



**NORTHERN**  
Applied Sciences Inc.

**Acoustic Assessment Report  
Proposed Car Wash & Drive-Through Facilities  
5646/5650 Manotick Main St, Ottawa, Ontario**

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V.1	March 8, 2024	Northern Applied Sciences Inc.

## Executive Summary

Northern Applied Sciences Inc (NAPSCI) was retained by Tatham Engineering to prepare an acoustic assessment report for the existing self-service car wash and proposed restaurant with a drive-through located at 5646/5650 Manotick Main St, Ottawa, Ontario. As the Site has not yet been constructed, sound levels were estimated based on accepted engineering estimation techniques for comparable sources expected to be at the Site. Sound levels were entered into Cadna-A acoustic modelling software to determine the noise impacts at sensitive receptors located near the Site. The worst-case noise impacts at the sensitive receptors generated by noise sources at the Site are summarized below:

**Acoustic Assessment Summary Table with Mitigation**

Point of Reception	Description of Reception Point	Site Leq (dBA)	Class 1 Performance Limit (dBA)	Compliance with Performance Limit
<i>Day (0700 h to 1900 h)</i>				
POR1a	Residence Yard (@ 1.5 m)	45	50	Yes
POR1b	Residence Window (@ 3.0 m)	45	50	Yes
POR2a	Residence Yard (@ 1.5 m)	45	55	Yes
POR2b	Residence Window (@ 4.5 m)	45	54	Yes
POR3a	Residence Yard (@ 1.5 m)	46	60	Yes
POR3b	Residence Window (@ 4.5 m)	45	58	Yes
POR4a	Residence Yard (@ 1.5 m)	48	62	Yes
POR4b	Residence Window (@ 1.5 m)	45	61	Yes
POR5a	Residence Yard (@ 1.5 m)	47	50	Yes
POR5b	Residence Window (@ 1.5 m)	44	50	Yes
<i>Evening (1900 h to 2300 h)</i>				
POR1a	Residence Yard (@ 1.5 m)	45	50	Yes
POR1b	Residence Window (@ 3.0 m)	45	50	Yes
POR2a	Residence Yard (@ 1.5 m)	45	51	Yes
POR2b	Residence Window (@ 4.5 m)	45	51	Yes
POR3a	Residence Yard (@ 1.5 m)	46	56	Yes
POR3b	Residence Window (@ 4.5 m)	45	55	Yes
POR4a	Residence Yard (@ 1.5 m)	48	58	Yes
POR4b	Residence Window (@ 1.5 m)	45	57	Yes
POR5a	Residence Yard (@ 1.5 m)	47	50	Yes
POR5b	Residence Window (@ 1.5 m)	44	50	Yes

Point of Reception	Description of Reception Point	Site Leq (dBA)	Class 1 Performance Limit (dBA)	Compliance with Performance Limit
<i>Night (2300 h to 0700 h)</i>				
POR1b	Residence Window (@ 3.0 m)	45	45	Yes
POR2b	Residence Window (@ 4.5 m)	45	45	Yes
POR3b	Residence Window (@ 4.5 m)	45	45	Yes
POR4b	Residence Window (@ 1.5 m)	45	48	Yes
POR5b	Residence Window (@ 1.5 m)	44	45	Yes

As shown in the Acoustic Summary Table, the Site is compliant with the Ontario noise performance limit guidelines as outlined in NPC-300 assuming that the noise mitigating measures identified in this report are installed and operational, as follows:

- HVACs  
The roof-top HVACs shall be installed such that the condenser coils are not oriented towards the receptors to the south and west.
- Drive-Through Traffic  
In order to mitigate the noise impacts on the receptors to the south and southwest of the drive-through, an acoustic barrier having a length of 35 m and extending to a minimum height of 1.8 m is required to be installed along the south property boundary. Refer to Figures C2 and C3 in Appendix C for the recommended acoustic barrier location.

Acoustic barriers must be of solid construction with no holes, gaps or cracks and they must have a minimum face density of 20 kg/m<sup>2</sup>. Sound barriers can be constructed from wood, masonry, composites or a combination of these materials. For wood sound barrier fences, generally board on board or tongue and groove construction is used. Final requirements should be reviewed once detailed grading plans are available.

Alternatively, noise barriers complying with the requirements and certification of CAN/CSA-Z107.9-00 (R2004) - Standard for Certification of Noise Barriers (Reaffirmed 2004), by the Canadian Standards Association, Reference 4, are acceptable.



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## 1 Introduction

Northern Applied Sciences Inc (NAPSCI) was retained by Tatham Engineering to review the potential environmental noise impact from their client's site located at 5646/5650 Manotick Main St, Ottawa, Ontario, consisting of the existing car wash facility and a proposed restaurant (e.g., coffee shop) with a drive-through, on nearby sensitive points of reception. The acoustic assessment report was prepared in a manner that satisfies the requirements of Ministry of Environment, Conservation and Parks (MECP) Publications NPC-300 and NPC-233.

The proposed land-use for development is a self-service car wash facility. A noise study has been requested by the City of Ottawa in order to quantify community impacts and ensure no additional noise controls would be needed.

The scope of the acoustic assessment involved the following elements:

- Identified all significant sources of noise at the Site.
- Identified nearby sensitive noise receptors to the Site (houses, schools, hospitals, places of worship, etc).
- Estimated sound levels using manufacturer sound performance data or engineering calculations, or previous noise measurements at comparable facilities.
- Predicted the overall noise impact at sensitive points of reception during the worst-case operating scenarios.
- Assessed whether the 'worst-case' noise impacts at the points of reception met the applicable noise limit criteria.

The primary noise sources from this Site include two (2) wash bays each equipped with high-pressure spray wands, two (2) roof-top HVAC units for the proposed drive-through restaurant, drive-through speaker and vehicle traffic. Based on a review of operations, a vibration assessment was not warranted for the Site.

## 2 Site Description

It is proposed that the existing car wash facility will be retained while the adjoining two-storey building will be demolished to allow for a new stand-alone building that will be used for a restaurant (e.g., coffee shop) with a drive-through. The existing car wash facility with two (2) wash bays will continue to be operate. The Site will be designed to allow vehicle traffic to enter and leave the Site with minimal interference.

The car wash bays will be coin operated thus this facility may operate 24 hours per day, while the drive-through restaurant is expected to operate from 6 AM to 1 PM.

The North American Industry Classification System (NAICS) Codes that applies to this Site are '811192 – Car Washes' and '722512 - Limited-Service Eating Places'.

Refer to Appendix C for site plans showing the proposed development of the Site.

### 3 Noise Source Summary

NAPSCI identified the noise sources for the Site based on discussions with Tatham personnel and a review of the proposed design drawings.

Sources of noise that were deemed to be tonal in character (emitting a hum, whine, buzz) were penalized 5 dBA per MECP Publication NPC-104. Noise generating equipment operates either continuously or intermittently depending on process requirements. As a worst-case scenario, most equipment was assumed to operate continuously and simultaneously. Refer to Table B1, Appendix B for worst-case operating times of individual equipment.

Table 1 (attached at end of text) presents a summary of noise sources identified at the Site that have a significant impact on sensitive points of reception. Location of the significant noise sources are identified on Figure C3, Appendix C.

#### 3.1 Self-Service Wash Bays

The two (2) existing self-service wash bays will continue to operate. Each wash bay contains a high-pressure spray wand. Sound levels of a typical self-serve car wash high-pressure spray wand were estimated based on our experience with similar sources at other existing facilities.

#### 3.2 HVAC Units

Two (2) roof-top HVAC units are proposed for the restaurant. Sound levels for the HVACs were estimated using manufacturer performance data. The HVACs were considered to operate for 60 min/hr during the worst-case day, evening and nighttime one-hour periods.

#### 3.3 Drive-Through Speaker

The Site will contain one (1) drive-through speaker on the menu board or the speaker post. The sound level for the drive-through speaker was estimated using manufacturer sound performance data of a similar or typical drive-through speaker installed at other facilities. The drive-through speaker was assumed to operate 37 min/hr during the worst-case day, evening and nighttime one-hour periods based on the use of speaker for 30 seconds per car.

#### 3.4 Vehicle Sources

Vehicles noise will be generated from automobiles entering and leaving the Site. The maximum one-hour day, evening and night traffic volumes used in this assessment were obtained from the Traffic Impact Assessment for the Site, as follows:

- Car Wash:
  - 6 cars/hr
- Restaurant with Drive-Through:
  - 32 cars/hr for walk-in orders
  - 74 cars/hr using the drive-through

### 3.5 Insignificant Sources

Equipment used at the car wash facility to provide high-pressure water was assumed to be contained inside the proposed building in a mechanical room. Noise emissions from the mechanical room were assumed to be minimal based on site visits to other existing self-serve car wash facilities. Refer to Table A1, Appendix A for a table summarizing all significant and insignificant sources located on-site.

### 3.6 Impulse Sources

No impulse noise sources were identified on-site.

### 3.7 Noise Mitigating Measures

The following noise mitigating measures are proposed for the Site:

#### HVACs

The roof-top HVACs shall be installed such that the condenser coils are not oriented towards the receptors to the south (POR1 and POR2) and receptors to the west (POR5).

#### Drive-Through Traffic

In order to mitigate the noise impacts on the receptors to the south and southwest of the drive-through, an acoustic barrier having a length of 35 m and extending to a minimum height of 1.8 m is required to be installed along the south property boundary. Refer to Figures C2 and C3 in Appendix C for the recommended acoustic barrier location.

Acoustic barriers must be of solid construction with no holes, gaps or cracks and they must have a minimum face density of 20 kg/m<sup>2</sup>. Sound barriers can be constructed from wood, masonry, composites or a combination of these materials. For wood sound barrier fences, generally board on board or tongue and groove construction is used. Final requirements should be reviewed once detailed grading plans are available.

Alternatively, noise barriers complying with the requirements and certification of CAN/CSA-Z107.9-00 (R2004) - Standard for Certification of Noise Barriers (Reaffirmed 2004), by the Canadian Standards Association, Reference 4, are acceptable.

## 4 Point of Reception Noise Impact Analysis

### 4.1 Points of Reception List & Description

Five (5) sensitive points of reception (POR) were identified as the basis for the acoustic assessment. Refer to Figure C1, Appendix C for a scaled area plan identifying the location of the Site as well as the locations of the identified sensitive receptors in relation to the Site.

Point of Reception 1 (POR1):

POR1 was placed at a one-storey residence located approximately 28 m south to southeast of the Site, on the south side of Mahogany Harbour Lane. Two (2) receptor points were placed in the model as follows:

- POR1a was assessed in the model in the yard of the residence at a height of 1.5 m above grade to represent an outdoor living area.
- POR1b was assessed in the model at the façade of the residence at a height of 3.0 m above grade to represent an open first floor window.

Ground cover between the Site and the receptors will consist of a mix of on-site paved areas, grass areas and Mahogany Harbour Lane.

Point of Reception 2 (POR2):

POR2 was placed at a two-storey residence located approximately 39 m southeast of the Site, on the south corner of Mahogany Harbour Lane and Manotick Main St. Two (2) receptor points were placed in the model as follows:

- POR2a was assessed in the model in the yard of the residence at a height of 1.5 m above grade to represent an outdoor living area.
- POR2b was assessed in the model at the façade of the residence at a height of 4.5 m above grade to represent an open second floor window.

Ground cover between the Site and the receptors will consist of a mix of on-site paved areas, grass areas and Mahogany Harbour Lane.

Point of Reception 3 (POR3):

POR3 was placed at a two-storey residence located approximately 56 m east of the Site, on the opposite side of Manotick Main St. Two (2) receptor points were placed in the model as follows:

- POR3a was assessed in the model in the yard of the residence at a height of 1.5 m above grade to represent an outdoor living area.
- POR3b was assessed in the model at the façade of the residence at a height of 4.5 m above grade to represent an open second floor window.

Ground cover between the Site and the receptors will consist of a mix of on-site paved areas, grass areas and Manotick Main St.

Point of Reception 4 (POR4):

POR4 was placed at a one-storey residence located approximately 38 m east of the Site, on the opposite side of Manotick Main St. Two (2) receptor points were placed in the model as follows:

- POR4a was assessed in the model in the yard of the residence at a height of 1.5 m above grade to represent an outdoor living area.

- POR4b was assessed in the model at the façade of the residence at a height of 1.5 m above grade to represent an open first floor window.

Ground cover between the Site and the receptors will consist of a mix of on-site paved areas, grass areas and Manotick Main St.

#### Point of Reception 5 (POR5):

POR5 was placed at a one-storey residence located approximately 37 m west of the Site. Two (2) receptor points were placed in the model as follows:

- POR5a was assessed in the model in the yard of the residence at a height of 1.5 m above grade to represent an outdoor living area.
- POR5b was assessed in the model at the façade of the residence at a height of 1.5 m above grade to represent an open first floor window.

Ground cover between the Site and the receptors will consist of grass areas.

## **4.2 Land-Use Zoning Plan**

The Site is currently zoned 'RC1 – Rural Commercial Zone'. Land located immediately north is also zoned 'RC1 – Rural Commercial Zone'. POR1, POR2, POR3 and POR4 are located on land zoned 'V1P – Village Residential First Density Zone'. POR5 is located on land zoned 'V3C – Village Residential Third Density Zone'. Refer to Figure C4, Appendix C for a partial zoning map of the proposed development site and surrounding area. The partial zoning plan was taken from: <https://maps.ottawa.ca/geoottawa/>. Refer to Attachment C5, Appendix C for the City of Ottawa zoning key.

## **4.3 Scaled Area Location Plan**

Refer to Figure C1, Appendix C for a scaled area plan identifying the location of the Site as well as the locations of the identified sensitive receptors in relation to the Site. The area plan with the aerial photograph was generated with Google Maps.

## **4.4 Procedure used to Assess Noise Impacts at Each Receptor**

Measured sound pressure levels, or sound power levels based on manufacturer data or accepted estimation techniques were used as input to the acoustic computer model Cadna-A (Computer Aided Noise Abatement, Version 4.4). The model is based on ISO Standard 9613-2 "Acoustics – Attenuation of Sound During Propagation Outdoors". The ISO based model accounts for reduction in sound level due to increased distance and geometrical spreading, air absorption, ground attenuation, and acoustical shielding by intervening structures, topography and brush. The model is considered conservative since it represents atmospheric conditions that promote propagation of sound from source to receiver. Refer to Appendix B for calculations and Cadna-A model set-up data and output data.

#### 4.5 List of Parameters/Assumptions Used in Calculations & Model

The following assumptions were used in the calculations:

- All noise sources operational.
- Tonal sources were increased 5 dBA per NPC-104 (where applicable).
- Sources were adjusted for intermittence per NPC-104 (where applicable).
- Vehicle traffic modelled using a moving point source in the Cadna-A software (not STAMSON) since infrequent movements.
- Lateral diffraction and second order reflection included in the model.
- Ground absorption set to 0.0 for reflective ground surfaces and 1.0 for absorptive ground surfaces.
- Model set to no subtraction of negative ground attenuation.
- Model set to no negative path difference.
- Tree foliage was not placed in the model.

#### 4.6 Point of Reception Noise Impact Summary

Table 2 (attached at end of text) summarizes the noise impact of the Site at the identified sensitive receptors. Specifically, it lists the distance from each noise source to the points of reception and the sound pressure level generated by each noise source at each receptor based on the Cadna-A computer model output.

Refer to Figures 1 and 2 (attached at end of text) for contour plots generated by the Cadna-A acoustic software. These figures illustrate the sound levels generated by the Site's proposed stationary noise sources during the worst-case day/evening and night operating scenarios.

