	10	23
11:00-12:00	11.4	47		16	31
12:00-13:00	10.5	77		23	19
13:00-14:00	11.6	63	Mostly Cloudy	17	18
14:00-15:00	12.8	48		14	34
15:00-16:00	13.3	47		4	18
16:00-17:00	15.4	35	Mostly Cloudy	13	30
17:00-18:00	15	37		18	31
18:00-19:00	14.1	37		21	30
19:00-20:00	12.5	43	Mainly Clear	15	33
20:00-21:00	10.4	51		11	31
21:00-22:00	9.7	58		11	29
22:00-23:00	9.6	63	Mostly Cloudy	16	31
23:00-24:00					

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

PROJECT :	20-03-09-CY	POINT :	
		DATE :	2020-06-01
ZONE :	AIM Kingston	START :	0h00
		END :	24h00

METEOROLOGICAL CONDITIONS

PERIOD	TEMPERATURE °C	RELATIVE HUMIDITY %	WEATHER CONDITIONS	WIND CONDITIONS	
				SPEED (km/h)	DIRECTION (10's deg)
00:00-01:00					
01:00-02:00					
02:00-03:00					
03:00-04:00					
04:00-05:00					
05:00-06:00	3.3	95		8	34
06:00-07:00	7.8	79		9	31
07:00-08:00	11.2	52	Mainly Clear	9	30
08:00-09:00	12.3	60		10	24
09:00-10:00	12.7	64		17	19
10:00-11:00	12.4	71	Mainly Clear	21	18
11:00-12:00	12.6	77		21	19
12:00-13:00	12.9	78		24	19
13:00-14:00	13.2	69	Mostly Cloudy	30	19
14:00-15:00	14.1	66		28	19
15:00-16:00	14.7	62		25	19
16:00-17:00	14	63	Mainly Clear	28	19
17:00-18:00	16.8	59		14	20
18:00-19:00	13	72		19	19
19:00-20:00	12.6	76	Mainly Clear	12	18
20:00-21:00	14.2	66		13	24
21:00-22:00	14.2	67		14	24
22:00-23:00	13.7	71	Mainly Clear	15	24
23:00-24:00					

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

PROJECT :	20-03-09-CY	POINT :	
		DATE :	2020-06-02
ZONE :	AIM Kingston	START :	0h00
		END :	11h00

METEOROLOGICAL CONDITIONS

PERIOD	TEMPERATURE °C	RELATIVE HUMIDITY %	WEATHER CONDITIONS	WIND CONDITIONS	
				SPEED (km/h)	DIRECTION (10's deg)
00:00-01:00					
01:00-02:00					
02:00-03:00					
03:00-04:00					
04:00-05:00					
05:00-06:00	11.4	87		7	19
06:00-07:00	11.8	86	Rain Showers	5	16
07:00-08:00	12.4	86	Rain Showers	4	7
08:00-09:00	14.2	75	Rain Showers	5	22
09:00-10:00	14	74	Rain Showers	3	14
10:00-11:00	14.2	75	Cloudy	13	24
11:00-12:00	12.8	85		21	19
12:00-13:00	13.4	79		13	18
13:00-14:00	13.2	77	Cloudy	14	20
14:00-15:00	13.7	80		10	18
15:00-16:00	13.8	81		10	19
16:00-17:00	13.9	78	Cloudy	9	19
17:00-18:00	14.2	77		6	22
18:00-19:00	14.2	75		5	14
19:00-20:00	14.6	76	Cloudy	3	12
20:00-21:00	13.7	91	Rain Showers	4	33
21:00-22:00	13.2	91	Rain Showers	4	16
22:00-23:00	13.2	91	Mostly Cloudy	6	15
23:00-24:00					