### 5 Acoustic Assessment Summary

#### 5.1 Rationale for Selecting Applicable Noise Limits

Sensitive receptors located near the Site are located in a "Class 1" Area, which is defined per NPC-300 as "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."

NPC-300 specifies that the noise limit criteria at sensitive points of reception due to the operation of stationary sources are the greater of the following:

1. Exclusionary minima values specified in the applicable MECP NPC documents; or
2. The lowest energy-equivalent one-hour background sound level ( $L_{eq}$ ) occurring at the sensitive point of reception occurring at the same time of day that the equipment is operating.

Background noise in the area near the receptors is at times heavily influenced by human activity. The AADT for Manotick Main St was obtained from the City of Ottawa Open Data website. Table 3 summarizes noise limits used in this assessment at the identified points of reception for stationary sources of noise.

**Table 3: Summary of Noise Criteria – Stationary Noise Sources**

POR	Day (0700 to 1900) Criteria (dBA)			Evening (1900 to 2300) Criteria (dBA)			Night (2300 to 0700) Criteria (dBA)		
	MECP Exclusionary Limit	Minimum Background Level	Criteria Used in Assessment	MECP Exclusionary Limit	Minimum Background Level	Criteria Used in Assessment	MECP Exclusionary Limit	Minimum Background Level	Criteria Used in Assessment
1a	50	50	<b>50</b>	50	50	<b>50</b>	--	--	--
1b	50	50	<b>50</b>	50	50	<b>50</b>	45	--	<b>45</b>
2a	50	55	<b>55</b>	50	51	<b>51</b>	--	--	--
2b	50	54	<b>54</b>	50	51	<b>51</b>	45	--	<b>45</b>
3a	50	60	<b>60</b>	50	56	<b>56</b>	--	--	--
3b	50	58	<b>58</b>	50	55	<b>55</b>	45	--	<b>45</b>
4a	50	62	<b>62</b>	50	58	<b>58</b>	--	--	--
4b	50	61	<b>61</b>	50	57	<b>57</b>	45	48	<b>48</b>
5a	50	50	<b>50</b>	50	50	<b>50</b>	--	--	--
5b	50	50	<b>50</b>	50	50	<b>50</b>	45	--	<b>45</b>

## 5.2 Predictable Worst-Case Impact Operating Scenarios

The Site may operate during the day, evening and night periods. Table 4 summarizes the worst-case operating scenarios assessed in the report:

**Table 4: Worst-Case Operating Scenarios**

Source ID	Source Description	Day Period	Evening Period	Night Period
		7 am to 7 pm	7 pm to 11 pm	11 pm to 7 am
1	High Pressure Wash Station	30 min/h	30 min/h	10 min/h
2	High Pressure Wash Station	30 min/h	30 min/h	10 min/h
3a, 3b, 3c	HVAC Unit	60 min/h	60 min/h	60 min/h
4a, 4b, 4c	HVAC Unit	60 min/h	60 min/h	60 min/h
5	Drive-Through Speaker	37 min/h	37 min/h	37 min/h
6	Vehicle Traffic - Car Wash	6 autos/h	6 autos/h	2 auto/h
7a	Vehicle Traffic - Coffee Shop – Total Incoming	106 autos/h	106 autos/h	106 autos/h
7b	Vehicle Traffic - Coffee Shop – Walk-ins Exiting	32 autos/h	32 autos/h	32 autos/h
7c	Vehicle Traffic - Coffee Shop – Drive-Through Traffic	74 autos/h	74 autos/h	74 autos/h
7d	Vehicle Traffic - Coffee Shop – Drive-Through Exiting	74 autos/h	74 autos/h	74 autos/h

The operating scenarios examined in this report are conservatively based on all potential equipment operating under maximum expected operating conditions during the specified time periods. These conservative operating scenarios will yield the maximum noise impacts at the sensitive receptors.



### 5.3 Acoustic Assessment Summary

Table 5 provides a summary of the noise impacts at the identified sensitive points of reception for worst-case day operating scenario from stationary non-impulsive noise sources at the Site:

**Table 5: Acoustic Assessment Summary Table  
Proposed Stationary Sources with Mitigation Measures**

Point of Reception	Description of Reception Point	Site Leq (dBA)	Class 1 Performance Limit (dBA)	Compliance with Performance Limit
<i>Day (0700 h to 1900 h)</i>				
POR1a	Residence Yard (@ 1.5 m)	45	50	Yes
POR1b	Residence Window (@ 3.0 m)	45	50	Yes
POR2a	Residence Yard (@ 1.5 m)	45	55	Yes
POR2b	Residence Window (@ 4.5 m)	45	54	Yes
POR3a	Residence Yard (@ 1.5 m)	46	60	Yes
POR3b	Residence Window (@ 4.5 m)	45	58	Yes
POR4a	Residence Yard (@ 1.5 m)	48	62	Yes
POR4b	Residence Window (@ 1.5 m)	45	61	Yes
POR5a	Residence Yard (@ 1.5 m)	47	50	Yes
POR5b	Residence Window (@ 1.5 m)	44	50	Yes
<i>Evening (1900 h to 2300 h)</i>				
POR1a	Residence Yard (@ 1.5 m)	45	50	Yes
POR1b	Residence Window (@ 3.0 m)	45	50	Yes
POR2a	Residence Yard (@ 1.5 m)	45	51	Yes
POR2b	Residence Window (@ 4.5 m)	45	51	Yes
POR3a	Residence Yard (@ 1.5 m)	46	56	Yes
POR3b	Residence Window (@ 4.5 m)	45	55	Yes
POR4a	Residence Yard (@ 1.5 m)	48	58	Yes
POR4b	Residence Window (@ 1.5 m)	45	57	Yes
POR5a	Residence Yard (@ 1.5 m)	47	50	Yes
POR5b	Residence Window (@ 1.5 m)	44	50	Yes
<i>Night (2300 h to 0700 h)</i>				
POR1b	Residence Window (@ 3.0 m)	45	45	Yes
POR2b	Residence Window (@ 4.5 m)	45	45	Yes
POR3b	Residence Window (@ 4.5 m)	45	45	Yes
POR4b	Residence Window (@ 1.5 m)	45	48	Yes
POR5b	Residence Window (@ 1.5 m)	44	45	Yes

## 6 Conclusions & Limitations

As shown in the Acoustic Summary Table, the Site is compliant with the Ontario noise performance limit guidelines as outlined in NPC-300 assuming that the noise mitigating measures identified in this report are installed and operational, as follows:

- HVACs  
The roof-top HVACs shall be installed such that the condenser coils are not oriented towards the receptors to the south and west.
- Drive-Through Traffic  
In order to mitigate the noise impacts on the receptors to the south and southwest of the drive-through, an acoustic barrier having a length of 35 m and extending to a minimum height of 1.8 m is required to be installed along the south property boundary. Refer to Figures C2 and C3 in Appendix C for the recommended acoustic barrier location.

Acoustic barriers must be of solid construction with no holes, gaps or cracks and they must have a minimum face density of 20 kg/m<sup>2</sup>. Sound barriers can be constructed from wood, masonry, composites or a combination of these materials. For wood sound barrier fences, generally board on board or tongue and groove construction is used. Final requirements should be reviewed once detailed grading plans are available.

Alternatively, noise barriers complying with the requirements and certification of CAN/CSA-Z107.9-00 (R2004) - Standard for Certification of Noise Barriers (Reaffirmed 2004), by the Canadian Standards Association, Reference 4, are acceptable.

The operating scenarios examined in this report are conservatively based on all potential equipment operating under maximum expected operating conditions during the specified time periods. These conservative operating scenarios will yield the maximum noise impacts at the sensitive receptors. Actual noise impacts are expected to be below this theoretical maximum.

Based on a review of process operations, a vibration assessment is not warranted.

**Table 1: Noise Source Summary**

Source ID	Description	Sound Power Level (A) (dBA)	Data Source (B)	Quantity	Source Location	Sound Characteristics	Noise Control Measures
1	High Pressure Wash Station	94.7	Estimated 1a	1	Outside	Steady	Uncontrolled
2	High Pressure Wash Station	94.7	Estimated 1a	1	Outside	Steady	Uncontrolled
3a	HVAC Unit - Fan	84.3	Estimated 1b	1	Outside	Steady	Uncontrolled
3b	HVAC Unit - Condenser Coil	81.3	Estimated 1b	1	Outside	Steady	Uncontrolled
3c	HVAC Unit - Condenser Coil	81.3	Estimated 1b	1	Outside	Steady	Uncontrolled
4a	HVAC Unit - Fan	77.2	Estimated 1b	1	Outside	Steady	Uncontrolled
4b	HVAC Unit - Condenser Coil	74.2	Estimated 1b	1	Outside	Steady	Uncontrolled
4c	HVAC Unit - Condenser Coil	74.2	Estimated 1b	1	Outside	Steady	Uncontrolled
5	Drive-Through Speaker	81.5	Estimated 1c	1	Outside	Steady	Uncontrolled
6	Vehicle Traffic - Car Wash	81.7	Estimated 1d	1	Outside	Steady	Uncontrolled
7a	Vehicle Traffic - Coffee Shop	81.7	Estimated 1d	1	Outside	Steady	Uncontrolled
7b	Vehicle Traffic - Coffee Shop	81.7	Estimated 1d	1	Outside	Steady	Uncontrolled
7c	Vehicle Traffic - Coffee Shop	81.7	Estimated 1d	1	Outside	Steady	Uncontrolled
7d	Vehicle Traffic - Coffee Shop	81.7	Estimated 1d	1	Outside	Steady	Uncontrolled
8	Idling Car 1	71.0	Estimated 1a	1	Outside	Steady	Uncontrolled
9	Idling Car 2	71.0	Estimated 1a	1	Outside	Steady	Uncontrolled
10	Idling Car 3	71.0	Estimated 1a	1	Outside	Steady	Uncontrolled
11	Idling Car 4	71.0	Estimated 1a	1	Outside	Steady	Uncontrolled
12	Idling Car 5	71.0	Estimated 1a	1	Outside	Steady	Uncontrolled
13	Idling Car 6	71.0	Estimated 1a	1	Outside	Steady	Uncontrolled

Notes:

- 1a: Data taken from database of similar measured source at different facility.
- 1b: Estimated with manufacturer sound performance data.
- 1c: Estimated with manufacturer sound performance data of similar or typical equipment/unit.
- 1d: Estimated using FHWA. Refer to Table B2, App. B for calculation estimate.

Table 2: Point of Reception Noise Impact Summary (Steady Noise Sources)

Source ID	Description	Point of Reception 1a				Point of Reception 1b				Point of Reception 2a				Point of Reception 2b				Point of Reception 3a				Point of Reception 3b				Point of Reception 4a				Point of Reception 4b				Point of Reception 5a				Point of Reception 5b			
		Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA	Distance m	Leq Day dBA	Leq Evening dBA	Leq Night dBA				
1	High Pressure Wash Station	67	30.4	30.4	73	29.5	29.5	26.4	71	22.7	22.7	87	21.7	21.7	18.7	75	26.7	26.7	91	26.0	26.0	23.0	52	30.3	30.3	61	28.2	28.2	25.2	38	35.7	35.7	49	32.9	32.9	29.9					
2	High Pressure Wash Station	70	27.0	27.0	76	26.6	26.6	23.6	71	23.1	23.1	88	21.8	21.8	18.8	71	29.0	29.0	87	28.9	28.9	25.8	46	34.8	34.8	56	32.7	32.7	29.7	43	30.8	30.8	54	28.3	28.3	25.3					
3a	HVAC Unit - Fan	45	33.7	33.7	50	32.2	32.2	32.2	39	34.0	34.0	55	30.8	30.8	30.8	52	31.5	31.5	71	29.0	29.0	29.0	49	32.4	32.4	59	29.7	29.7	29.7	49	31.9	31.9	61	28.7	28.7	28.7					
3b	HVAC Unit - Condenser Coil	45	29.4	29.4	50	30.6	30.6	30.6	39	37.6	37.6	55	39.3	39.3	39.3	52	35.1	35.1	71	37.5	37.5	37.5	49	40.3	40.3	58	37.7	37.7	37.7	49	28.1	28.1	61	25.4	25.4	25.4					
3c	HVAC Unit - Condenser Coil	45	28.2	28.2	50	29.9	29.9	29.9	39	27.0	27.0	55	29.7	29.7	29.7	52	35.1	35.1	70	37.5	37.5	37.5	49	40.3	40.3	58	37.7	37.7	37.7	49	36.4	36.4	62	32.9	32.9	32.9					
4a	HVAC Unit - Fan	38	30.8	30.8	43	29.5	29.5	29.5	36	31.3	31.3	52	27.4	27.4	27.4	58	26.3	26.3	77	24.0	24.0	24.0	56	26.9	26.9	66	24.7	24.7	24.7	44	28.8	28.8	56	25.4	25.4	25.4					
4b	HVAC Unit - Condenser Coil	38	28.9	28.9	44	28.2	28.2	28.2	36	38.6	38.6	53	35.2	35.2	35.2	58	29.2	29.2	77	31.3	31.3	31.3	56	27.3	27.3	66	26.1	26.1	26.1	44	27.7	27.7	56	24.3	24.3	24.3					
4c	HVAC Unit - Condenser Coil	38	28.2	28.2	44	27.0	27.0	27.0	36	29.8	29.8	52	26.8	26.8	26.8	58	28.9	28.9	77	31.2	31.2	31.2	56	29.8	29.8	66	27.0	27.0	27.0	45	36.0	36.0	57	32.7	32.7	32.7					
5	Drive-Through Speaker	40	32.9	32.9	44	34.2	34.2	34.2	27	35.6	35.6	42	34.5	34.5	34.5	46	32.9	32.9	65	30.4	30.4	30.4	54	31.6	31.6	63	29.1	29.1	29.1	59	22.5	22.5	71	22.2	22.2	22.2					
6	Vehicle Traffic - Car Wash	54	25.2	25.2	60	25.8	25.8	25.8	60	16.2	16.2	77	19.7	19.7	19.7	52	27.3	27.3	67	25.6	25.6	25.6	27	31.2	31.2	37	28.7	28.7	28.7	22	31.4	31.4	34	28.2	28.2	28.2					
7a	Vehicle Traffic - Coffee Shop	22	40.0	40.0	29	39.2	39.2	37	32.1	32.1	54	34.3	34.3	34.3	52	37.1	37.1	67	35.3	35.3	35.3	27	40.4	40.4	37	37.8	37.8	37.8	25	42.8	42.8	37	39.0	39.0	39.0						
7b	Vehicle Traffic - Coffee Shop	23	34.4	34.4	29	34.1	34.1	34.1	34	28.5	28.5	51	29.8	29.8	29.8	49	32.5	32.5	64	30.3	30.3	30.3	27	35.1	35.1	37	32.5	32.5	32.5	27	37.7	37.7	40	34.3	34.3	34.3					
7c	Vehicle Traffic - Coffee Shop	22	36.9	36.9	29	38.0	38.0	38.0	24	38.7	38.7	41	38.7	38.7	38.7	39	39.1	39.1	58	36.1	36.1	36.1	38	37.2	37.2	47	35.8	35.8	35.8	34	36.6	36.6	45	34.1	34.1	34.1					
7d	Vehicle Traffic - Coffee Shop	54	22.7	22.7	60	25.5	25.5	25.5	42	19.6	19.6	56	26.0	26.0	26.0	40	35.0	35.0	59	31.8	31.8	31.8	27	37.1	37.1	37	34.1	34.1	34.1	62	32.6	32.6	74	30.0	30.0	30.0					
8	Idling Car 1	53	6.8	6.8	57	12.0	12.0	12.0	40	24.1	24.1	55	26.3	26.3	26.3	39	31.5	31.5	58	27.9	27.9	27.9	40	31.3	31.3	49	29.1	29.1	29.1	61	8.8	8.8	74	6.2	6.2	6.2					
9	Idling Car 2	46	24.6	24.6	49	27.4	27.4	27.4	29	27.8	27.8	44	27.6	27.6	27.6	40	28.8	28.8	59	25.0	25.0	25.0	50	26.8	26.8	58	25.4	25.4	25.4	64	18.3	18.3	76	15.1	15.1	15.1					
10	Idling Car 3	40	24.9	24.9	44	27.7	27.7	27.7	24	26.9	26.9	39	27.4	27.4	27.4	45	27.8	27.8	64	24.3	24.3	24.3	55	25.8	25.8	64	24.5	24.5	24.5	62	22.8	22.8	74	24.2	24.2	24.2					
11	Idling Car 4	27	24.3	24.3	32	23.5	23.5	23.5	25	26.7	26.7	42	27.3	27.3	27.3	61	25.3	25.3	81	22.0	22.0	22.0	66	14.3	14.3	75	13.1	13.1	13.1	48	28.4	28.4	59	25.9	25.9	25.9					
12	Idling Car 5	25	33.7	33.7	31	31.1	31.1	31.1	37	23.1	23.1	53	21.6	21.6	21.6	75	23.4	23.4	94	20.7	20.7	20.7	74	17.6	17.6	84	7.6	7.6	7.6	34	30.6	30.6	44	27.7	27.7	27.7					
13	Idling Car 6	42	28.6	28.6	48	27.4	27.4	27.4	51	21.8	21.8	67	24.6	24.6	24.6	76	21.7	21.7	94	20.9	20.9	20.9	66	25.3	25.3	76	23.4	23.4	23.4	25	32.1	32.1	37	27.8	27.8	27.8					
Total Sound Pressure Level at POR (dBA)			45	45		45	45	45		45	45	45		45	45	45		45	45	45		48	48	48		45	45	45		47	47	47		42	42	41					
MECP Criterion (dBA)			50	50		50	50	45		50	50	45		50	50	45		50	50	45		50	50	45		50	50	45		50	50		50	50	45						
Excess (dBA)			-5	-5		-5	-5	0		-5	-5	0		-5	-5	0		-5	-5	0		-2	-2	0		-5	-5	0		-3	-3		-8	-8	-4						



Figure 1

Modelled Impacts for  
Worst-Case Operating Scenario  
at 1.5 m Above Grade

Day/Evening Operating Condition

Acoustic Assessment Report

Proposed Car Wash &  
Restaurant with Drive-Through

5646/5650 Manotick Main St  
Ottawa, Ontario

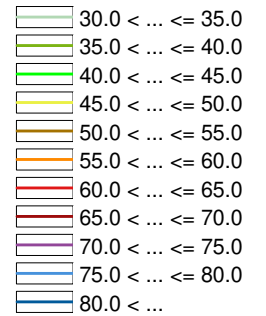




Figure 2

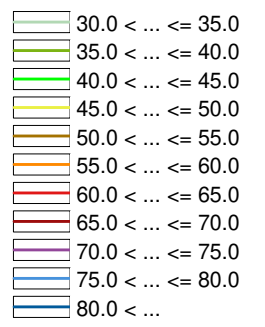
Modelled Impacts for  
Worst-Case Operating Scenario  
at 1.5 m Above Grade

Night Operating Condition

Acoustic Assessment Report

Proposed Car Wash &  
Restaurant with Drive-Through

5646/5650 Manotick Main St  
Ottawa, Ontario



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**Appendix A**  
**Supporting Information**

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## Environmental Noise Study

Tatham Engineering - 5646/5650 Manotick Main St, Ottawa  
 NAPSCI 24-021

**Table A1: Equipment Summary**

Source ID	Source Description	Source Type	Significant?	Data Source	Manufacturer	Model	Comments
1	High Pressure Wash Station	Point	Yes	Estimated 1a			
2	High Pressure Wash Station	Point	Yes	Estimated 1a			
3a	HVAC Unit - Fan	Point	Yes	Estimated 1b	Carrier	48HCEE116F2H	10 ton cooling capacity
3b	HVAC Unit - Condenser Coil	V. Area	Yes	Estimated 1b			
3c	HVAC Unit - Condenser Coil	V. Area	Yes	Estimated 1b			
4a	HVAC Unit - Fan	Point	Yes	Estimated 1b	Carrier	48HCEE096F2H	8.5 ton cooling capacity
4b	HVAC Unit - Condenser Coil	V. Area	Yes	Estimated 1b			
4c	HVAC Unit - Condenser Coil	V. Area	Yes	Estimated 1b			
5	Drive-Through Speaker	Point	Yes	Estimated 1c			
6	Vehicle Traffic - Car Wash	Mvg-Pt	Yes	Estimated 1d			
7a	Vehicle Traffic - Coffee Shop	Mvg-Pt	Yes	Estimated 1d			
7b	Vehicle Traffic - Coffee Shop	Mvg-Pt	Yes	Estimated 1d			
7c	Vehicle Traffic - Coffee Shop	Mvg-Pt	Yes	Estimated 1d			
7d	Vehicle Traffic - Coffee Shop	Mvg-Pt	Yes	Estimated 1d			
8	Idling Car 1	Point	Yes	Estimated 1a			
9	Idling Car 2	Point	Yes	Estimated 1a			
10	Idling Car 3	Point	Yes	Estimated 1a			
11	Idling Car 4	Point	Yes	Estimated 1a			
12	Idling Car 5	Point	Yes	Estimated 1a			
13	Idling Car 6	Point	Yes	Estimated 1a			
HWT	Hot Water Tank		No		Spacesaver	SS06SEB30	Insignificant; electric
EF-1	Carwash Washroom		No		Reversomatic	QCF-110ES	Insignificant; 1 sones
EF-2	Carwash M&E Room		No		Pennbarry	Z10S-SC	Insignificant; 3.31 sones
B	Boiler		No		IBC	SL-26-260 G3	Insignificant; 100,000 BTU

**Notes:**

- 1a: Data taken from database of similar measured source at different facility.
- 1b: Estimated with manufacturer sound performance data.
- 1c: Estimated with manufacturer sound performance data of similar or typical equipment/unit.
- 1d: Estimated using FHWA. Refer to Table B2, App. B for calculation estimate.



# Capacity ratings (cont)

Attachment A2:  
 HVAC Manufacturer Sound Performance  
 Data (Note: D09 & D11 equivalent to E09 &  
 E11 (E includes humidifier option))



**SOUND RATINGS TABLE** a, b, c

48HC UNIT	COOLING STAGES	OUTDOOR SOUND (dB) AT 60 HZ								
		A-WEIGHTED	63	125	250	500	1000	2000	4000	8000
A04	1	76	78.2	78.0	74.2	73.3	70.6	66.0	62.4	56.9
A05	1	78	84.7	83.6	77.1	74.6	72.3	68.3	64.7	60.9
A06	1	77	87.5	82.5	76.1	73.6	71.3	67.1	64.1	60.0
A07	1	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
D07	2	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
D08	2	82	90.6	84.3	80.2	79.3	77.1	72.2	67.4	63.7
D09	2	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
D11	2	87	85.9	87.9	85.6	84.4	82.8	78.5	74.9	72.5
D12	2	87	85.9	87.9	85.6	84.4	82.8	78.5	74.9	72.5
D14	2	83	89.3	86.0	82.9	80.7	78.5	73.6	69.6	64.5

NOTE(S):

- a. Outdoor sound data is measured in accordance with AHRI.
- b. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
- c. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI.

LEGEND

**dB** — Decibel

**Memo**

**Re: Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post**

The sound pressure levels from the menu board or speaker post are as follows:

1. Sound pressure level (SPL) contours (A weighted) were measured on a typical HME SPP2 speaker post. The test condition was for pink noise set to 84 dBA at 1 foot in front of the speaker. All measurements were conducted outside with the speaker post placed 8 feet from a non-absorbing building wall and at an oblique angle to the wall. These measurements should not be construed to guarantee performance with any particular speaker post in any particular environment. They are typical results obtained under the conditions described above.
2. The SPL levels are presented for different distances from the speaker post:

Distance from the Speaker (Feet)	SPL (dBA)
1 foot	84 dBA
2 feet	78 dBA
4 feet	72 dBA
8 feet	66 dBA
16 feet	60 dBA
32 feet	54 dBA

3. The above levels are based on factory recommended operating levels, which are preset for HME components and represent the optimum level for drive-thru operations in the majority of the installations.

Also, HME incorporates automatic volume control (AVC) into many of our Systems. AVC will adjust the outbound volume based on the outdoor, ambient noise level. When ambient noise levels naturally decrease at night, AVC will reduce the outbound volume on the system. See below for example:

Distance from Outside Speaker	Decibel Level of standard system with 45 dB of outside noise <u>without</u> AVC	Decibel level of standard system with 45 dB of outside noise <u>with</u> AVC active
1 foot	84 dBA	60 dBA
2 feet	78 dBA	54 dBA
4 feet	72 dBA	48 dBA
8 feet	66 dBA	42 dBA
16 feet	60 dBA	36 dBA

If there are any further questions regarding this issue please contact HME customer service at 1-800-848-4468.

Thank you for your interest in HME's products.

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**Appendix B**

**Noise Calculations & Cadna-A Model**

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**Environmental Noise Study**

Tatham Engineering - 5646/5650 Manotick Main St, Ottawa

NAPSCI 24-021

**Table B2: Noise Source Estimates**

**Table B1: Noise Source Estimates for Vehicle Traffic (Automobiles)**

Source ID	Description	Overall PWL dB	Overall PWL dBA	Value to be subtracted from Overall SPL (dB) to Give SPL for each Octave Band (Note 1)							
				7	6	9	10	10	15	24	31
				63	125	250	500	1000	2000	4000	8000
6/7	Vehicle Traffic - Car Wash / Coffee Shop	88.3	81.3	81.3	82.3	79.3	78.3	78.3	73.3	64.3	57.3

Note 1: Estimated using FHWA. Octave band corrections from Noise Control for Buildings & Manufacturing Plants; Hoover & Keith, 2005.

**Environmental Noise Study**

Tatham Engineering - 5646/5650 Manotick Main St, Ottawa  
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	POR	E (m)	N (m)	Ht (m)
Residence Yard ---->	1a	446874	5007575	1.5
Residence 1st Storey POW ---->	1b	446878	5007569	3
Residence Yard ---->	2a	446899	5007587	1.5
Residence 2ndt Storey POW ---->	2b	446913	5007577	4.5
Residence Yard ---->	3a	446924	5007642	1.5
Residence 2ndt Storey POW ---->	3b	446938	5007656	4.5
Residence Yard ---->	4a	446892	5007666	1.5
Residence 2ndt Storey POW ---->	4b	446898	5007674	1.5
Residence Yard ---->	5a	446831	5007604	1.5
Residence 2ndt Storey POW ---->	5b	446820	5007598	1.5

**Table B3: Cadna Set-up**

Source Information					Distances to PORs												
Source ID	Source Description	Source Type	Site Location		Building Height m	HAR m	HAG m	POR1a m	POR1b m	POR2a m	POR2b m	POR3a m	POR3b m	POR4a m	POR4b m	POR5a m	POR5b m
			Easting m	Northing m													
1	High Pressure Wash Station	Point	446849.3	5007636.8	--	--	1.5	67	73	71	87	75	91	52	61	38	49
2	High Pressure Wash Station	Point	446852.9	5007640.7	--	--	1.5	70	76	71	88	71	87	46	56	43	54
3a	HVAC Unit - Fan	Point	446877.6	5007619.0	5.0	1.35	7.6	45	50	39	55	52	71	49	59	49	61
3b	HVAC Unit - Condenser Coil	V. Area	446877.4	5007619.4	5.0	1.25	6.3	45	50	39	55	52	71	49	58	49	61
3c	HVAC Unit - Condenser Coil	V. Area	446877.9	5007619.3	5.0	1.25	6.3	45	50	39	55	52	70	49	58	49	62
4a	HVAC Unit - Fan	Point	446874.5	5007612.6	5.0	1.35	7.6	38	43	36	52	58	77	56	66	44	56
4b	HVAC Unit - Condenser Coil	V. Area	446874.3	5007612.9	5.0	1.25	6.3	38	44	36	53	58	77	56	66	44	56
4c	HVAC Unit - Condenser Coil	V. Area	446874.8	5007612.9	5.0	1.25	6.3	38	44	36	52	58	77	56	65	45	57
5	Drive-Through Speaker	Point	446889.6	5007611.9	--	--	1.0	40	44	27	42	46	65	54	63	59	71
6	Vehicle Traffic - Car Wash	Mvg-Pt	Varies	Varies	--	--	1.0	54	60	60	77	52	67	27	37	22	34
7a	Vehicle Traffic - Coffee Shop	Mvg-Pt	Varies	Varies	--	--	1.0	22	29	37	54	52	67	27	37	25	37
7b	Vehicle Traffic - Coffee Shop	Mvg-Pt	Varies	Varies	--	--	1.0	23	29	34	51	49	64	27	37	27	40
7c	Vehicle Traffic - Coffee Shop	Mvg-Pt	Varies	Varies	--	--	1.0	22	29	24	41	39	58	38	47	34	45
7d	Vehicle Traffic - Coffee Shop	Mvg-Pt	Varies	Varies	--	--	1.0	54	60	42	56	40	59	27	37	62	74
8	Idling Car 1	Point	446888.5	5007625.7	--	--	1.0	53	57	40	55	39	58	40	49	61	74
9	Idling Car 2	Point	446894.0	5007616.0	--	--	1.0	46	49	29	44	40	59	50	58	64	76
10	Idling Car 3	Point	446892.6	5007610.3	--	--	1.0	40	44	24	39	45	64	55	64	62	74
11	Idling Car 4	Point	446878.7	5007601.4	--	--	1.0	27	32	25	42	61	81	66	75	48	59
12	Idling Car 5	Point	446864.2	5007597.1	--	--	1.0	25	31	37	53	75	94	74	84	34	44
13	Idling Car 6	Point	446854.9	5007611.3	--	--	1.0	42	48	51	67	76	94	66	76	25	37

Environmental Noise Study

Tatham Engineering - 5646/5650 Manotick Main St, Ottawa

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**Table B4: Traffic Distribution**

Start Hour	End Hour	Time Period	Typical Distribution <sup>1</sup> %	AADT 7786	Min Hour	Distribution		
						Auto 90%	MD 5%	HD 5%
23	24	Night	1.67%	130				
0	1	Night	0.87%	68				
1	2	Night	0.49%	38				
2	3	Night	0.36%	28				
3	4	Night	0.30%	23	23	21	1	1
4	5	Night	0.36%	28				
5	6	Night	0.95%	74				
6	7	Night	2.75%	214				
7	8	Day	5.05%	393	393	354	20	20
8	9	Day	6.55%	510				
9	10	Day	5.62%	438				
10	11	Day	5.50%	428				
11	12	Day	6.04%	470				
12	13	Day	6.48%	504				
13	14	Day	6.26%	487				
14	15	Day	6.60%	514				
15	16	Day	7.41%	577				
16	17	Day	7.82%	609				
17	18	Day	7.65%	595				
18	19	Day	6.27%	488				
19	20	Evening	5.12%	399				
20	21	Evening	4.09%	318				
21	22	Evening	3.41%	266				
22	23	Evening	2.41%	188	188	169	9	9
			100.00%	7786				

Note 1: Reference - Typical Hourly Traffic Distribution for Noise Modelling; VanDelden, Penton, Haniff; Canadian Acoustics; Vol.36, No. 3, 2008.