OPERATORS	SIGNATURES
Utsav Patel	UP
Carlos Yoong	CY

Annex C Noise Contour Maps

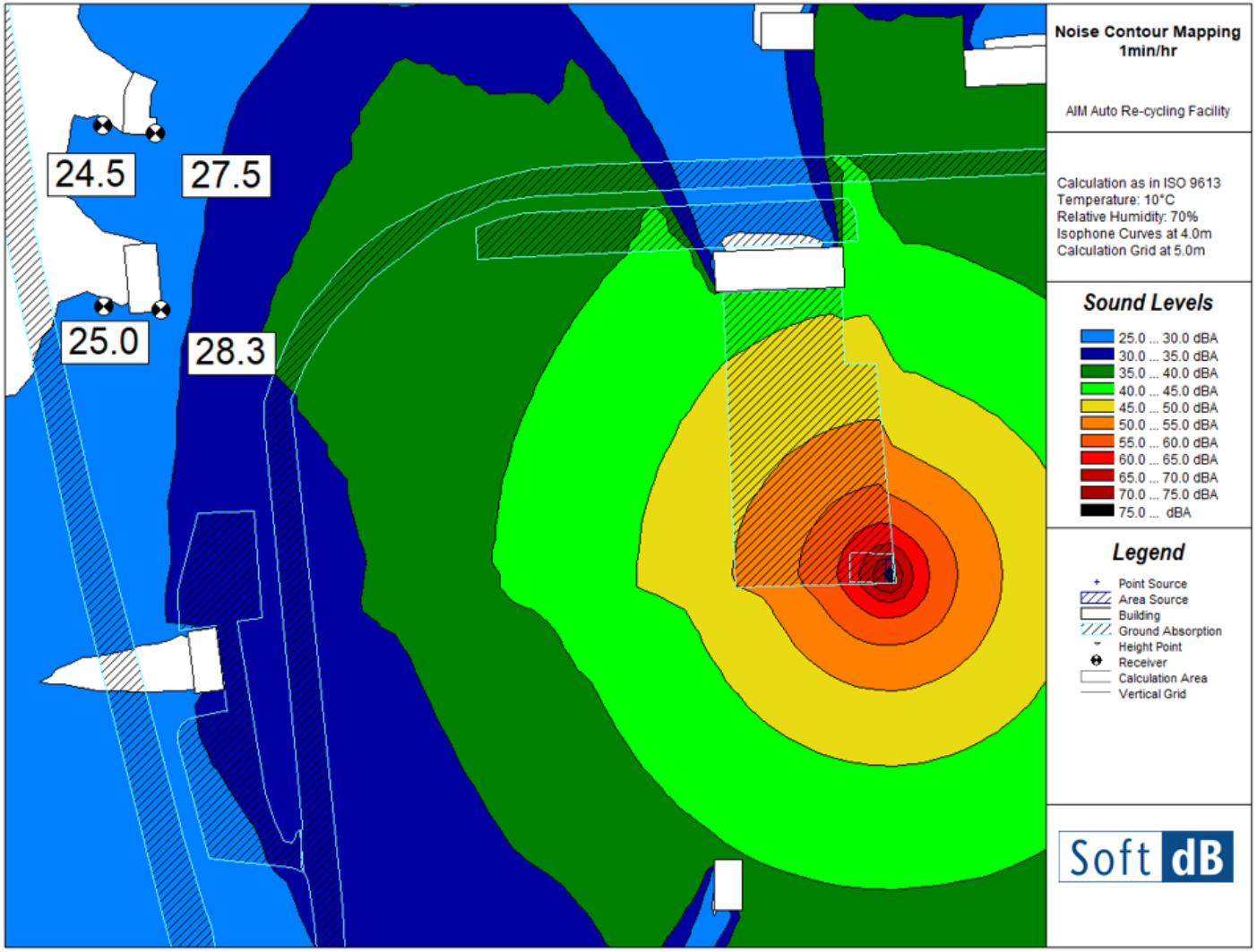


Figure 10: Noise contour mapping of the car crusher operation for 1 min/hour

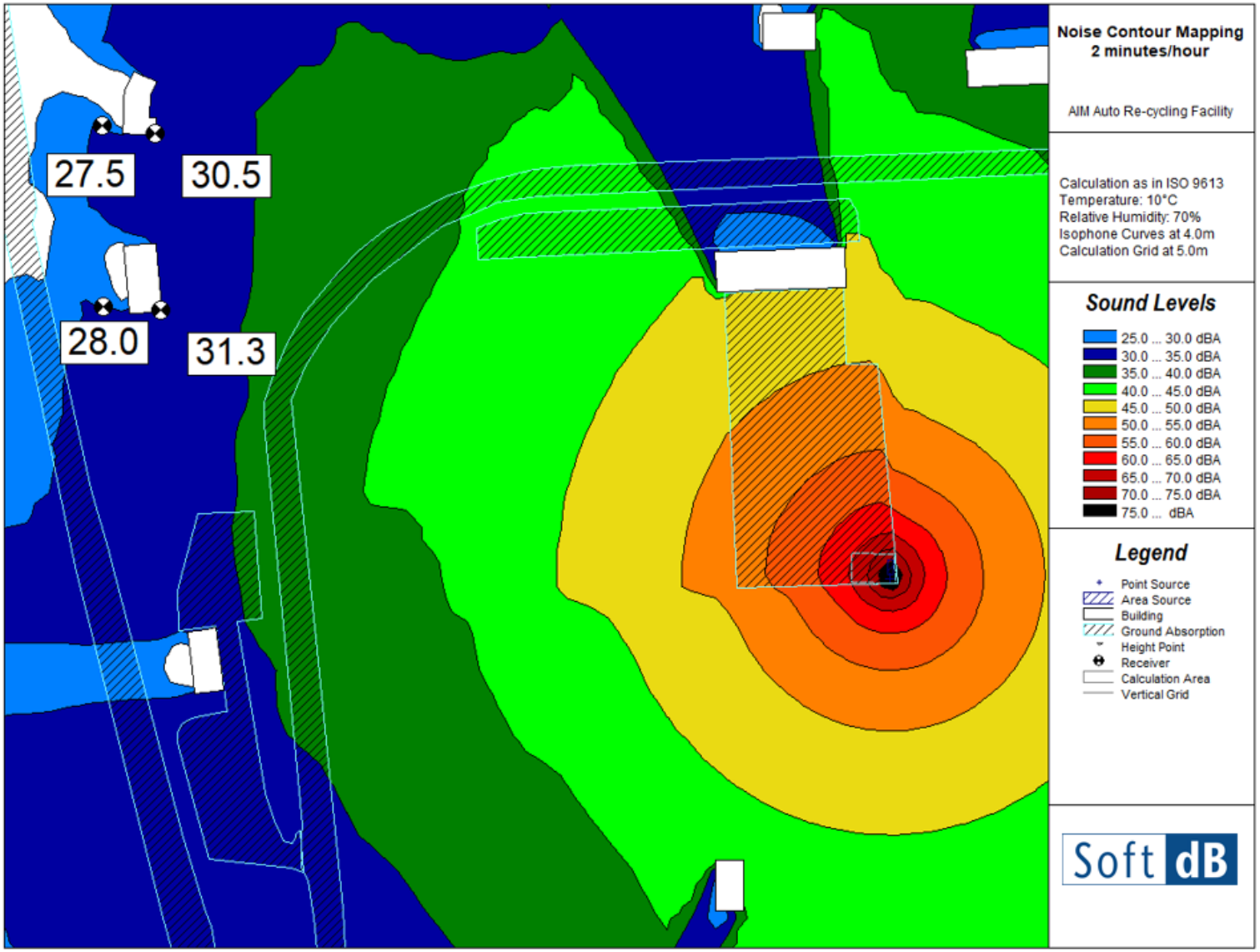


Figure 11: Noise contour mapping of the car crusher operation for 2 min/hour

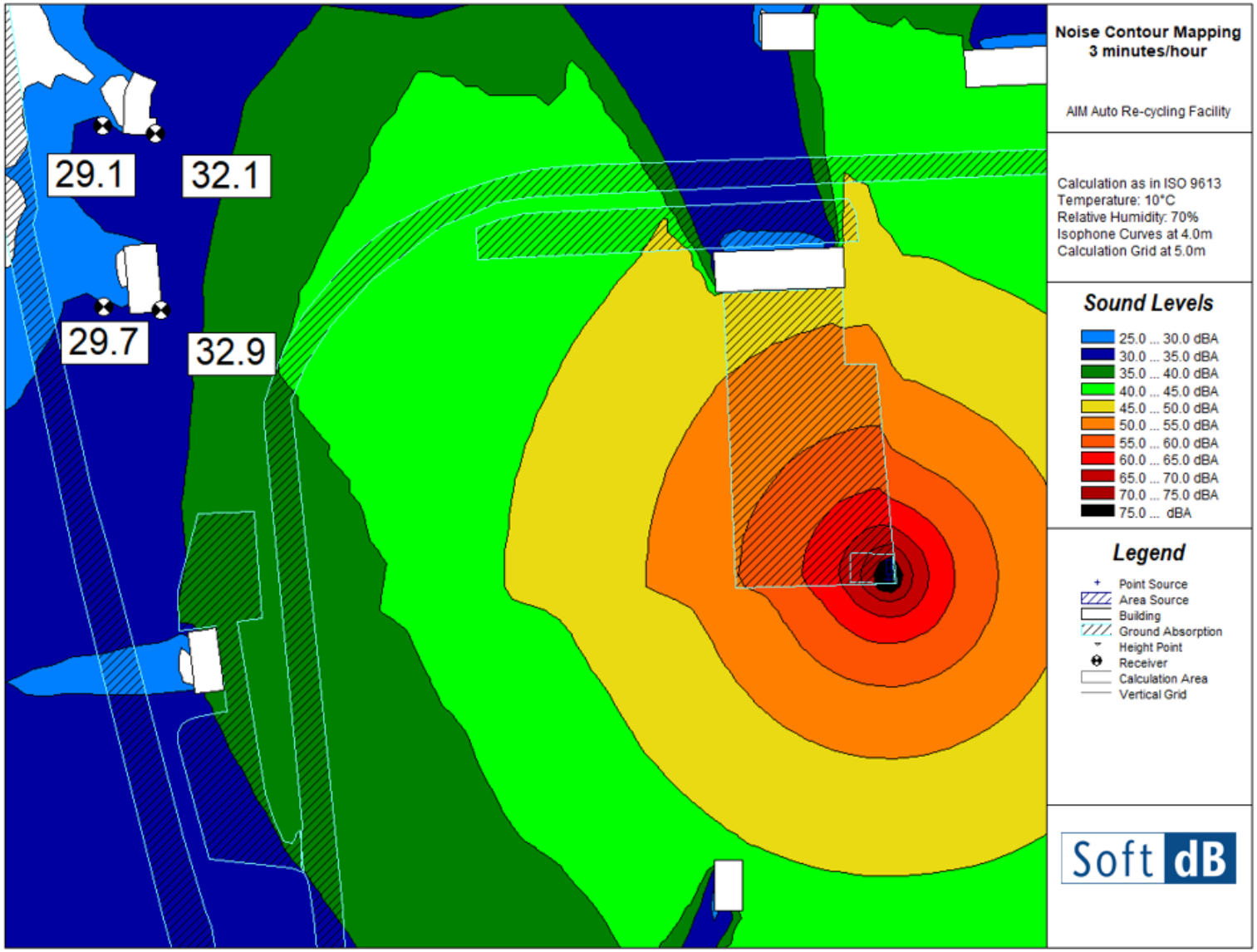


Figure 12: Noise contour mapping of the car crusher operation for 3 min/hour

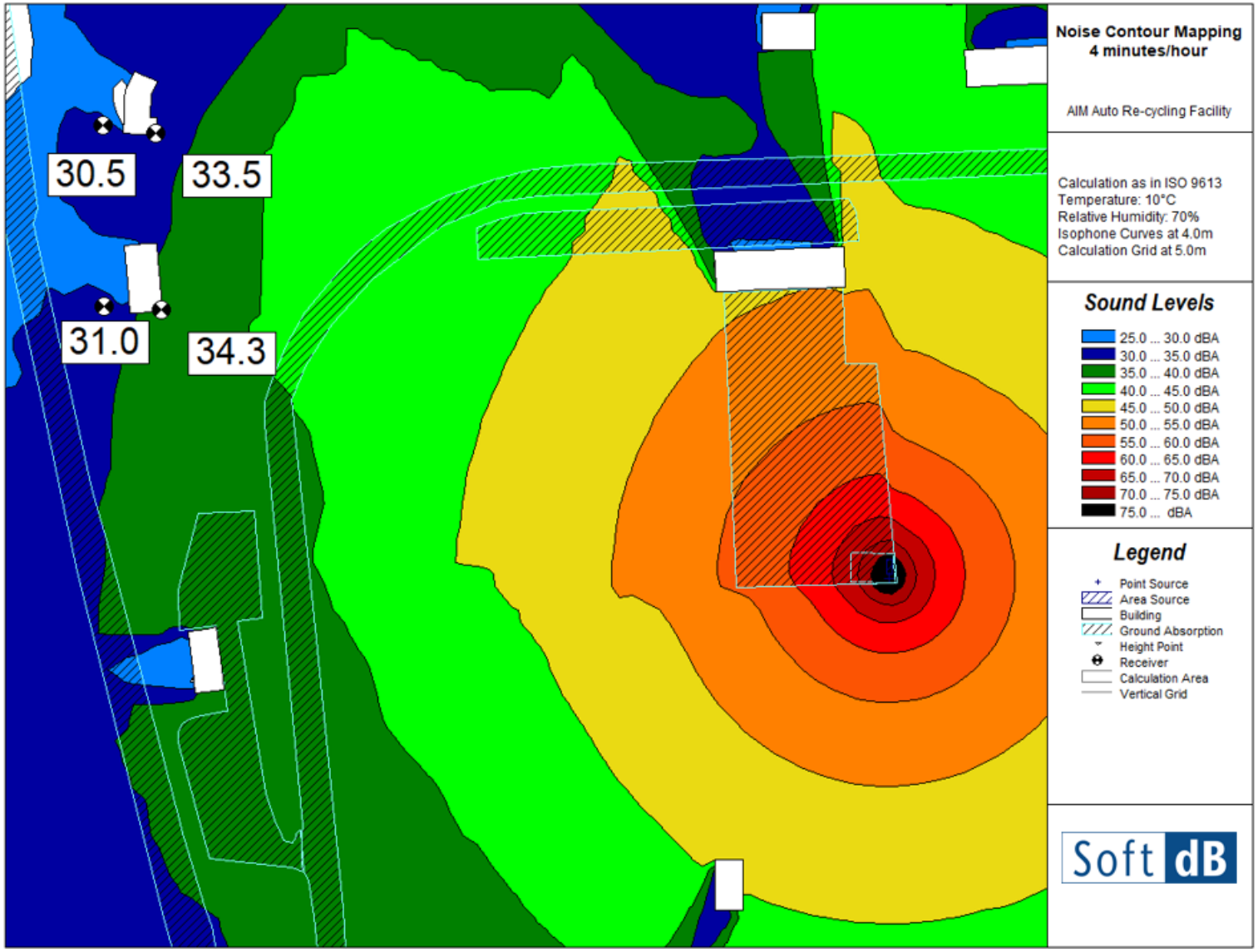


Figure 13: Noise contour mapping of the car crusher operation for 4 min/hour

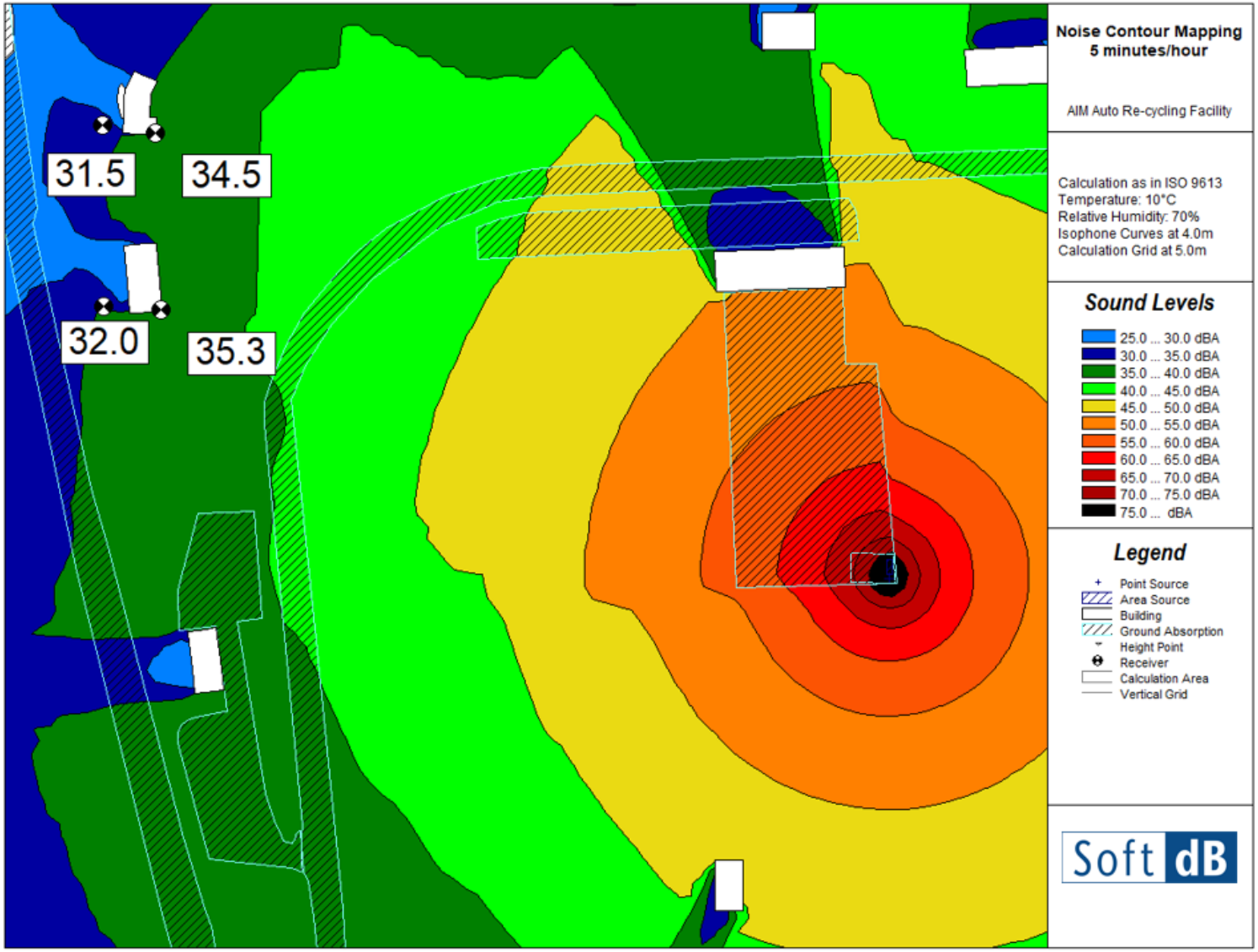


Figure 14: Noise contour mapping of the car crusher operation for 5 min/hour

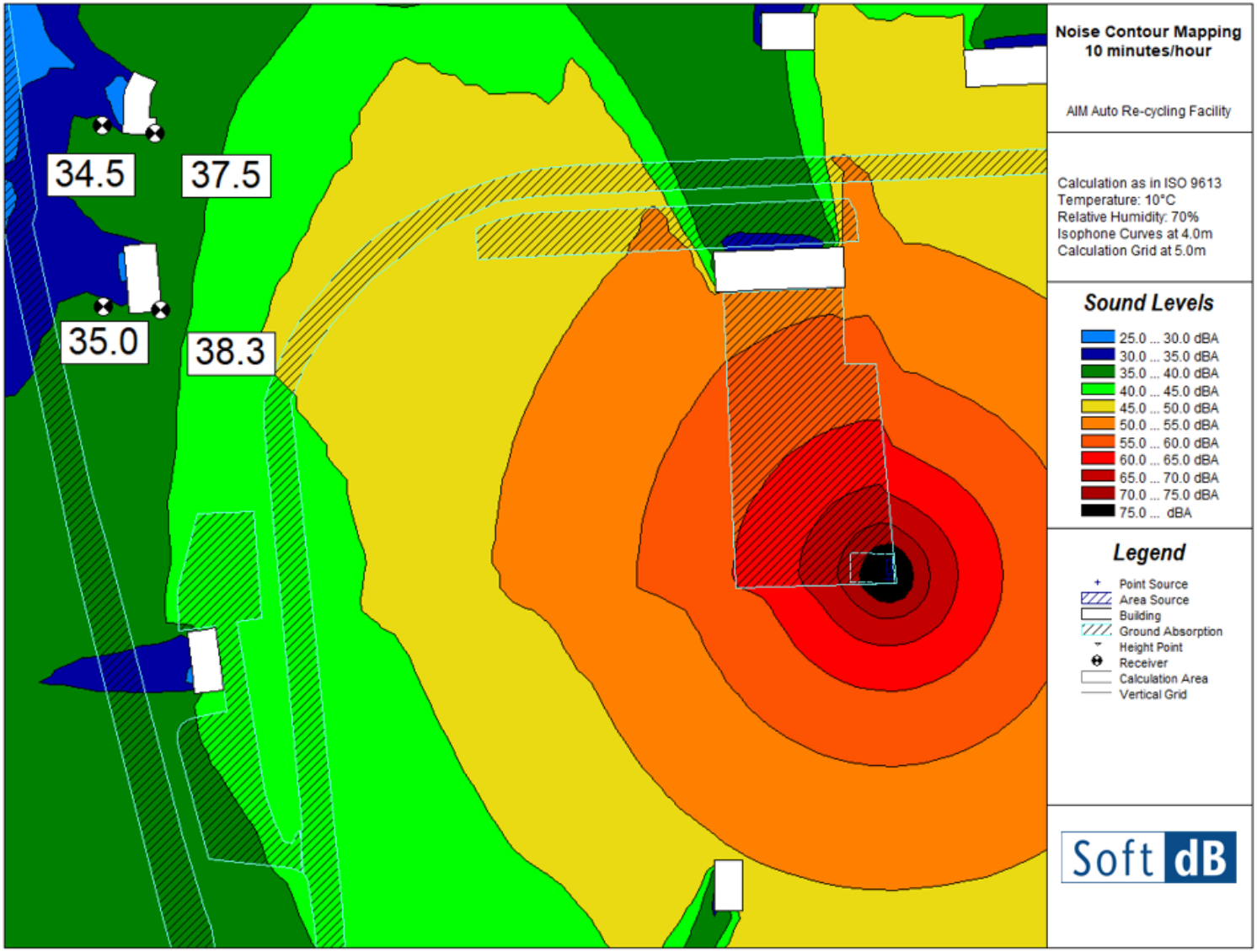


Figure 15: Noise contour mapping of the car crusher operation for 10 min/hour

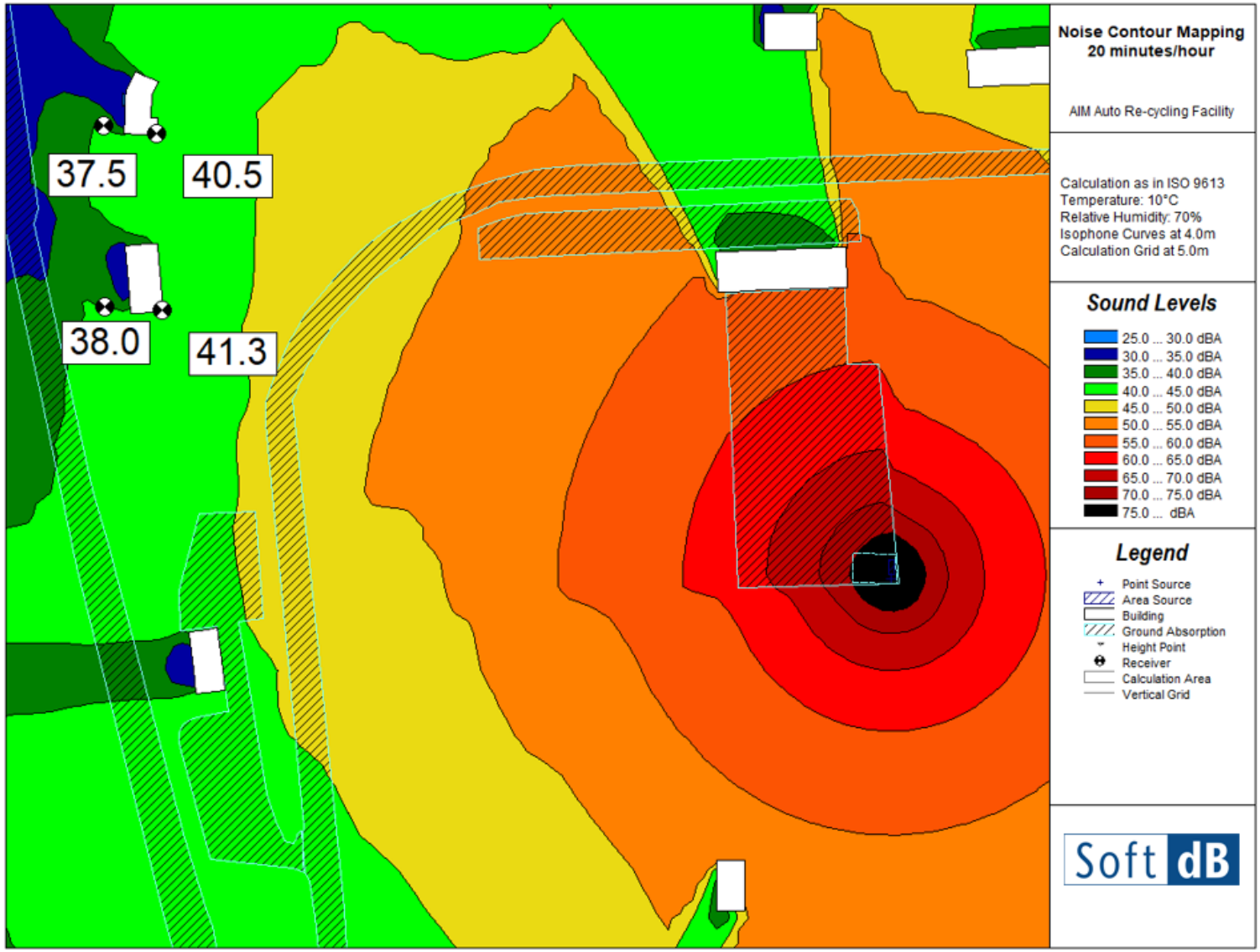


Figure 16: Noise contour mapping of the car crusher operation for 20 min/hour

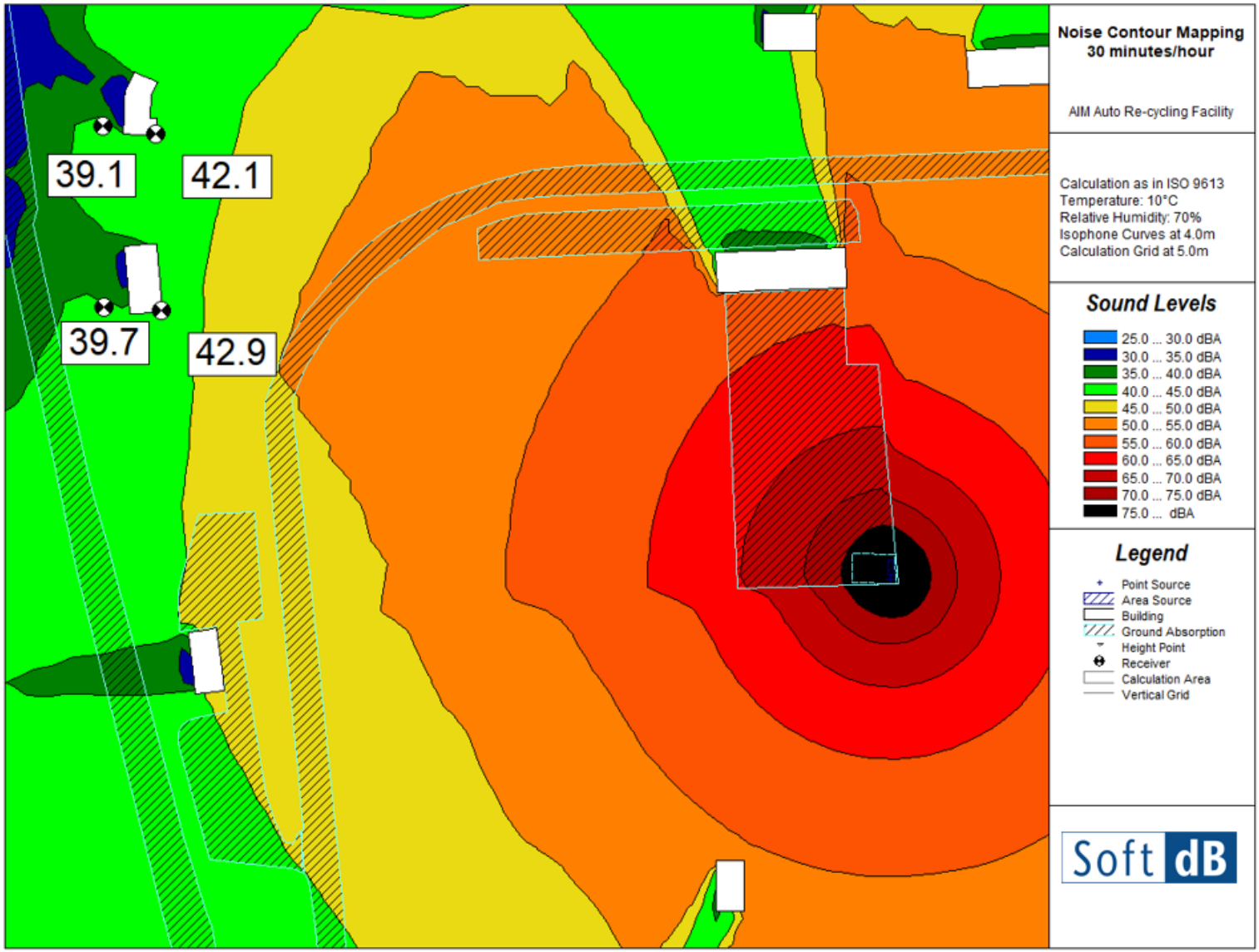


Figure 17: Noise contour mapping of the car crusher operation for 30 min/hour