**Environmental Noise Study**

Tatham Engineering - 5646/5650 Manotick Main St, Ottawa  
 NAPSCI 24-021

**Table B5 - Transportation Noise Model Summary**

Model	Receptor ID	Description	Assessment Location	Time Period	Number of Vehicles			Speed Limit (km/h)	Road Gradient (%)	Road Pavement	Topography	Wood Depth	Number of Row of Houses	Density of 1st Row	Intermediate Surface	Road Viewable Angle		Source-Receiver Distance (m)	Receptor Height (m)	Mitigation (Y/N)	Barrier Height (m)	Barrier-Receiver Distance (m)	Barrier Viewable Angle		Total Leq (dBA)	MECP Exclusionary Limit (dBA)	Applicable Limit
					L1	L2	B1									B2											
1aD	POR1a	1 storey house	OLA	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-19	+36	68.00	1.5	N	--	--	--	--	50	50	50
1aE	POR1a	1 storey house	OLA	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-19	+36	68.00	1.5	N	--	--	--	--	47	50	50
1bD	POR1b	1 storey house	POW	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-22	+29	70.00	4.5	N	--	--	--	--	50	50	50
1bE	POR1b	1 storey house	POW	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-22	+29	70.00	4.5	N	--	--	--	--	47	50	50
1bN	POR1b	1 storey house	POW	Night	21	1	1	60	0	1	1	0	0	20%	Absorptive	-22	+29	70.00	4.5	N	--	--	--	--	NA	45	45
2aD	POR2a	2 storey house	OLA	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-60	+21	43.00	1.5	N	--	--	--	--	55	50	55
2aE	POR2a	2 storey house	OLA	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-60	+21	43.00	1.5	N	--	--	--	--	51	50	51
2bD	POR2b	2 storey house	POW	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-64	0	43.00	4.5	N	--	--	--	--	54	50	54
2bE	POR2b	2 storey house	POW	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-64	0	43.00	4.5	N	--	--	--	--	51	50	51
2bN	POR2b	2 storey house	POW	Night	21	1	1	60	0	1	1	0	0	20%	Absorptive	-64	0	43.00	4.5	N	--	--	--	--	NA	45	45
3aD	POR3a	2 storey house	OLA	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-90	+90	31.00	4.5	N	--	--	--	--	60	50	60
3aE	POR3a	2 storey house	OLA	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-90	+90	31.00	4.5	N	--	--	--	--	56	50	56
3bD	POR3b	2 storey house	POW	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-90	+90	41.00	4.5	N	--	--	--	--	58	50	58
3bE	POR3b	2 storey house	POW	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-90	+90	41.00	4.5	N	--	--	--	--	55	50	55
3bN	POR3b	2 storey house	POW	Night	21	1	1	60	0	1	1	0	0	20%	Absorptive	-90	+90	41.00	4.5	N	--	--	--	--	45	45	45
4aD	POR4a	1 storey house	OLA	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-90	+90	24.00	1.5	N	--	--	--	--	62	50	62
4aE	POR4a	1 storey house	OLA	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-90	+90	24.00	1.5	N	--	--	--	--	58	50	58
4bD	POR4b	1 storey house	POW	Day	354	20	20	60	0	1	1	0	0	20%	Absorptive	-90	+90	27.00	1.5	N	--	--	--	--	61	50	61
4bE	POR4b	1 storey house	POW	Evening	169	9	9	60	0	1	1	0	0	20%	Absorptive	-90	+90	27.00	1.5	N	--	--	--	--	57	50	57
4bN	POR4b	1 storey house	POW	Night	21	1	1	60	0	1	1	0	0	20%	Absorptive	-90	+90	27.00	1.5	N	--	--	--	--	48	45	48



**Report (CarWash&Starbucks v0.3.cna)**

Group Table, Day/Night

Name	Expression	Partial Sum Level																																
		POR1a			POR1b			POR2a			POR2b			POR3a			POR3b			POR4a			POR4b			POR5a			POR5b			sdk1		
		Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night	Day	Even	Night

**Sound Sources**

**Point Sources**

Name	M. ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height	Coordinates		
		Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night					X	Y	Z
		(dBA)	(dBA)	(dBA)			(dB(A))	(dB(A))	(dB(A))	(dB(A))		(m²)	(min)	(min)	(min)	(dB)	(Hz)		(m)	(m)	(m)	(m)	
1		94.9	94.9	94.9	Lw	s1_s2		0.0	0.0	0.0			30.00	30.00	10.00	0.0		(none)	1.50	r	446849.32	5007636.79	1.50
2		94.9	94.9	94.9	Lw	s1_s2		0.0	0.0	0.0			30.00	30.00	10.00	0.0		(none)	1.50	r	446852.94	5007640.70	1.50
3a		84.3	84.3	84.3	Lw	s3-3		0.0	0.0	0.0			60.00	60.00	60.00	0.0		Area_2fts_to_8ft2	1.35	g	446877.61	5007619.00	7.60
4a		79.6	79.6	79.6	Lw	s4-3		0.0	0.0	0.0			60.00	60.00	60.00	0.0		Area_2fts_to_8ft2	1.35	g	446874.47	5007612.57	7.60
5		81.5	81.5	81.5	Lw	s8_s13		0.0	0.0	0.0			37.00	37.00	37.00	0.0	500	(none)	1.00	r	446889.60	5007611.86	1.00
8		71.0	71.0	71.0	Lw	s8_to_s13		0.0	0.0	0.0			60.00	60.00	60.00	0.0		(none)	1.00	r	446888.52	5007625.66	1.00
9		71.0	71.0	71.0	Lw	s8_to_s13		0.0	0.0	0.0			60.00	60.00	60.00	0.0		(none)	1.00	r	446894.04	5007616.00	1.00
10		71.0	71.0	71.0	Lw	s8_to_s13		0.0	0.0	0.0			60.00	60.00	60.00	0.0		(none)	1.00	r	446892.56	5007610.34	1.00
11		71.0	71.0	71.0	Lw	s8_to_s13		0.0	0.0	0.0			60.00	60.00	60.00	0.0		(none)	1.00	r	446878.65	5007601.39	1.00
12		71.0	71.0	71.0	Lw	s8_to_s13		0.0	0.0	0.0			60.00	60.00	60.00	0.0		(none)	1.00	r	446864.22	5007597.13	1.00
13		71.0	71.0	71.0	Lw	s8_to_s13		0.0	0.0	0.0			60.00	60.00	60.00	0.0		(none)	1.00	r	446854.91	5007611.25	1.00

**Line Sources**

Name	M. ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
		Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Day	Evening	Night	Speed
		(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(dB(A))	(dB(A))	(dB(A))	(dB(A))		(m²)	(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)	
6		73.6	73.6	68.9	52.5	52.5	47.7	PWL-Pt	s5_to_s6		0.0	0.0	0.0						0.0		(none)	6.0	6.0	2.0	5.0	
7a		83.1	83.1	83.1	65.0	65.0	65.0	PWL-Pt	s5_to_s6		0.0	0.0	0.0						0.0		(none)	106.0	106.0	106.0	5.0	
7b		78.3	78.3	78.3	59.8	59.8	59.8	PWL-Pt	s5_to_s6		0.0	0.0	0.0						0.0		(none)	32.0	32.0	32.0	5.0	
7c		82.6	82.6	82.6	65.8	65.8	65.8	PWL-Pt	s5_to_s6		0.0	0.0	0.0						0.0		(none)	74.0	74.0	74.0	2.9	
7d		77.2	77.2	77.2	63.4	63.4	63.4	PWL-Pt	s5_to_s6		0.0	0.0	0.0						0.0		(none)	74.0	74.0	74.0	5.0	

**Area Sources**

Name	M. ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src		
		Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Day	Evening	Night
		(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(dB(A))	(dB(A))	(dB(A))	(dB(A))		(m²)	(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	

**Area Sources vertical**

Name	M. ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	
		Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				
		(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(dB(A))	(dB(A))	(dB(A))	(dB(A))		(m²)	(min)	(min)	(min)	(dB)	(Hz)			
3b		81.3	81.3	81.3	82.5	82.5	82.5	Lw	s3-3-3		0.0	0.0	0.0						3.0		(none)		
3c		81.3	81.3	81.3	82.5	82.5	82.5	Lw	s3-3-3		0.0	0.0	0.0						3.0		(none)		
4b		76.6	76.6	76.6	77.8	77.8	77.8	Lw	s4-3-3		0.0	0.0	0.0						3.0		(none)		
4c		76.6	76.6	76.6	77.8	77.8	77.8	Lw	s4-3-3		0.0	0.0	0.0						3.0		(none)		

**Railway Tracks**

## Tatham Eng - Proposed Car Wash & Drive-Through Facilities

Name	M.	ID	Lm,E		Train Class	Add.Level				Vmax
			Day	Night		Dfb	Dbr	Dbü	Dra	
			(dBA)	(dBA)		(dB)	(dB)	(dB)	(dB)	(km/h)

### Railway Classes

Name	M.	ID	Lm,E		Train Class								Add.Level				Vmax			
			Day	Night	Type	p	Number of Trains			v	l	Dfz	Dae	Lm,E,i (dB)		Dfb		Dbr	Dbü	Dra
			(dBA)	(dBA)		(%)	Day	Evening	Night	(km/h)	(m)	(dB)	(dB)	Day	Night	(dB)	(dB)	(dB)	(dB)	(km/h)

### Parking Lots

Name	M.	ID	Type	Lwa			Event Data				Penalty Type		Penalty Surface		According to	Operating Time					
				Day	Special	Night	Ref. Quantity	Number B	No. Spaces/RefQ	Events/h/RefQ		Kpa	Type	Kstro		Surface	Day	Special	Night		
				(dBA)	(dBA)	(dBA)					Day	Special	Night	(dB)		(dB)			(min)	(min)	(min)

### Roads

Name	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
			Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type	(%)	Drefl	Hbuild	Dist.
			(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(km/h)	(km/h)		(dB)		(%)	(dB)	(m)	(m)

### Crossing

Name	M.	ID	Active			Height	Coordinates			
			Day	Evening	Night	Begin	X	Y	Z	
						(m)	(m)	(m)	(m)	

### Receiver Points

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height	Coordinates			
			Day	Even	Night	Day	Even	Night	Type	Auto	Noise Type		X	Y	Z	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)	(m)	(m)	(m)	
POR1a			45.0	45.0	44.9	50.0	50.0	0.0				1.50	r	446874.48	5007574.53	1.50
POR1b			44.9	44.9	44.7	50.0	50.0	45.0				3.00	r	446877.78	5007569.35	3.00
POR2a			45.3	45.3	45.3	50.0	50.0	0.0				1.50	r	446899.45	5007587.17	1.50
POR2b			45.1	45.1	45.0	50.0	50.0	45.0				4.50	r	446912.84	5007576.75	4.50
POR3a			45.4	45.4	45.3	50.0	50.0	0.0				1.50	r	446924.34	5007642.24	1.50
POR3b			44.6	44.6	44.5	50.0	50.0	45.0				4.50	r	446938.23	5007655.73	4.50
POR4a			47.6	47.6	47.4	50.0	50.0	0.0				1.50	r	446892.06	5007665.83	1.50
POR4b			45.2	45.2	45.0	50.0	50.0	45.0				1.50	r	446897.97	5007674.10	1.50
POR5a			47.2	47.2	46.9	50.0	50.0	0.0				1.50	r	446831.03	5007603.93	1.50
POR5b			43.9	43.9	43.6	50.0	50.0	45.0				1.50	r	446820.08	5007597.82	1.50
sdk1			73.4	73.4	68.6	0.0	0.0	0.0				1.50	r	446849.34	5007644.25	1.50

### Designated Land Use

Name	M.	ID	Type	Persons
				(1/km <sup>2</sup> )

### Obstacles

#### Barriers

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height	
			left	right		horz.	vert.	Begin	End
					(m)	(m)	(m)	(m)	
			0.21	0.21				5.00	r
			0.21	0.21				5.00	r

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height	
			left	right		horz.	vert.	Begin	End
					(m)	(m)	(m)	(m)	
			0.21	0.21				1.80	r

**Buildings**

Name	M.	ID	RB	Residents	Absorption	Height
						Begin
						(m)
				0	0.21	5.00 r
				0	0.21	5.00 r
				0		1.25 g
				0		1.25 g

**Foilage**

Name	M.	ID	Height
			(m)

**Built-Up Area**

Name	M.	ID	Type	Attenuation	B	m	Height
				dB/100m	%	1/m	(m)

**Geometry Data**

**Geometry Line Sources**

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(m)	(m)	(m)	(m)	(m)	(m)
6	1.00	r	446875.25	5007644.34	1.00	0.00
			446873.87	5007642.65	1.00	0.00
			446871.60	5007641.31	1.00	0.00
			446868.65	5007641.43	1.00	0.00
			446856.38	5007649.87	1.00	0.00
			446853.27	5007650.00	1.00	0.00
			446848.56	5007644.92	1.00	0.00
			446847.21	5007643.43	1.00	0.00
			446846.55	5007641.16	1.00	0.00
			446847.21	5007639.03	1.00	0.00
			446845.37	5007641.20	1.00	0.00
			446845.29	5007642.95	1.00	0.00
			446847.51	5007646.06	1.00	0.00
			446845.11	5007644.69	1.00	0.00
			446842.25	5007644.17	1.00	0.00
			446840.04	5007645.06	1.00	0.00
			446836.41	5007645.51	1.00	0.00
			446831.91	5007642.98	1.00	0.00
			446831.25	5007640.35	1.00	0.00
			446834.02	5007635.74	1.00	0.00
			446842.88	5007621.82	1.00	0.00
			446844.85	5007620.94	1.00	0.00
			446847.12	5007621.24	1.00	0.00
			446855.10	5007627.48	1.00	0.00
			446866.65	5007639.59	1.00	0.00
			446872.24	5007646.67	1.00	0.00
7a	1.00	r	446872.80	5007646.25	1.00	0.00
			446867.30	5007639.22	1.00	0.00
			446855.51	5007626.79	1.00	0.00
			446850.53	5007621.60	1.00	0.00
			446850.86	5007618.14	1.00	0.00
			446864.52	5007597.21	1.00	0.00
			446867.25	5007595.83	1.00	0.00
7b	1.00	r	446866.91	5007596.59	1.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(m)	(m)	(m)	(m)	(m)	(m)
			446866.40	5007599.20	1.00	0.00
			446866.87	5007600.46	1.00	0.00
			446871.32	5007603.56	1.00	0.00
			446866.43	5007600.98	1.00	0.00
			446864.47	5007601.03	1.00	0.00
			446861.73	5007604.23	1.00	0.00
			446855.05	5007615.96	1.00	0.00
			446853.57	5007618.92	1.00	0.00
			446854.16	5007621.34	1.00	0.00
			446858.13	5007625.26	1.00	0.00
			446869.78	5007637.21	1.00	0.00
			446873.58	5007641.27	1.00	0.00
			446875.70	5007643.95	1.00	0.00
7c	1.00	r	446867.25	5007595.83	1.00	0.00
			446870.63	5007596.79	1.00	0.00
			446892.79	5007611.06	1.00	0.00
			446893.53	5007612.76	1.00	0.00
			446893.80	5007616.43	1.00	0.00
			446893.06	5007618.13	1.00	0.00
			446887.27	5007627.13	1.00	0.00
7d	1.00	r	446887.27	5007627.13	1.00	0.00
			446874.17	5007637.52	1.00	0.00
			446873.52	5007639.34	1.00	0.00
			446873.93	5007640.73	1.00	0.00
			446876.28	5007643.64	1.00	0.00

**Geometry Area Sources**

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(m)	(m)	(m)	(m)	(m)	(m)

**Geometry Parking Lots**

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(m)	(m)	(m)	(m)	(m)	(m)

**Geometry Roads**

Name	Height		Coordinates				Dist (m)	LSlope (%)
	Begin	End	x	y	z	Ground		
	(m)	(m)	(m)	(m)	(m)	(m)		

**Geometry Railway Tracks**

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(m)	(m)	(m)	(m)	(m)	(m)

**Geometry Barriers**

Name	M. ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates				
		left	right		horz.	vert.	Begin	End	x	y	z	Ground	
				(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
		0.21	0.21				5.00	r		446845.18	5007636.83	5.00	0.00
										446851.93	5007630.50	5.00	0.00
										446859.26	5007638.27	5.00	0.00
										446852.51	5007644.65	5.00	0.00
		0.21	0.21				5.00	r		446848.85	5007640.70	5.00	0.00
										446855.59	5007634.38	5.00	0.00
		0.21	0.21				1.80	r		446868.04	5007589.51	1.80	0.00
										446895.87	5007607.94	1.80	0.00

**Geometry Buildings**

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground
						(m)	(m)	(m)	(m)	(m)	
				0	0.21	5.00	r	446889.42	5007617.97	5.00	0.00
								446887.87	5007620.36	5.00	0.00
								446888.63	5007620.88	5.00	0.00
								446886.52	5007624.20	5.00	0.00
								446885.73	5007623.69	5.00	0.00
								446883.41	5007627.30	5.00	0.00
								446879.15	5007624.59	5.00	0.00
								446878.82	5007625.10	5.00	0.00
								446873.71	5007621.87	5.00	0.00
								446874.04	5007621.36	5.00	0.00
								446866.11	5007616.21	5.00	0.00
								446872.11	5007606.85	5.00	0.00
				0	0.21	5.00	r	446858.16	5007639.31	5.00	0.00
								446859.25	5007640.45	5.00	0.00
								446862.57	5007637.36	5.00	0.00
								446854.62	5007628.84	5.00	0.00
								446852.37	5007630.97	5.00	0.00
								446859.26	5007638.27	5.00	0.00
				0		1.25	g	446873.32	5007612.25	6.25	0.00
								446874.60	5007613.06	6.25	0.00
								446875.81	5007611.18	6.25	0.00
								446874.54	5007610.36	6.25	0.00
				0		1.25	g	446876.45	5007618.69	6.25	0.00
								446877.72	5007619.50	6.25	0.00
								446878.94	5007617.62	6.25	0.00
								446877.67	5007616.80	6.25	0.00

**Geometry Contour Lines**

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)

**Geometry Lines of Fault**

Name	M.	ID	Coordinates	
			x	y
			(m)	(m)

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (m)	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (m)	1000.00
Min. Length of Section (m)	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	60.00
Reference Time Night (min)	60.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	
	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (°C)	10
rel. Humidity (%)	70
Ground Absorption G	0.00
Wind Speed for Dir. (m/s)	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03)	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Receiver  
 Name: POR1b  
 ID:  
 X: 446877.78  
 Y: 5007569.35  
 Z: 3.00

Point Source, ISO 9613, Name: "1", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446849.32	5007636.79	1.50	0	0	91.9	87.1	0.0	0.0	48.3	1.7	-2.8	0.0	0.0	17.6	-0.0	-0.0	27.1	22.3
2	446849.32	5007636.79	1.50	1	0	91.8	87.1	0.0	0.0	48.5	1.7	-2.7	0.0	0.0	21.4	-0.0	1.0	21.9	17.1

Point Source, ISO 9613, Name: "2", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446852.94	5007640.70	1.50	0	0	91.9	87.1	0.0	0.0	48.6	1.7	-2.7	0.0	0.0	21.3	-0.0	-0.0	23.0	18.2
2	446852.94	5007640.70	1.50	1	0	91.8	87.1	0.0	0.0	48.8	1.8	-2.6	0.0	0.0	21.3	-0.0	1.0	21.6	16.8

Point Source, ISO 9613, Name: "3a", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446877.61	5007619.00	7.60	0	0	84.3	84.3	0.0	-8.5	45.0	0.2	-1.6	0.0	0.0	0.0	-0.0	-0.0	32.2	32.2

Point Source, ISO 9613, Name: "4a", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446874.47	5007612.57	7.60	0	0	79.6	79.6	0.0	-7.9	43.8	0.2	-1.8	0.0	0.0	0.0	-0.0	-0.0	29.5	29.5

Point Source, ISO 9613, Name: "5", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446889.60	5007611.86	1.00	0	500	79.4	79.4	0.0	0.0	43.9	0.1	-0.5	0.0	0.0	5.0	0.0	-0.0	31.0	31.0
2	446889.60	5007611.86	1.00	1	500	79.4	79.4	0.0	0.0	45.3	0.1	1.7	0.0	0.0	0.0	0.0	1.0	31.3	31.3

Point Source, ISO 9613, Name: "8", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446888.52	5007625.66	1.00	0	0	71.0	71.0	0.0	0.0	46.2	0.8	-1.0	0.0	0.0	13.3	-0.0	-0.0	11.8	11.8
2	446888.52	5007625.66	1.00	1	0	70.1	70.1	0.0	0.0	50.8	1.6	-2.8	0.0	0.0	22.2	-0.0	1.0	-2.7	-2.7

Point Source, ISO 9613, Name: "9", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446894.04	5007616.00	1.00	0	0	71.0	71.0	0.0	0.0	44.9	0.7	-2.2	0.0	0.0	5.0	-0.0	-0.0	22.6	22.6
2	446894.04	5007616.00	1.00	1	0	70.9	70.9	0.0	0.0	45.8	0.8	-1.2	0.0	0.0	0.0	-0.0	1.0	24.5	24.5
3	446894.04	5007616.00	1.00	1	0	70.1	70.1	0.0	0.0	51.9	1.8	-2.7	0.0	0.0	24.5	-0.0	1.0	-6.3	-6.3
4	446894.04	5007616.00	1.00	2	0	68.9	68.9	0.0	0.0	47.5	1.5	-1.9	0.0	0.0	0.0	-0.0	2.0	19.8	19.8

Point Source, ISO 9613, Name: "10", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446892.56	5007610.34	1.00	0	0	71.0	71.0	0.0	0.0	43.8	0.7	-1.6	0.0	0.0	6.6	-0.0	-0.0	21.7	21.7
2	446892.56	5007610.34	1.00	1	0	70.9	70.9	0.0	0.0	45.8	0.8	-1.2	0.0	0.0	0.0	-0.0	1.0	24.4	24.4
3	446892.56	5007610.34	1.00	2	0	70.1	70.1	0.0	0.0	46.7	1.1	-2.0	0.0	0.0	0.0	-0.0	2.0	22.3	22.3

Point Source, ISO 9613, Name: "11", ID: "-"

Nr.	X (m)	Y (m)	Z (m)	Refl.	Freq. (Hz)	LxT dB(A)	LxN dB(A)	K0 (dB)	Dc (dB)	Adiv (dB)	Aatm (dB)	Agr (dB)	Afol (dB)	Ahous (dB)	Abar (dB)	Cmet (dB)	RL (dB)	LrT dB(A)	LrN dB(A)
1	446878.65	5007601.39	1.00	0	0	71.0	71.0	0.0	0.0	41.1	0.5	-1.2	0.0	0.0	7.1	-0.0	-0.0	23.5	23.5

Point Source, ISO 9613, Name: "12", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446864.22	5007597.13	1.00	0	0	71.0	71.0	0.0	0.0	40.8	0.5	-1.3	0.0	0.0	0.0	-0.0	-0.0	31.1	31.1

Point Source, ISO 9613, Name: "13", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446854.91	5007611.25	1.00	0	0	71.0	71.0	0.0	0.0	44.6	0.7	-1.6	0.0	0.0	0.0	-0.0	-0.0	27.4	27.4

Line Source, ISO 9613, Name: "6", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446858.35	5007630.89	1.00	0	0	62.2	57.5	0.0	0.0	47.2	0.3	-2.7	0.0	0.0	0.0	-0.0	-0.0	17.4	12.7
2	446864.13	5007636.95	1.00	0	0	61.1	56.4	0.0	0.0	47.8	0.3	-2.5	0.0	0.0	8.8	-0.0	-0.0	6.8	2.0
3	446838.45	5007628.78	1.00	0	0	64.7	59.9	0.0	0.0	48.1	0.3	-2.5	0.0	0.0	0.0	-0.0	-0.0	18.8	14.0
4	446864.52	5007644.27	1.00	0	0	62.5	57.7	0.0	0.0	48.6	0.4	-2.5	0.0	0.0	10.0	-0.0	-0.0	6.0	1.3
5	446859.20	5007647.93	1.00	0	0	57.1	52.3	0.0	0.0	49.1	0.4	-2.6	0.0	0.0	18.3	-0.0	-0.0	-8.1	-12.9
6	446857.19	5007649.31	1.00	0	0	55.4	50.7	0.0	0.0	49.3	0.4	-2.5	0.0	0.0	16.7	-0.0	-0.0	-8.4	-13.2
7	446849.15	5007622.82	1.00	0	0	59.6	54.9	0.0	0.0	46.7	0.3	-2.2	0.0	0.0	0.0	-0.0	-0.0	14.9	10.1
8	446853.14	5007625.95	1.00	0	0	59.5	54.7	0.0	0.0	46.8	0.3	-2.8	0.0	0.0	0.0	-0.0	-0.0	15.1	10.3
9	446868.35	5007641.74	1.00	0	0	59.9	55.1	0.0	0.0	48.3	0.4	-2.5	0.0	0.0	12.5	-0.0	-0.0	1.4	-3.4
10	446871.14	5007645.28	1.00	0	0	58.0	53.2	0.0	0.0	48.6	0.4	-2.1	0.0	0.0	13.8	-0.0	-0.0	-2.7	-7.5
11	446852.17	5007648.82	1.00	0	0	57.6	52.8	0.0	0.0	49.4	0.4	-2.7	0.0	0.0	18.0	-0.0	-0.0	-7.5	-12.3
12	446849.81	5007646.27	1.00	0	0	58.2	53.4	0.0	0.0	49.3	0.4	-2.7	0.0	0.0	15.7	-0.0	-0.0	-4.5	-9.3
13	446832.64	5007638.05	1.00	0	0	59.8	55.0	0.0	0.0	49.3	0.4	-2.6	0.0	0.0	0.0	-0.0	-0.0	12.7	7.9
14	446834.16	5007644.24	1.00	0	0	59.6	54.9	0.0	0.0	49.8	0.4	-0.0	0.0	0.0	0.0	-0.0	-0.0	9.5	4.7
15	446845.98	5007621.09	1.00	0	0	56.1	51.3	0.0	0.0	46.7	0.3	-2.4	0.0	0.0	0.0	-0.0	-0.0	11.5	6.8
16	446845.97	5007643.90	1.00	0	0	56.2	51.4	0.0	0.0	49.2	0.4	-2.8	0.0	0.0	11.7	-0.0	-0.0	-2.3	-7.0
17	446847.08	5007645.46	1.00	0	0	54.2	49.4	0.0	0.0	49.3	0.4	-2.7	0.0	0.0	16.0	-0.0	-0.0	-8.8	-13.6
18	446843.86	5007621.38	1.00	0	0	55.8	51.1	0.0	0.0	46.9	0.3	-2.4	0.0	0.0	0.0	-0.0	-0.0	11.1	6.3
19	446870.95	5007641.33	1.00	0	0	53.7	48.9	0.0	0.0	48.2	0.3	-2.5	0.0	0.0	14.0	-0.0	-0.0	-6.3	-11.1
20	446869.48	5007641.39	1.00	0	0	54.7	49.9	0.0	0.0	48.2	0.3	-2.5	0.0	0.0	12.9	-0.0	-0.0	-4.3	-9.0
21	446838.23	5007645.29	1.00	0	0	58.1	53.4	0.0	0.0	49.6	0.4	-1.6	0.0	0.0	0.0	-0.0	-0.0	9.7	4.9
22	446872.74	5007641.98	1.00	0	0	56.7	51.9	0.0	0.0	48.3	0.3	-2.5	0.0	0.0	14.6	-0.0	-0.0	-3.9	-8.7
23	446846.29	5007640.11	1.00	0	0	57.0	52.3	0.0	0.0	48.8	0.4	-2.3	0.0	0.0	12.7	-0.0	-0.0	-2.6	-7.4
24	446854.83	5007649.94	1.00	0	0	57.4	52.7	0.0	0.0	49.5	0.4	-2.7	0.0	0.0	16.1	-0.0	-0.0	-5.9	-10.6
25	446843.68	5007644.43	1.00	0	0	57.1	52.4	0.0	0.0	49.3	0.4	-2.3	0.0	0.0	9.3	-0.0	-0.0	0.4	-4.4
26	446846.96	5007645.74	1.00	0	0	53.5	48.7	0.0	0.0	49.3	0.4	-2.8	0.0	0.0	15.9	-0.0	-0.0	-9.3	-14.1
27	446845.76	5007645.06	1.00	0	0	54.2	49.5	0.0	0.0	49.3	0.4	-2.8	0.0	0.0	11.4	-0.0	-0.0	-4.0	-8.8
28	446874.77	5007643.76	1.00	0	0	54.3	49.5	0.0	0.0	48.4	0.4	-2.1	0.0	0.0	13.9	-0.0	-0.0	-6.4	-11.1
29	446874.08	5007642.91	1.00	0	0	50.8	46.0	0.0	0.0	48.3	0.4	-2.1	0.0	0.0	14.7	-0.0	-0.0	-10.5	-15.3
30	446846.88	5007640.09	1.00	0	0	56.0	51.2	0.0	0.0	48.8	0.4	-2.2	0.0	0.0	13.2	-0.0	-0.0	-4.1	-8.8
31	446846.88	5007642.29	1.00	0	0	56.2	51.5	0.0	0.0	49.0	0.4	-2.8	0.0	0.0	12.4	-0.0	-0.0	-2.8	-7.5
32	446831.58	5007641.66	1.00	0	0	56.8	52.1	0.0	0.0	49.7	0.4	-2.2	0.0	0.0	0.0	-0.0	-0.0	8.9	4.1
33	446841.15	5007644.61	1.00	0	0	56.3	51.5	0.0	0.0	49.5	0.4	-2.0	0.0	0.0	0.0	-0.0	-0.0	8.4	3.7
34	446848.07	5007644.38	1.00	0	0	54.2	49.4	0.0	0.0	49.1	0.4	-2.7	0.0	0.0	16.8	-0.0	-0.0	-9.5	-14.3
35	446847.40	5007643.63	1.00	0	0	49.9	45.1	0.0	0.0	49.1	0.4	-2.7	0.0	0.0	12.6	-0.0	-0.0	-9.5	-14.3
36	446845.33	5007642.07	1.00	0	0	54.9	50.2	0.0	0.0	49.0	0.4	-2.8	0.0	0.0	11.3	-0.0	-0.0	-3.1	-7.8
37	446858.32	5007630.85	1.00	1	0	60.8	56.0	0.0	0.0	47.5	0.3	-2.7	0.0	0.0	0.0	-0.0	1.0	14.7	9.9
38	446861.75	5007634.45	1.00	1	0	57.6	52.8	0.0	0.0	47.8	0.3	-2.6	0.0	0.0	0.0	-0.0	1.0	11.0	6.3
39	446863.57	5007636.36	1.00	1	0	55.6	50.9	0.0	0.0	48.0	0.3	-2.5	0.0	0.0	13.0	-0.0	1.0	-4.2	-9.0
40	446856.84	5007629.31	1.00	1	0	53.1	48.3	0.0	0.0	48.1	0.3	-2.7	0.0	0.0	21.5	-0.0	1.0	-15.2	-19.9
41	446836.17	5007632.37	1.00	1	0	59.8	55.0	0.0	0.0	49.3	0.5	-2.2	0.0	0.0	0.0	-0.0	1.0	11.2	6.5
42	446834.06	5007635.69	1.00	1	0	18.2	13.4	0.0	0.0	49.6	10.0	-2.1	0.0	0.0	0.0	-0.0	1.0	-40.3	-45.1
43	446851.02	5007624.29	1.00	1	0	58.8	54.1	0.0	0.0	47.3	0.4	-2.6	0.0	0.0	0.0	-0.0	1.0	12.8	8.0
44	446848.86	5007645.24	1.00	1	0	51.8	47.1	0.0	0.0	49.4	0.4	-2.7	0.0	0.0	15.9	-0.0	1.0	-12.2	-17.0
45	446832.64	5007638.05	1.00	1	0	58.1	53.3	0.0	0.0	49.9	0.6	-1.7	0.0	0.0	0.0	-0.0	1.0	8.3	3.5
46	446833.03	5007637.40	1.00	1	0	27.8	23.0	0.0	0.0	49.8	10.2	-2.1	0.0	0.0	25.0	-0.0	1.0	-56.0	-60.8
47	446833.68	5007636.31	1.00	1	0	28.2	23.5	0.0	0.0	49.7	10.1	-2.1	0.0	0.0	0.0	-0.0	1.0	-30.4	-35.2
48	446832.25	5007638.68	1.00	1	0	56.7	51.9	0.0	0.0	49.9	0.6	-1.9	0.0	0.0	0.0	-0.0	1.0	7.2	2.4
49	446832.12	5007643.09	1.00	1	0	42.5	37.8	0.0	0.0	50.2	1.1	-2.1	0.0	0.0	0.0	-0.0	1.0	-7.7	-12.5
50	446835.01	5007644.72	1.00	1	0	55.9	51.1	0.0	0.0	50.7	0.6	-2.8	0.0	0.0	16.2	-0.0	1.0	-9.9	-14.6
51	446833.78	5007644.03	1.00	1	0	57.1	52.3	0.0	0.0	50.3	0.6	-2.4	0.0	0.0	16.3	-0.0	1.0	-8.7	-13.5
52	446846.39	5007644.49	1.00	1	0	57.8	53.0	0.0	0.0	49.6	0.4	-2.8	0.0	0.0	16.6	-0.0	1.0	-7.1	-11.9
53	446838.23	5007645.29	1.00	1	0	57.6	52.9	0.0	0.0	50.4	0.5	-2.8	0.0	0.0	14.9	-0.0	1.0	-6.3	-11.1