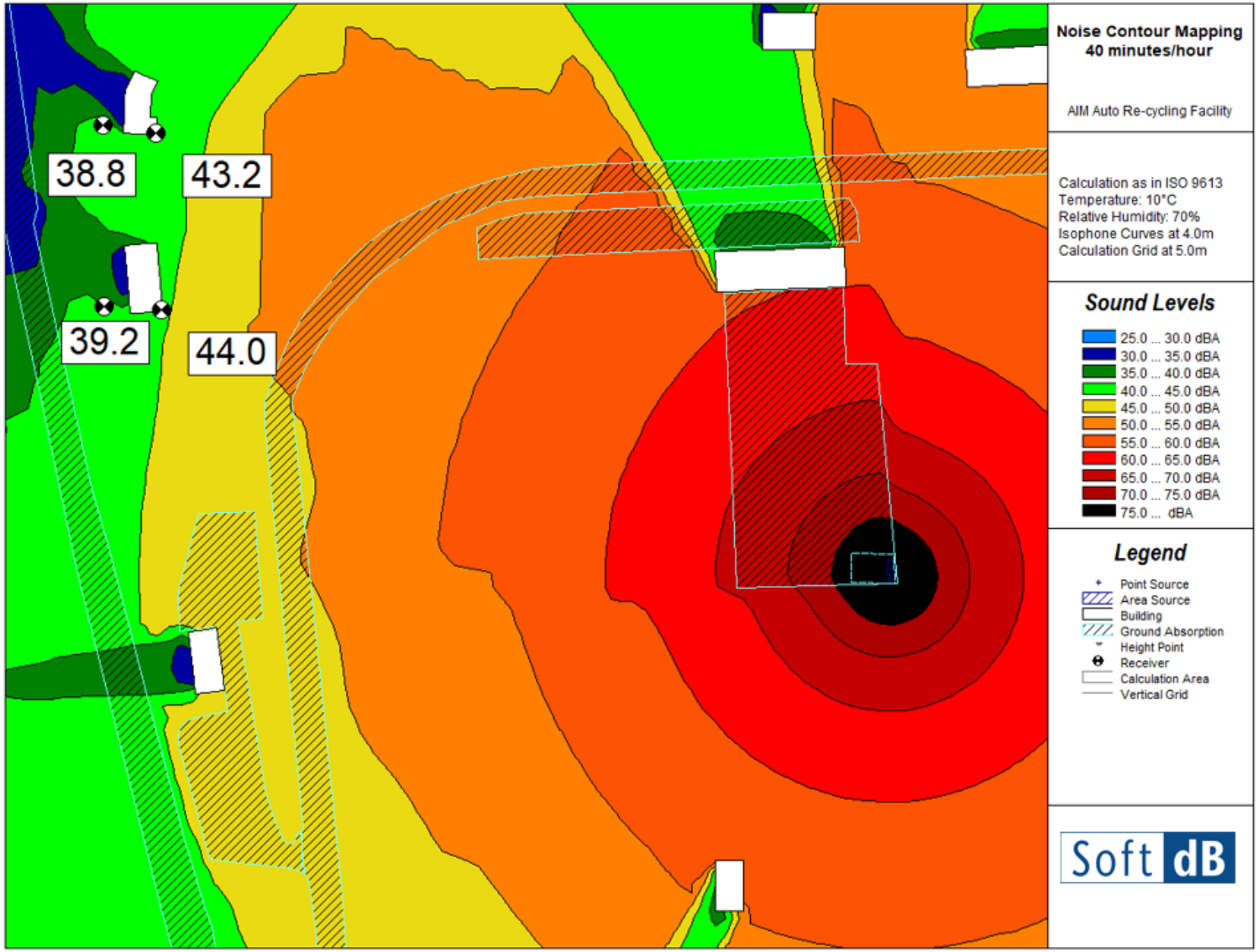


Figure 18: Noise contour mapping of the car crusher operation for 40 min/hour

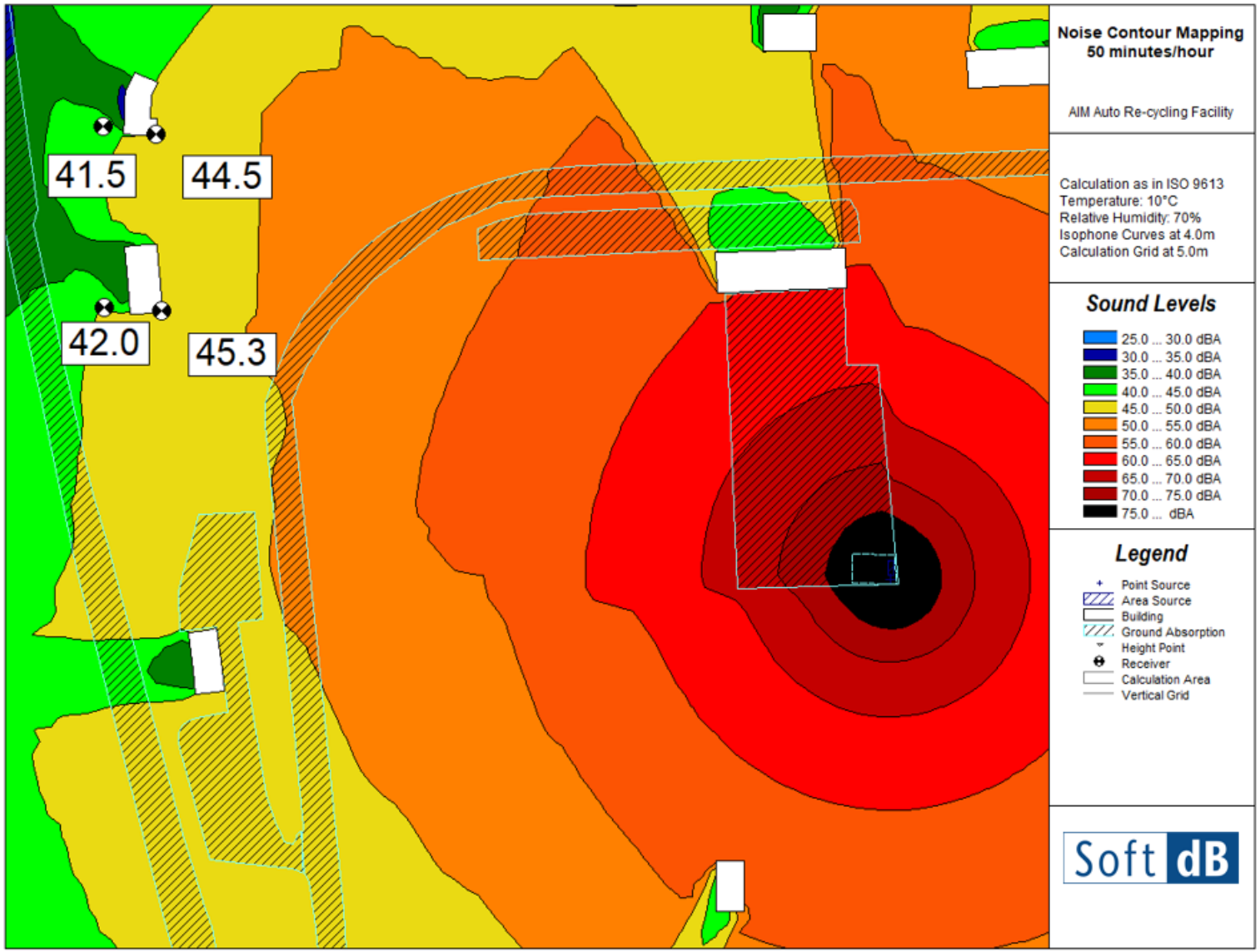


Figure 19: Noise contour mapping of the car crusher operation for 50 min/hour

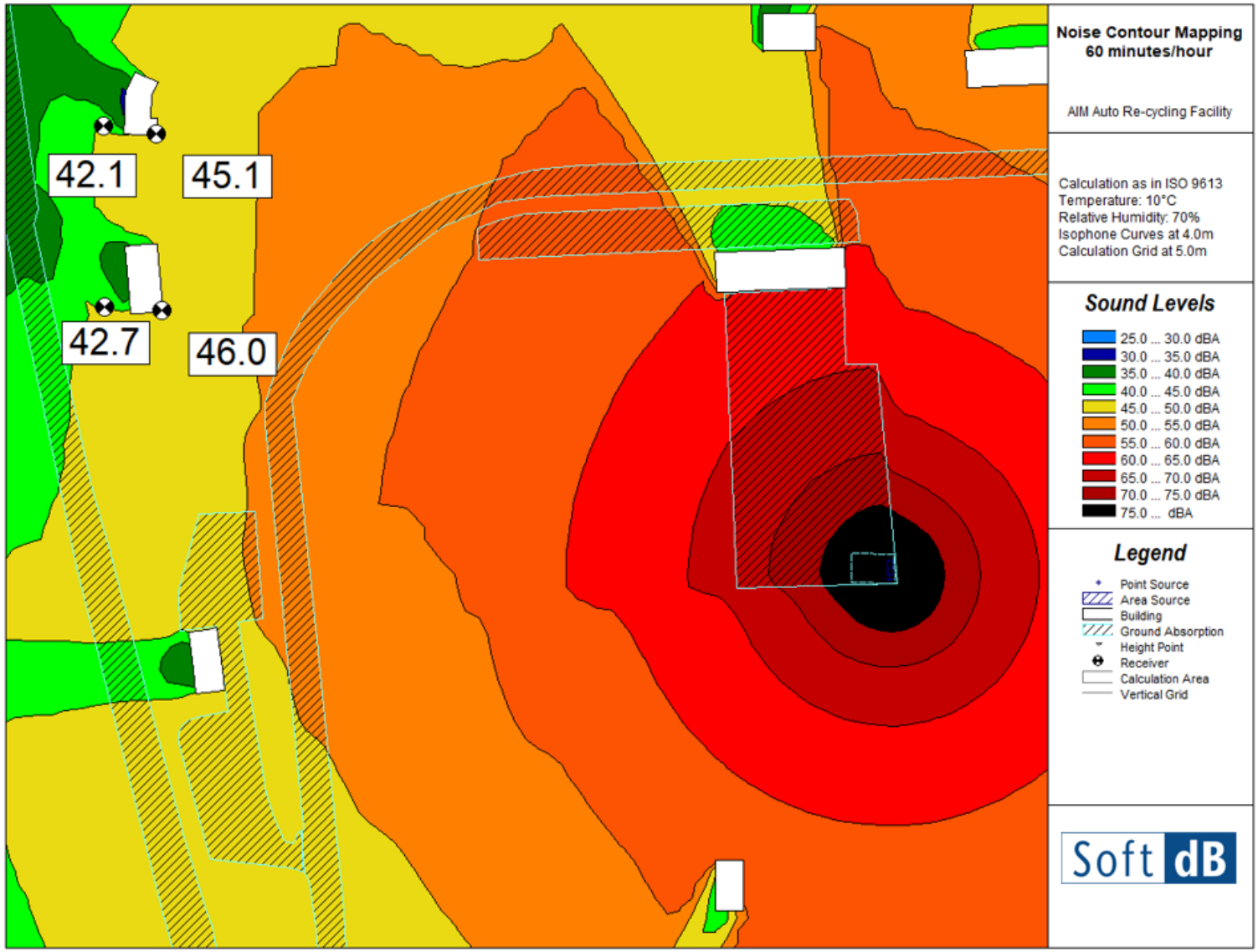


Figure 20: Noise contour mapping of the car crusher operation for 60 min/hour

Annex D Excerpts from NPC-300

"Class 1 area"
means an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as "urban hum."

"Class 2 area"
means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 areas:

- sound levels characteristic of Class 1 during daytime (07:00 to 19:00 or to 23:00 hours); and
- low evening and night background sound level defined by natural environment and infrequent human activity starting as early as 19:00 hours (19:00 or 23:00 to 07:00 hours).

"Class 3 area"
means a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as:

- a small community;
- agricultural area;
- a rural recreational area such as a cottage or a resort area; or
- a wilderness area.

"Class 4 area"