Line Source, ISO 9613, Name: "6", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
54	446846.29	5007640.11	1.00	1	0	56.9	52.1	0.0	0.0	49.0	0.4	-2.7	0.0	0.0	16.6	-0.0	1.0	-7.4	-12.2
55	446844.11	5007644.51	1.00	1	0	55.1	50.3	0.0	0.0	49.8	0.5	-2.8	0.0	0.0	16.1	-0.0	1.0	-9.5	-14.3
56	446842.68	5007644.24	1.00	1	0	51.4	46.6	0.0	0.0	50.0	0.5	-2.8	0.0	0.0	15.8	-0.0	1.0	-13.1	-17.8
57	446846.29	5007645.36	1.00	1	0	56.7	51.9	0.0	0.0	49.6	0.4	-2.7	0.0	0.0	15.3	-0.0	1.0	-7.0	-11.8
58	446846.88	5007640.09	1.00	1	0	55.9	51.1	0.0	0.0	48.9	0.4	-2.7	0.0	0.0	16.8	-0.0	1.0	-8.5	-13.2
59	446846.88	5007642.31	1.00	1	0	55.7	50.9	0.0	0.0	49.5	0.4	-2.7	0.0	0.0	17.2	-0.0	1.0	-9.8	-14.5
60	446846.59	5007641.30	1.00	1	0	47.1	42.3	0.0	0.0	49.0	0.4	-2.7	0.0	0.0	14.7	-0.0	1.0	-15.3	-20.1
61	446831.58	5007641.66	1.00	1	0	50.2	45.4	0.0	0.0	50.2	1.1	-2.1	0.0	0.0	0.0	-0.0	1.0	-0.1	-4.9
62	446831.49	5007641.32	1.00	1	0	53.8	49.0	0.0	0.0	50.0	0.6	-1.7	0.0	0.0	0.0	-0.0	1.0	3.8	-0.9
63	446831.65	5007641.95	1.00	1	0	54.0	49.2	0.0	0.0	50.4	0.6	-2.3	0.0	0.0	16.2	-0.0	1.0	-11.9	-16.7
64	446841.16	5007644.61	1.00	1	0	55.7	51.0	0.0	0.0	50.1	0.5	-2.8	0.0	0.0	15.5	-0.0	1.0	-8.5	-13.3
65	446840.05	5007645.06	1.00	1	0	34.4	29.6	0.0	0.0	50.2	0.5	-2.8	0.0	0.0	15.2	-0.0	1.0	-29.7	-34.4
66	446847.88	5007644.17	1.00	1	0	55.4	50.6	0.0	0.0	49.5	0.4	-2.7	0.0	0.0	15.9	-0.0	1.0	-8.7	-13.5
67	446845.33	5007642.07	1.00	1	0	54.4	49.7	0.0	0.0	49.7	0.4	-2.7	0.0	0.0	16.8	-0.0	1.0	-10.8	-15.6
68	446845.36	5007641.53	1.00	1	0	50.6	45.9	0.0	0.0	49.1	0.4	-2.7	0.0	0.0	15.1	-0.0	1.0	-12.3	-17.1
69	446853.89	5007626.53	1.00	2	0	34.8	30.0	0.0	0.0	48.1	2.7	-2.8	0.0	0.0	0.0	-0.0	2.0	-15.2	-20.0
70	446854.37	5007626.90	1.00	2	0	44.0	39.3	0.0	0.0	48.0	0.9	-2.8	0.0	0.0	0.0	-0.0	2.0	-4.1	-8.9
71	446845.96	5007643.89	1.00	2	0	26.3	21.5	0.0	0.0	49.2	9.5	-2.8	0.0	0.0	20.0	-0.0	2.0	-51.6	-56.4
72	446847.45	5007645.97	1.00	2	0	45.0	40.2	0.0	0.0	49.8	0.5	-2.7	0.0	0.0	16.4	-0.0	2.0	-21.1	-25.8
73	446845.52	5007644.93	1.00	2	0	25.7	20.9	0.0	0.0	49.3	9.7	-2.8	0.0	0.0	20.0	-0.0	2.0	-52.5	-57.3
74	446847.44	5007646.02	1.00	2	0	44.0	39.2	0.0	0.0	49.8	0.5	-2.7	0.0	0.0	16.4	-0.0	2.0	-22.0	-26.8
75	446846.78	5007641.95	1.00	2	0	27.5	22.7	0.0	0.0	49.0	9.3	-2.8	0.0	0.0	20.0	-0.0	2.0	-50.0	-54.8
76	446847.98	5007644.28	1.00	2	0	47.0	42.2	0.0	0.0	49.7	0.4	-2.7	0.0	0.0	17.0	-0.0	2.0	-19.4	-24.2

Line Source, ISO 9613, Name: "7a", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446854.09	5007613.19	1.00	0	0	75.7	75.7	0.0	0.0	45.0	0.2	-0.9	0.0	0.0	0.0	-0.0	-0.0	31.4	31.4
2	446860.55	5007603.30	1.00	0	0	75.7	75.7	0.0	0.0	42.6	0.2	-1.5	0.0	0.0	0.0	-0.0	-0.0	34.3	34.3
3	446864.15	5007597.78	1.00	0	0	66.3	66.3	0.0	0.0	41.0	0.2	-1.0	0.0	0.0	1.8	-0.0	-0.0	24.3	24.3
4	446864.56	5007636.33	1.00	0	0	74.0	74.0	0.0	0.0	47.7	0.3	-2.5	0.0	0.0	9.3	-0.0	-0.0	19.2	19.2
5	446858.66	5007630.11	1.00	0	0	74.6	74.6	0.0	0.0	47.1	0.3	-2.7	0.0	0.0	0.0	-0.0	-0.0	29.9	29.9
6	446865.88	5007596.52	1.00	0	0	69.8	69.8	0.0	0.0	40.5	0.2	-1.2	0.0	0.0	3.4	-0.0	-0.0	27.0	27.0
7	446853.69	5007624.89	1.00	0	0	72.2	72.2	0.0	0.0	46.6	0.3	-2.7	0.0	0.0	0.0	-0.0	-0.0	28.0	28.0
8	446851.20	5007622.30	1.00	0	0	67.8	67.8	0.0	0.0	46.5	0.3	-2.6	0.0	0.0	0.0	-0.0	-0.0	23.7	23.7
9	446871.47	5007644.55	1.00	0	0	71.3	71.3	0.0	0.0	48.6	0.4	-2.4	0.0	0.0	14.0	-0.0	-0.0	10.9	10.9
10	446868.72	5007641.04	1.00	0	0	71.6	71.6	0.0	0.0	48.2	0.3	-2.5	0.0	0.0	12.7	-0.0	-0.0	13.0	13.0
11	446850.70	5007619.87	1.00	0	0	70.4	70.4	0.0	0.0	46.2	0.3	-1.9	0.0	0.0	0.0	-0.0	-0.0	25.8	25.8
12	446864.46	5007636.22	1.00	1	0	68.2	68.2	0.0	0.0	48.1	0.3	-2.5	0.0	0.0	12.9	-0.0	1.0	8.3	8.3
13	446862.62	5007634.28	1.00	1	0	70.1	70.1	0.0	0.0	47.9	0.3	-2.6	0.0	0.0	0.0	-0.0	1.0	23.4	23.4
14	446859.49	5007630.98	1.00	1	0	72.6	72.6	0.0	0.0	47.6	0.3	-2.7	0.0	0.0	0.0	-0.0	1.0	26.4	26.4
15	446857.14	5007628.51	1.00	1	0	64.8	64.8	0.0	0.0	47.4	0.3	-2.7	0.0	0.0	0.0	-0.0	1.0	18.8	18.8
16	446857.64	5007629.03	1.00	1	0	65.5	65.5	0.0	0.0	48.2	0.4	-2.7	0.0	0.0	21.6	-0.0	1.0	-2.9	-2.9
17	446852.45	5007623.60	1.00	1	0	70.7	70.7	0.0	0.0	47.1	0.4	-2.6	0.0	0.0	0.0	-0.0	1.0	24.8	24.8
18	446850.56	5007621.27	1.00	1	0	61.4	61.4	0.0	0.0	47.1	0.4	-2.7	0.0	0.0	0.0	-0.0	1.0	15.5	15.5
19	446854.30	5007625.53	1.00	2	0	47.5	47.5	0.0	0.0	48.2	2.8	-2.8	0.0	0.0	0.0	-0.0	2.0	-2.6	-2.6
20	446854.74	5007625.99	1.00	2	0	56.8	56.8	0.0	0.0	48.2	0.9	-2.8	0.0	0.0	0.0	-0.0	2.0	8.5	8.5

Line Source, ISO 9613, Name: "7b", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446859.10	5007608.85	1.00	0	0	70.0	70.0	0.0	0.0	43.8	0.2	-2.3	0.0	0.0	0.0	-0.0	-0.0	28.3	28.3
2	446855.76	5007614.72	1.00	0	0	64.3	64.3	0.0	0.0	45.1	0.2	-2.0	0.0	0.0	0.0	-0.0	-0.0	21.0	21.0
3	446869.10	5007602.01	1.00	0	0	67.1	67.1	0.0	0.0	41.6	0.2	-1.4	0.0	0.0	4.9	-0.0	-0.0	21.9	21.9
4	446868.87	5007602.27	1.00	0	0	67.2	67.2	0.0	0.0	41.7	0.2	-1.8	0.0	0.0	4.8	-0.0	-0.0	22.3	22.3
5	446860.41	5007627.60	1.00	0	0	67.9	67.9	0.0	0.0	46.7	0.3	-2.7	0.0	0.0	0.0	-0.0	-0.0	23.6	23.6
6	446866.23	5007633.57	1.00	0	0	69.8	69.8	0.0	0.0	47.3	0.3	-2.4	0.0	0.0	11.2	-0.0	-0.0	13.5	13.5
7	446863.42	5007602.26	1.00	0	0	64.9	64.9	0.0	0.0	42.1	0.2	-2.1	0.0	0.0	4.8	-0.0	-0.0	19.9	19.9
8	446862.05	5007603.86	1.00	0	0	59.7	59.7	0.0	0.0	42.6	0.2	-2.0	0.0	0.0	0.0	-0.0	-0.0	18.9	18.9
9	446866.66	5007597.89	1.00	0	0	64.0	64.0	0.0	0.0	40.7	0.2	-1.6	0.0	0.0	4.2	-0.0	-0.0	20.5	20.5
10	446865.45	5007601.00	1.00	0	0	62.7	62.7	0.0	0.0	41.6	0.2	-1.8	0.0	0.0	4.8	-0.0	-0.0	17.9	17.9
11	446856.14	5007623.30	1.00	0	0	67.2	67.2	0.0	0.0	46.3	0.3	-2.7	0.0	0.0	0.0	-0.0	-0.0	23.3	23.3
12	446866.64	5007599.83	1.00	0	0	61.1	61.1	0.0	0.0	41.2	0.2	-1.8	0.0	0.0	4.9	-0.0	-0.0	16.5	16.5

Line Source, ISO 9613, Name: "7b", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
13	446854.31	5007617.44	1.00	0	0	65.0	65.0	0.0	0.0	45.6	0.3	-2.3	0.0	0.0	0.0	-0.0	-0.0	21.4	21.4
14	446870.21	5007637.67	1.00	0	0	60.8	60.8	0.0	0.0	47.8	0.3	-2.6	0.0	0.0	13.7	-0.0	-0.0	1.6	1.6
15	446872.11	5007639.70	1.00	0	0	66.1	66.1	0.0	0.0	48.0	0.3	-2.5	0.0	0.0	14.6	-0.0	-0.0	5.7	5.7
16	446853.86	5007620.13	1.00	0	0	63.7	63.7	0.0	0.0	46.0	0.3	-2.6	0.0	0.0	0.0	-0.0	-0.0	20.1	20.1
17	446873.96	5007641.75	1.00	0	0	60.7	60.7	0.0	0.0	48.2	0.3	-2.1	0.0	0.0	14.8	-0.0	-0.0	-0.6	-0.6
18	446875.02	5007643.09	1.00	0	0	63.2	63.2	0.0	0.0	48.4	0.4	-2.0	0.0	0.0	14.1	-0.0	-0.0	2.4	2.4
19	446860.35	5007627.54	1.00	1	0	59.7	59.7	0.0	0.0	47.9	0.3	-2.7	0.0	0.0	0.0	-0.0	1.0	13.3	13.3
20	446862.87	5007630.12	1.00	1	0	67.6	67.6	0.0	0.0	48.1	0.4	-2.7	0.0	0.0	0.0	-0.0	1.0	20.9	20.9
21	446866.24	5007633.58	1.00	1	0	65.0	65.0	0.0	0.0	48.4	0.4	-2.6	0.0	0.0	0.0	-0.0	1.0	17.9	17.9
22	446868.21	5007635.60	1.00	1	0	63.1	63.1	0.0	0.0	48.6	0.4	-2.6	0.0	0.0	12.7	-0.0	1.0	3.0	3.0
23	446860.75	5007627.94	1.00	1	0	60.5	60.5	0.0	0.0	48.6	0.4	-2.7	0.0	0.0	19.3	-0.0	1.0	-5.9	-5.9
24	446855.39	5007622.56	1.00	1	0	63.5	63.5	0.0	0.0	46.7	0.4	-2.5	0.0	0.0	0.0	-0.0	1.0	17.9	17.9
25	446853.87	5007620.17	1.00	1	0	63.1	63.1	0.0	0.0	46.6	0.3	-2.4	0.0	0.0	0.0	-0.0	1.0	17.5	17.5
26	446855.49	5007622.66	1.00	2	0	42.5	42.5	0.0	0.0	48.6	2.9	-2.8	0.0	0.0	0.0	-0.0	2.0	-8.1	-8.1
27	446855.93	5007623.09	1.00	2	0	42.5	42.5	0.0	0.0	48.5	2.8	-2.8	0.0	0.0	0.0	-0.0	2.0	-8.1	-8.1

Line Source, ISO 9613, Name: "7c", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446876.17	5007600.36	1.00	0	0	77.0	77.0	0.0	0.0	40.9	0.2	-0.7	0.0	0.0	6.0	-0.0	-0.0	30.7	30.7
2	446887.25	5007607.49	1.00	0	0	77.0	77.0	0.0	0.0	42.9	0.2	-1.3	0.0	0.0	5.9	-0.0	-0.0	29.3	29.3
3	446868.94	5007596.31	1.00	0	0	71.2	71.2	0.0	0.0	40.1	0.1	-1.2	0.0	0.0	5.5	-0.0	-0.0	26.7	26.7
4	446891.78	5007620.12	1.00	0	0	72.5	72.5	0.0	0.0	45.4	0.3	-0.9	0.0	0.0	4.6	-0.0	-0.0	23.1	23.1
5	446888.88	5007624.62	1.00	0	0	73.5	73.5	0.0	0.0	46.0	0.3	-0.7	0.0	0.0	11.2	-0.0	-0.0	16.7	16.7
6	446893.67	5007614.59	1.00	0	0	71.4	71.4	0.0	0.0	44.6	0.2	-1.7	0.0	0.0	5.1	-0.0	-0.0	23.2	23.2
7	446893.16	5007611.91	1.00	0	0	68.5	68.5	0.0	0.0	44.1	0.2	-1.7	0.0	0.0	5.6	-0.0	-0.0	20.2	20.2
8	446893.43	5007617.28	1.00	0	0	68.4	68.4	0.0	0.0	45.1	0.2	-2.1	0.0	0.0	4.8	-0.0	-0.0	20.4	20.4
9	446881.65	5007603.89	1.00	1	0	73.4	73.4	0.0	0.0	44.6	0.2	-1.7	0.0	0.0	0.0	-0.0	1.0	29.3	29.3
10	446885.80	5007606.56	1.00	1	0	71.5	71.5	0.0	0.0	45.0	0.3	-1.3	0.0	0.0	0.0	-0.0	1.0	26.6	26.6
11	446890.11	5007609.34	1.00	1	0	73.7	73.7	0.0	0.0	45.5	0.3	-1.0	0.0	0.0	0.0	-0.0	1.0	27.9	27.9
12	446891.83	5007620.05	1.00	1	0	39.9	39.9	0.0	0.0	46.0	6.5	-1.9	0.0	0.0	25.0	-0.0	1.0	-36.8	-36.8
13	446890.43	5007622.21	1.00	1	0	73.9	73.9	0.0	0.0	51.0	0.6	-2.8	0.0	0.0	24.7	-0.0	1.0	-0.6	-0.6
14	446887.54	5007626.71	1.00	1	0	64.0	64.0	0.0	0.0	50.7	0.6	-2.6	0.0	0.0	0.0	-0.0	1.0	14.3	14.3
15	446893.65	5007614.39	1.00	1	0	70.8	70.8	0.0	0.0	45.8	0.3	-0.5	0.0	0.0	0.0	-0.0	1.0	24.2	24.2
16	446893.79	5007616.23	1.00	1	0	61.7	61.7	0.0	0.0	45.8	0.3	-0.8	0.0	0.0	0.0	-0.0	1.0	15.4	15.4
17	446893.77	5007616.00	1.00	1	0	63.4	63.4	0.0	0.0	51.9	0.7	-2.6	0.0	0.0	24.0	-0.0	1.0	-11.5	-11.5
18	446893.05	5007611.67	1.00	1	0	66.9	66.9	0.0	0.0	45.8	0.3	-0.2	0.0	0.0	0.0	-0.0	1.0	20.0	20.0
19	446893.42	5007612.52	1.00	1	0	62.8	62.8	0.0	0.0	45.8	0.3	-0.3	0.0	0.0	0.0	-0.0	1.0	16.0	16.0
20	446893.64	5007616.80	1.00	1	0	64.8	64.8	0.0	0.0	45.7	0.3	-1.0	0.0	0.0	0.0	-0.0	1.0	18.8	18.8
21	446893.37	5007617.43	1.00	1	0	65.9	65.9	0.0	0.0	51.4	0.7	-2.8	0.0	0.0	24.1	-0.0	1.0	-8.4	-8.4
22	446885.39	5007606.30	1.00	2	0	72.6	72.6	0.0	0.0	46.2	0.4	-2.0	0.0	0.0	0.0	-0.0	2.0	26.0	26.0
23	446890.34	5007609.48	1.00	2	0	70.7	70.7	0.0	0.0	46.6	0.4	-1.5	0.0	0.0	0.0	-0.0	2.0	23.2	23.2
24	446892.53	5007610.89	1.00	2	0	61.9	61.9	0.0	0.0	46.8	0.4	-1.8	0.0	0.0	0.0	-0.0	2.0	14.5	14.5
25	446892.67	5007618.74	1.00	2	0	51.5	51.5	0.0	0.0	47.8	2.6	-2.3	0.0	0.0	0.0	-0.0	2.0	1.4	1.4
26	446890.71	5007621.78	1.00	2	0	57.5	57.5	0.0	0.0	48.2	2.8	-1.6	0.0	0.0	0.0	-0.0	2.0	6.1	6.1
27	446893.67	5007614.59	1.00	2	0	64.8	64.8	0.0	0.0	47.3	0.8	-1.8	0.0	0.0	0.0	-0.0	2.0	16.4	16.4
28	446893.16	5007611.91	1.00	2	0	61.8	61.8	0.0	0.0	47.0	0.8	-1.8	0.0	0.0	0.0	-0.0	2.0	13.8	13.8
29	446893.43	5007617.28	1.00	2	0	61.8	61.8	0.0	0.0	47.7	0.9	-1.9	0.0	0.0	0.0	-0.0	2.0	13.2	13.2

Line Source, ISO 9613, Name: "7d", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446883.29	5007630.28	1.00	0	0	73.5	73.5	0.0	0.0	46.7	0.3	-1.3	0.0	0.0	17.9	-0.0	-0.0	9.9	9.9
2	446877.65	5007634.76	1.00	0	0	69.7	69.7	0.0	0.0	47.3	0.3	-2.0	0.0	0.0	16.6	-0.0	-0.0	7.5	7.5
3	446875.28	5007636.64	1.00	0	0	65.9	65.9	0.0	0.0	47.6	0.3	-2.0	0.0	0.0	15.4	-0.0	-0.0	4.7	4.7
4	446874.38	5007637.36	1.00	0	0	60.6	60.6	0.0	0.0	47.7	0.3	-2.0	0.0	0.0	15.5	-0.0	-0.0	-0.9	-0.9
5	446874.87	5007641.89	1.00	0	0	68.1	68.1	0.0	0.0	48.2	0.3	-2.1	0.0	0.0	14.3	-0.0	-0.0	7.3	7.3
6	446876.04	5007643.34	1.00	0	0	62.3	62.3	0.0	0.0	48.4	0.4	-2.0	0.0	0.0	12.9	-0.0	-0.0	2.7	2.7
7	446873.85	5007638.43	1.00	0	0	66.3	66.3	0.0	0.0	47.8	0.3	-2.1	0.0	0.0	15.3	-0.0	-0.0	4.9	4.9
8	446873.73	5007640.03	1.00	0	0	65.0	65.0	0.0	0.0	48.0	0.3	-2.1	0.0	0.0	15.0	-0.0	-0.0	3.8	3.8
9	446883.86	5007629.83	1.00	1	0	72.3	72.3	0.0	0.0	50.3	0.5	-2.4	0.0	0.0	0.0	-0.0	1.0	23.0	23.0
10	446878.79	5007633.85	1.00	1	0	69.2	69.2	0.0	0.0	49.7	0.5	-2.7	0.0	0.0	12.1	-0.0	1.0	8.7	8.7
11	446886.74	5007627.55	1.00	2	0	37.0	37.0	0.0	0.0	50.9	11.6	-2.8	0.0	0.0	25.0	-0.0	2.0	-49.7	-49.7

Line Source, ISO 9613, Name: "7d", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
12	446882.74	5007630.72	1.00	2	0	66.5	66.5	0.0	0.0	50.6	0.6	-2.8	0.0	0.0	0.0	-0.0	2.0	16.2	16.2
13	446881.03	5007632.08	1.00	2	0	62.9	62.9	0.0	0.0	50.7	0.6	-2.8	0.0	0.0	0.0	-0.0	2.0	12.4	12.4
14	446879.62	5007633.19	1.00	2	0	63.6	63.6	0.0	0.0	50.7	0.6	-2.8	0.0	0.0	0.0	-0.0	2.0	13.2	13.2
15	446878.42	5007634.14	1.00	2	0	63.4	63.4	0.0	0.0	50.7	0.6	-2.8	0.0	0.0	0.0	-0.0	2.0	12.9	12.9
16	446877.26	5007635.07	1.00	2	0	63.4	63.4	0.0	0.0	50.8	0.6	-2.8	0.0	0.0	0.0	-0.0	2.0	12.8	12.8
17	446876.65	5007635.55	1.00	2	0	64.3	64.3	0.0	0.0	51.3	0.6	-2.7	0.0	0.0	14.6	-0.0	2.0	-1.7	-1.7

vert. Area Source, ISO 9613, Name: "3b", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446877.93	5007619.28	5.75	0	0	80.3	80.3	3.0	0.0	45.0	0.4	-1.6	0.0	0.0	9.1	-0.0	-0.0	30.4	30.4
2	446877.93	5007619.28	5.13	0	0	74.3	74.3	3.0	0.0	45.0	0.4	-1.5	0.0	0.0	16.3	-0.0	-0.0	17.1	17.1

vert. Area Source, ISO 9613, Name: "3c", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446877.38	5007619.34	5.75	0	0	80.3	80.3	3.0	0.0	45.0	0.4	-1.6	0.0	0.0	9.9	-0.0	-0.0	29.6	29.6
2	446877.38	5007619.34	5.13	0	0	74.3	74.3	3.0	0.0	45.0	0.4	-1.5	0.0	0.0	16.5	-0.0	-0.0	17.0	17.0

vert. Area Source, ISO 9613, Name: "4b", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446874.80	5007612.84	5.75	0	0	75.6	75.6	3.0	0.0	43.8	0.3	-1.8	0.0	0.0	8.4	-0.0	-0.0	27.9	27.9
2	446874.80	5007612.84	5.13	0	0	69.6	69.6	3.0	0.0	43.8	0.3	-1.7	0.0	0.0	13.5	-0.0	-0.0	16.7	16.7

vert. Area Source, ISO 9613, Name: "4c", ID: "-"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	446874.30	5007612.94	5.75	0	0	75.6	75.6	3.0	0.0	43.8	0.3	-1.7	0.0	0.0	9.6	-0.0	-0.0	26.6	26.6
2	446874.30	5007612.94	5.13	0	0	69.6	69.6	3.0	0.0	43.8	0.3	-1.7	0.0	0.0	13.9	-0.0	-0.0	16.2	16.2

STAMSON 5.0            NORMAL REPORT            Date: 29-02-2024 12:45:37  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2BD\_in.te                            Time Period: 1 hours  
 Description:

Road data, segment # 1: Main

-----  
 Car traffic volume : 354 veh/TimePeriod  
 Medium truck volume : 20 veh/TimePeriod  
 Heavy truck volume : 20 veh/TimePeriod  
 Posted speed limit : 60 km/h  
 Road gradient : 0 %  
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Main

-----  
 Angle1 Angle2 : -64.00 deg 0.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 43.00 m  
 Receiver height : 4.50 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 Reference angle : 0.00

↑  
 Results segment # 1: Main

-----  
 Source height = 1.50 m

ROAD (0.00 + 54.14 + 0.00) = 54.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-64	0	0.57	66.38	0.00	-7.18	-5.05	0.00	0.00	0.00	54.14

-----

Segment Leq : 54.14 dBA

Total Leq All Segments: 54.14 dBA

↑

TOTAL Leq FROM ALL SOURCES: 54.14

↑  
 ↑

---

**Appendix C**  
**Plans & Drawings**

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Figure C1  
Area Plan  
Proposed Car  
Wash Facility