means an area or specific site that would otherwise be defined as Class 1 or 2 and which:

- is an area intended for development with new noise sensitive land use(s) that are not yet built;
- is in proximity to existing, lawfully established stationary source(s); and
- has formal confirmation from the land use planning authority with the Class 4 area classification which is determined during the land use planning process.

Part B Stationary Sources

B1 General

Part A needs to be read in conjunction with this Part.

B1.1 Scope

Part B provides sound level limits for stationary sources affecting points of reception in noise sensitive land uses. The limits apply to the assessment of existing, planned, new, expanded or modified stationary sources of sound in compliance with section 9 and section 47.3 of the *Environmental Protection Act*. The limits would also be applied when Environmental Compliance Approvals are issued under Part II.1 of the *Environmental Protection Act*. Part B provides the operational requirements applied to MOE approvals for noise emissions from stationary sources. The sound level limits may also apply to noise-related incidents reported to the MOE, which are investigated to determine the potential for an adverse effect, in contravention of section 14 of the *Environmental Protection Act*. The sound level limits will also be applied in decisions made under the provisions of the *Environmental Assessment Act*.

In addition, this guideline is intended for other agencies and ministries that exercise a similar decision-making authority under other legislation, such as licensing and permitting by the Ministry of Natural Resources under the *Aggregate Resources Act*.

B1.2 Responsibility

In the context of applying for MOE approval, it is the responsibility of the owner of a stationary source to comply with the applicable sound level limits.

B2 Noise Impact Studies

Noise impact studies are to be prepared by qualified individuals with experience in environmental acoustics, preferably Professional Engineers. Noise impact studies are required by the MOE in the context of an application for an MOE approval. The MOE guidance for applying for approvals includes the requirements for noise impact studies. Other approval authorities may have similar requirements.

B3 Noise Impact Assessment

The impact assessment of noise produced by stationary sources is done by either prediction or measurement, or a combination of both. The noise impact assessment descriptor is the One-Hour Equivalent Sound Level (L_{eq}), and the noise impact is evaluated at representative points of reception.

B3.1 Procedures

All sound level measurements and calculations need to be made in accordance with References [16], [17], [24], [28], [29], [30], [33] and [34] or other methods/models that are acceptable to the MOE.

For purposes of establishing compliance with the stationary source plane of window sound level limits, the assumption will be made that one or more windows, associated with noise sensitive spaces, are located on each floor level of any façade of a noise sensitive land use with a full or partial view (exposure) to a stationary source.

Exceptions to the above can be made when it can be demonstrated that specific windows are not associated with noise sensitive spaces and that the architectural design is not amenable to converting the associated space to being noise sensitive. For example:

1. inoperable windows to a single loaded corridor serving a high-rise multi-unit building need not comply with plane of window sound level limits.
2. plane of window limits do not apply to the glazing of enclosed noise buffer where it can be shown that the plane of window sound level limits will be met at the windows of noise sensitive spaces protected by the enclosed noise buffer.

B4 Establishment of Sound Level Limits - Objective

The sound level limit at a point of reception is set as the higher of either the applicable exclusion limit, or the minimum background sound level that occurs or is likely to occur during the time period corresponding to the operation of the stationary source under impact assessment.

B5 Background Sound Levels

Background sound levels, defined in Part A, are typically caused by road traffic, except in areas well removed from the activities of people. Sound from existing adjacent stationary sources may be included in the determination of the background One-Hour Equivalent Sound Level (L_{eq}) if such stationary sources of sound have the appropriate approvals and are not under consideration for noise abatement by the municipality or the MOE.

Highly intrusive short duration noise caused by a source such as an aircraft fly-over or a train (including light rail transit, subways and streetcars) pass-by is normally excluded from the determination of the background sound level, subject to exceptions identified in the definition of background sound level in Part A.

If the background sound level is to be established by means of monitoring, the monitoring should be performed over a minimum period of 48 hours and should be conducted during times when the background sound level is at its lowest level. The lowest hourly L_{eq} value should be selected to represent the background sound level.

In general, the sound level data included in an impact assessment needs to be representative of the background conditions and the predictable worst case noise impact from the stationary source.

B6 Sound Levels Due to Stationary Sources

1. Approval of Stationary Sources

   The One-Hour Equivalent Sound Level (L_{eq}) and/or the Logarithmic Mean Impulse Sound Level (L_{LM}) produced by the stationary sources are to be obtained by measurement and/or prediction. The estimation of the L_{eq} and/or L_{LM} of the stationary source under impact assessment needs to reflect the principle of predictable worst case noise impact. The predictable worst case noise impact at a point of reception is defined in Part A of this guideline as the greatest noise impact relative to the limit in any hour.

2. Complaint Investigation of Stationary Sources

   The One-Hour Equivalent Sound Level (L_{eq}) and/or the Logarithmic Mean Impulse Sound Level (L_{LM}) produced by the existing stationary sources are to be obtained by measurements taken in accordance with the procedures described in Section B3.1.

B7.1 Steady and Varying Sound - Outdoors and Plane of Window

For sound from a stationary source including Quasi-Steady Impulsive Sound but not including other impulsive sound, the sound level limit at a point of reception, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of the applicable exclusion limit value given in Table B-1 or Table B-2, 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.

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

B10 Noise Control Measures

The preferred and normally the most economical and practical noise control option is the use of source based noise control measures implemented on the property of the stationary source, as described in the definition of noise control measures in Part A of this guideline.

In addition, subject to an agreement described below, the following receptor based noise control measures are acceptable for implementation at the noise sensitive land use:

1. Receptor based outdoor noise control measures.
2. Receptor based site configuration noise control measures.
3. Receptor based "on building" noise control measures, under the condition that the noise sensitive land use is classified as a Class 4 area.

Should the receptor based noise control measures be used, their implementation and maintenance should be included in an agreement for noise mitigation as described in Part A of this guideline.

B11 Development of Adjacent Lands

Where a site in proximity to a stationary source is in the process of being developed or redeveloped for noise sensitive land uses (such as residential), it is considered the responsibility of the proponent/developer of the noise sensitive land use to ensure compliance with the applicable sound level limits and for this responsibility to be reflected in the land use planning decisions.

The land use planning and approval process for the new noise sensitive land use may involve several authorities and levels of approval. Involvement by the owner of the stationary source in the land use planning process is highly recommended when an adjacent new noise sensitive land use is proposed.

A cooperative effort on the part of the proponent of a new noise sensitive land use and the stationary source owner is desirable for both parties. For the proponent of the new noise sensitive land use, cooperation may result in more economical noise control measures. For the owner of the stationary source, cooperation may facilitate input into the design of the proposed new noise sensitive land use and the noise mitigation that may be appropriate for land use compatibility.

Annex E Excerpts from O. Reg. 85/16

End-of-life vehicle

2. A motor vehicle or a motor vehicle hulk is an end-of-life vehicle if,

(a) it is abandoned; or

(b) it is being managed for the purpose of,

(i) recycling it,

(ii) reusing it other than as an operable motor vehicle, or

(iii) disposing of it.

End-of-life vehicle waste disposal site

3. (1) An end-of-life vehicle waste disposal site is a waste disposal site that meets the following criteria:

1. Only end-of-life vehicles are managed at the waste disposal site, subject to subsection (2).
2. None of the following wastes are managed on the property upon which the waste disposal site is situated, unless the wastes are generated on the property:

   i. Biomedical waste or treated biomedical waste, as defined in the Ministry publication entitled "Guideline C-4: The Management of Biomedical Waste in Ontario", dated November 2009, as amended from time to time and available on a website of the Government of Ontario.

   ii. Asbestos waste, as defined in subsection 1 (1) of Regulation 347 of the Revised Regulations of Ontario, 1990 (General – Waste Management) made under the Act, other than waste that results from the removal of asbestos-containing components from a motor vehicle.

   iii. PCB waste.

   iv. Radioactive waste.

Prescribed activities, s. 20.21 of the Act - waste

4. (1) Subject to subsection (2), the following are prescribed activities for the purposes of subsection 20.21 (1) of the Act:

1. The use, operation, establishment, alteration, enlargement or extension of an end-of-life vehicle waste disposal site.

(2) This section does not apply in respect of activities engaged in at an end-of-life vehicle waste disposal site if, as a result of the application of section 5.1 of Regulation 347 of the Revised Regulations of Ontario, 1990 (General – Waste Management) made under the Act, subsection 27 (1) of the Act does not apply with respect to the site.

Prescribed activities, s. 20.21 of the Act - air

5. (1) Subject to subsection (4), the following are prescribed activities for the purposes of subsection 20.21 (1) of the Act:

1. The use, operation, construction, alteration, extension or replacement of any structure, equipment, apparatus, mechanism or thing that meets the criteria set out in subsection (2) and that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water.
2. The alteration of a process or rate of production with respect to any structure, equipment, apparatus, mechanism or thing that meets the criteria set out in subsection (2) if the alteration may result in one of the following:
   i. A contaminant being discharged into any part of the natural environment other than water.
   ii. The rate or manner of discharge of a contaminant into any part of the natural environment other than water being altered.

(2) The criteria referred to in paragraphs 1 and 2 of subsection (1) with respect to a structure, equipment, apparatus, mechanism or thing are the following:

1. The structure, equipment, apparatus, mechanism or thing is used at an end-of-life vehicle waste disposal site for the management of a material that is permitted to be managed at the site, or for a use that is ancillary to the operation of the site.
2. The structure, equipment, apparatus, mechanism or thing is not a shredder that is used or operated to shred metal.
3. The equipment, apparatus, mechanism or thing is not used or operated to cut, using heat, metal with a thickness greater than 250 mm.
4. If the equipment, apparatus, mechanism or thing is used to crush or shear metal on more than 50 days in a calendar year and the distance between the crusher or shear and the property boundary of a noise receptor is less than 250 metres, an acoustic barrier that meets the following requirements is installed on the site of the crusher or shear:
   i. An acoustic barrier that breaks the line of sight between the crusher or shear and the noise receptor.
   ii. An acoustic barrier that has a density of at least 20 kg/m².

(3) For the purposes of paragraph 4 of subsection (2), the distance between a crusher or shear and the property boundary of a noise receptor shall be measured horizontally from the point that is located on the edge of the unit and closest to the property boundary of the noise receptor to the point that is located on the property boundary of the noise receptor and closest to the point from which the measurement is made.

(4) This section does not apply in respect of activities related to a structure, equipment, apparatus, mechanism or thing that is exempt from section 9 of the Act.

Annex F Excerpts from City of Kingston Noise By-law 2004-52

Schedule A

General Noise Prohibitions

1. Operation of a motor vehicle or motorized snow vehicle in a race.
2. Operation of a motor vehicle in such a way that the tires squeal.
3. Operation of a combustion engine or pneumatic device without an effective exhaust muffling device that is in good working order and in constant operation.
4. Operation of any item of construction equipment without an effective exhaust muffling device that is in good working order and in constant operation.
5. Operation of a vehicle in a manner that results in banging, clanking, squealing or similar sounds because of inadequate maintenance or an improperly secured load.
6. Operation of the horn of a vehicle or other warning device except where required or authorized, or in accordance with good safety practice.
7. Operation of any outdoor auditory signaling device, including but not limited to outdoor paging systems, the ringing of bells or gongs, the use of sirens or chimes, or the sounding of whistles for any purpose other than to control organized sporting activities at a sports field, or the production, reproduction or amplification of any similar sounds by electronic means except where required or authorized by law or in accordance with good safety practice.
8. Persistent barking, calling or whining or other similar persistent noise-making by animals and birds kept as household pets.
9. Selling or advertising by shouting, yelling or amplified sound.

(By-law Number 2004-52; 2017-68)

Schedule B
Noise Prohibitions By Time And Place

	Activity	Prohibited Times Residential Areas	Prohibited Times Other Areas
1.	Operation of construction equipment in connection with construction.	C and F	C and F
2.	Playing of musical instruments, including percussion instruments	D	E
3.	Erection, alteration, repair, dismantling, or any activity related to construction.	C and F	C and F
4.	Operation of any device or group of connected devices intended for the production, reproduction, or amplification of voices or sound, except for the playing of the national anthem and for intermittent game related announcements during organized sporting activities at a sports field, on the condition that the volume does not exceed the minimum level required to be clearly audible to persons at a sports field.	A	E
5.	Operation of a combustion engine that (i) is, or (ii) is used in, or (iii) is intended for use in a toy or a model or replica of a larger device, which is not a conveyance and which has no purpose other than amusement.	C	E
6.	Venting, release or pressure relief of air, steam or other gaseous material, product or compound from any autoclave, boiler, pressure vessel, pipe, valve, machine, device or system.	E	E
7.	Operation of a solid waste bulk lift or refuse compacting equipment, except within the geographical boundaries of the Downtown Kingston Business Improvement Area.	C	D

	Activity	Prohibited Times Residential Areas	Prohibited Times Other Areas
8.	Operation of commercial car wash equipment.	E	E
9.	Operation of any powered rail car including but not limited to locomotives and refrigeration cars while stationary on property not owned or controlled by a railway company governed by the Railway Safety Act (Canada).	C	D
10.	Operation of any motorized conveyance other than on a highway or other place intended for its operation.	C	D
11.	Outdoor operation of any powered or non-powered tool for domestic purposes other than snow removal.	D	E
12.	Loading, unloading, delivering, packing, unpacking or otherwise handling any containers, products, other materials or refuse, unless necessary for the maintenance of essential services or the moving of private household effects.	C and F	F
13.	Operation of a pit or quarry.	C and F	C and F
14.	Take-off or landing of a power-assisted hang glider, parafoil, or aircraft of any type.	A	C
15.	Yelling, shouting, hooting, whistling or singing, except during organized sporting activities at a sports field.	D	E
16.	Yelling, shouting, hooting, whistling or singing during organized sporting activities at a sports field.	H	I
17.	Amplification of voices or sound for the playing of the national anthem and for intermittent game related announcements during organized sporting activities at a sports field.	G	I

(By-law Number 2004-52; 2017-68; 2017-69)

Prohibited Times

A. At any time

B. 1700 hours (5:00pm) of one day to 0700 hours of the next day (0900 Sundays)

C. 1900 hours (7:00pm) of one day to 0700 hours of the next day (0900 Sundays)

D. 2100 hours (9:00pm) of one day to 0700 hours of the next day (0900 Sundays)

E. 2300 hours (11:00pm) of one day to 0700 hours of the next day (0900 Sundays)

F. All day Sundays and Statutory Holidays

G. 2230 hours (10:30 pm) of one day to 0800 hours of the next day

H. 2230 hours (10:30 pm) of one day to 0700 hours of the next day (0800 Sundays)

I. 2300 hours (11:00 pm) of one day to 0700 hours of the next day (0800 Sundays)

J. 2100 hours (9:00pm) of one day to 0600 hours of the next day

K. At any time except:

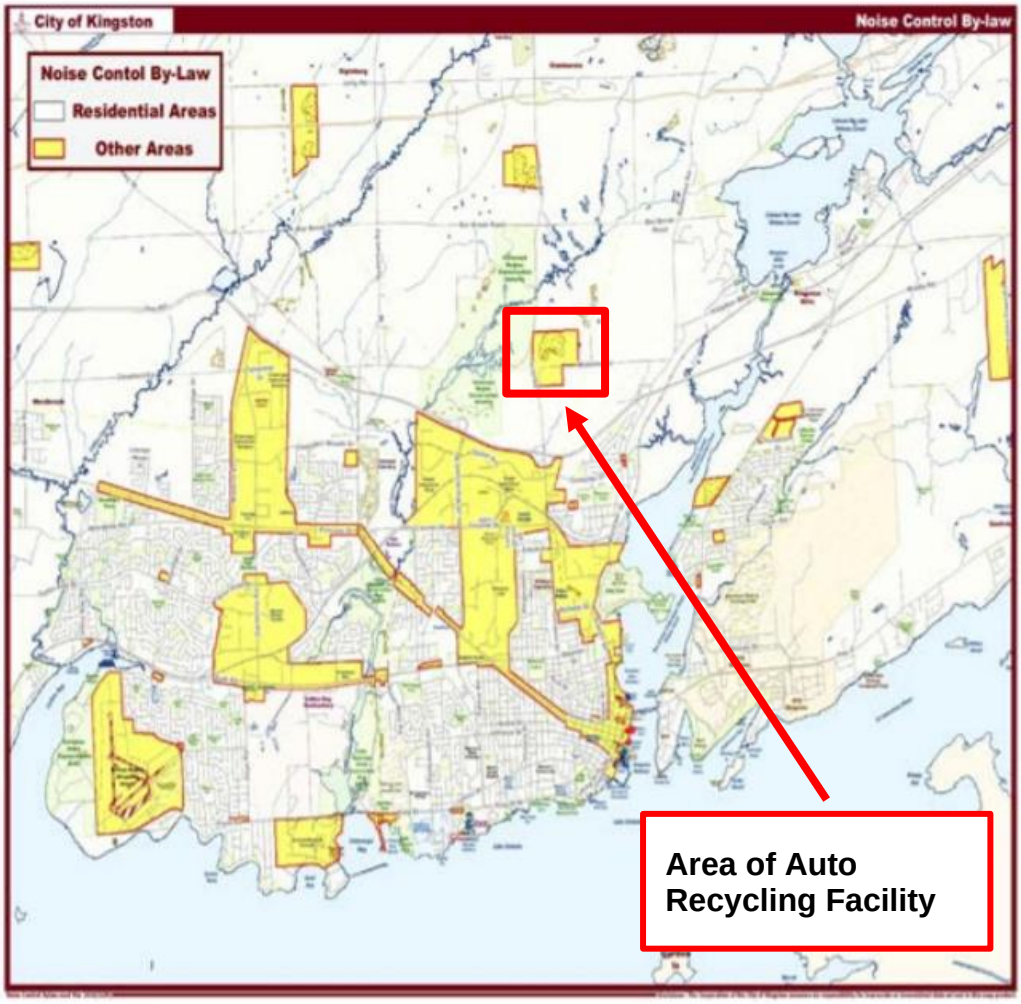
a) between dusk and 2300 hours (11:00 pm) on Victoria Day;

b) between dusk and 2300 hours (11:00 pm) on the day immediately preceding Victoria Day;

c) between dusk and 2300 hours (11:00 pm) on Canada Day;

d) between dusk and 2300 hours (11:00 pm) on the day immediately preceding Canada Day;

e) between dusk on New Year's Eve and 0030 hours (12:30 am) on New Year's Day; or,

Schedule D

Designated Residential Areas and Other Areas