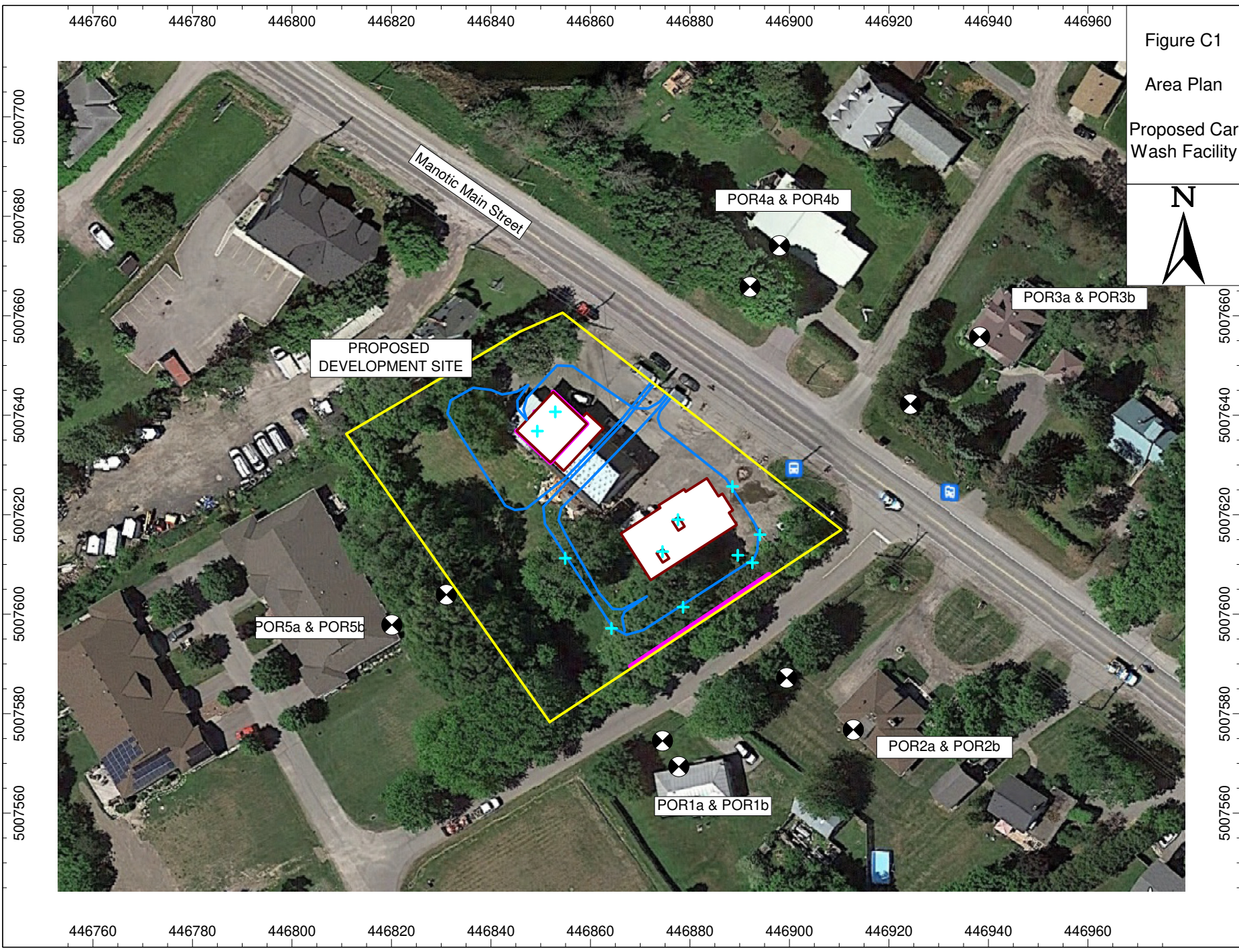




Figure C2a: Existing Site Plan

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PAS POUR CONSTRUCTION

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**PROJECT TEAM / EQUIPE DU PROJET :**

**CIVIL ENGINEER**

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https://www.mcintoshperry.com/

**STRUCTURAL ENGINEER**

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**MECHANICAL ENGINEER**

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https://mirton.com/

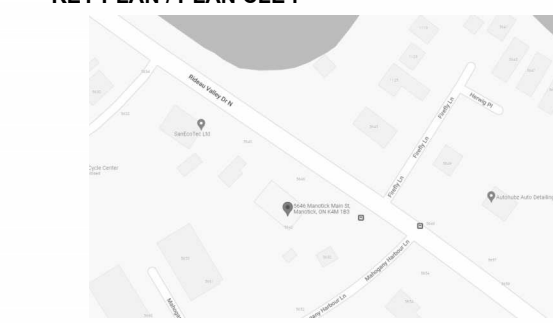
**ELECTRICAL ENGINEER**

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2000 Thurston Dr #31, Ottawa, ON K1G 4K7  
https://mirton.com/

**LANDSCAPE ARCHITECT**

NAK Design Strategies  
1285 Wellington St. W, Ottawa, ON K1Y 3A8  
https://www.nakdesignstrategies.com/

**KEY PLAN / PLAN CLÉ :**



**CLIENT :**

**HAWKINS PROPERTIES**

650a Eagleson Rd, Kanata, ON K2M 1H4

Tel : (613) 859-2819

REVISION	DESCRIPTION	DATE
1.12	ISSUED FOR SPA R5	24-13-09
1.11	ISSUED FOR SPA R4	24-02-08
	revision	description
		date

**PROJECT NAME / NOM DU PROJET :**

**5646 & 5650  
Manotick Main**

5646 & 5650 Manotick Main St, Manotick, ON

K4M 1B3

**DRAWING NAME / NOM DU DESSIN :**

**SITE PLAN - EXISTING**

**DRAWING INFORMATION /**

**INFORMATION DU DESSIN :**

PROJECT NO. / NO. DE PROJET : **22199**

DATE : **02/07/24**

DRAWN BY / DESSINÉ PAR : **MS**

REVIEWED BY / VÉRIFIÉ PAR : **ES**

SCALE / ÉCHELLE : **As indicated**

PROJECT PHASE / PHASE DU PROJET : **1**

DWG NO. / NO. DESSIN : **A050.1**

REVISION NO. / NO. DE RÉVISION : **1.12**



**1 SITE PLAN - EXISTING**  
A050.1 1 : 200

**SITE CONTEXT**

**LEGEND**

**SURFACES**

- GRASS
- RIVERSTONE
- CONCRETE PAVERS
- POURED CONCRETE
- ASPHALT PAVING
- PROPOSED NEW BUILDING
- EXISTING BUILDING TO REMAIN
- EXISTING BUILDING TO BE DEMOLISHED

**BOUNDARY INFO**

- PROPERTY LINE
- SETBACK LINE
- EXISTING FENCE
- NEW FENCE
- OVERHEAD WIRES
- RETAINING WALL

**VEGETATION**

- TREE: EXISTING TO REMAIN
- TREE: EXISTING TO BE REMOVED
- TREE: NEW PROPOSED
- SHRUB: EXISTING TO REMAIN
- SHRUB: NEW PROPOSED

**SYMBOLS**

- DIRECTIONAL ARROWS
- BUILDING ACCESS
- BUILDING EGRESS
- SIAMESE CONNECTION
- UTILITY POLE
- FIRE HYDRANT
- CATCH BASIN / MANHOLE
- DEPRESSED CURB
- LANDSCAPE LIGHT
- LIGHT POLE
- WALL MOUNTED LIGHT
- EXISTING GRADE ELEVATION
- PROPOSED GRADE ELEVATION
- LOT CORNERS
- BIKE PARKING
- CAR PARKING
- BF PARKING
- QUEUEING SPACE DIMENSION

**GENERAL NOTES**

- NOTE A :** ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS, INCLUDING OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS. ANY DISCREPANCIES BETWEEN DRAWINGS WILL BE REPORTED TO THE PROJECT LEAD IMMEDIATELY FOR CLARIFICATION PRIOR TO COMMENCING ANY CONSTRUCTION.
- NOTE B :** ALL GENERAL SITE INFORMATION AND CONDITIONS HAVE BEEN COMPILED FROM DWG. CSI 22-3310 - 5646 MANOTICK MAIN STREET OTTAWA TOPO (RF), PRELIMINARY.
- NOTE C :** CONTRACTOR IS RESPONSIBLE TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL ERRORS AND / OR OMISSIONS TO THE ARCHITECT.
- NOTE D :** REFER TO LANDSCAPE PLAN FOR ALL EXTERIOR LANDSCAPING.
- NOTE E :** DO NOT SCALE DRAWINGS.
- NOTE F :** ALL CONTRACTORS MUST COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS.

**BOUNDARY INFO**

TOPOGRAPHIC BOUNDARY INFORMATION OF LOT 4, CONCESSION A (BROKEN FRONT), GEOGRAPHIC TOWNSHIP OF NORTH GOWER PREPARED BY MCINTOSH PERRY SURVEYING INC.



**PROJECT INFORMATION**

**SITE SUMMARY**  
ADDRESS: 5646 Manotick Main Street  
CURRENT ZONING: RC1  
SITE AREA: 4078.48 m²  
PROPOSED USE: RC1  
BUILDING AREA: 361.7 m² / 3408.9 sqft

ZONING SUMMARY	REQUIRED	PROPOSED
LOT AREA	1350.00 m²	4078.48 m²
LOT WIDTH	20.00 m	n/a
MIN. LOT WIDTH	n/a	n/a
MAX. BUILDING HEIGHT	11.00 m	6.00 m
MAX. PARAPET HEIGHT	Above max. building	0.50 m

SET BACKS	REQUIRED	PROPOSED
- FRONT YARD	7.50 m (min.) n/a (max.)	8.50 m
- CORNER SIDE YARD	7.50 m (min.) n/a (max.)	12.64 m
- INTERIOR SIDE YARD	3.00 m (min.) 4.50 m (max.)	13.90 m (min.)
- REAR YARD	7.50 m (min.) n/a (max.)	28.19 m (min.) n/a (max.)
- ADDITIONAL REQ	0.00 m	0.00 m

VEHICULAR PARKING	REQUIRED	PROPOSED
MIN LANDSCAPED AREA	n/a	n/a
LAND COVERAGE	30% Max.	8.86%
MIN PARKING SPACES	10 per 100m² - 20%	20
MIN VISITOR PARKING SPACES	n/a	n/a
MIN ACCESSIBLE PRKG SPACES	1	1

BICYCLE PARKING	REQUIRED	PROPOSED
MIN PARKING SPACES	n/a	3

WASTE CONTAINERS	REQUIRED	PROPOSED
GARBAGE (0.11 y³ / unit)	TBH	TBH
RECYCLING (0.038 y³ / unit)	TBH	TBH
ORGANICS	TBH	TBH

AMENITY AREA	REQUIRED	PROPOSED
PRIVATE	TBH	TBH
COMMUNAL	TBH	TBH

BUILDING SUMMARY	UNITS	GFA - OBC	GFA - CITY
MIN PARKING SPACES	n/a	316.70 m²	316.70 m²

OUTDOOR REFUSE AREA	REQUIRED	PROPOSED
SETBACK	9.00 m	26.92 m
LOT LINE ABUTTING A PUBLIC STREET		
OTHER LOT LINES	3.00 m	22.70 m
		41.19 m
		22.97 m

QUEUEING SPACES	REQUIRED	PROPOSED
SETBACK	3.00 m	3.00 m
RESIDENTIAL ZONE	3.00 m	3.00 m

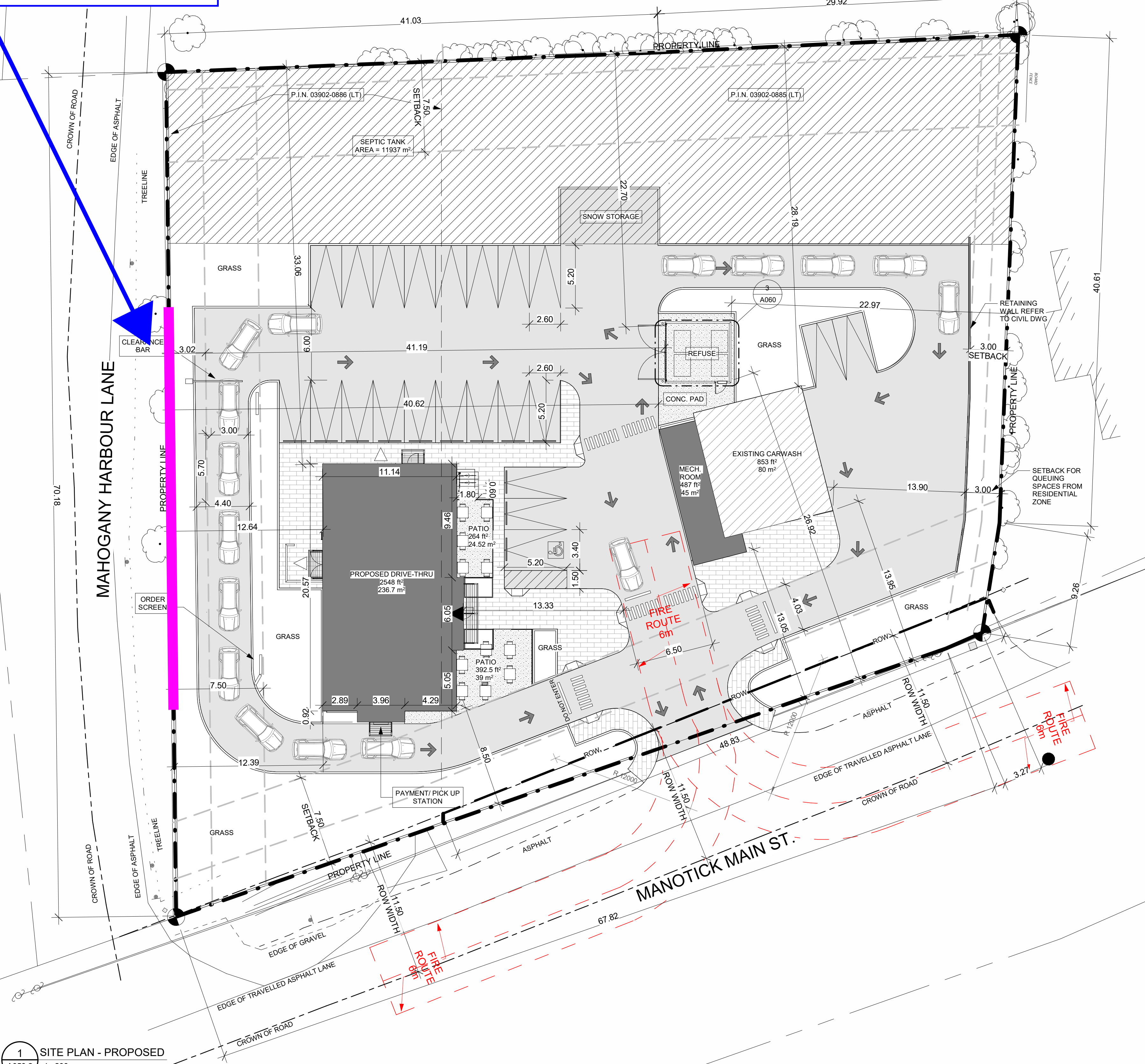
MIN. NUMBER OF QUEUEING SPACES	REQUIRED	PROPOSED
CAR WASH	5	5
DRIVE-THRU REST. BEFORE ORDER BOARD	7	7
TOTAL	11	10



Figure C2b: Proposed Site Plan

NOT FOR CONSTRUCTION /  
PAS POUR CONSTRUCTION

Location of Acoustic Barrier as recommended by Acoustic Assessment Report:  
Minimum length: 35 m  
Minimum height: 1.8 m above grade



1 SITE PLAN - PROPOSED  
A050.2 1:200

**SITE CONTEXT**

LEGEND	
<b>SURFACES</b>	
[Symbol]	GRASS
[Symbol]	RIVERSTONE
[Symbol]	CONCRETE PAVERS
[Symbol]	POURED CONCRETE
[Symbol]	ASPHALT PAVING
[Symbol]	PROPOSED NEW BUILDING
[Symbol]	EXISTING BUILDING TO REMAIN
[Symbol]	EXISTING BUILDING TO BE DEMOLISHED
<b>LINES</b>	
[Symbol]	PROPERTY LINE
[Symbol]	SETBACK LINE
[Symbol]	EXISTING FENCE
[Symbol]	NEW FENCE
[Symbol]	OVERHEAD WIRES
[Symbol]	RETAINING WALL
<b>VEGETATION</b>	
[Symbol]	TREE: EXISTING TO REMAIN
[Symbol]	TREE: EXISTING TO BE REMOVED
[Symbol]	TREE: NEW PROPOSED
[Symbol]	SHRUB: NEW PROPOSED
<b>SYMBOLS</b>	
[Symbol]	DIRECTIONAL ARROWS
[Symbol]	BUILDING ACCESS
[Symbol]	BUILDING EGRESS
[Symbol]	SIAMESE CONNECTION
[Symbol]	UTILITY POLE
[Symbol]	FIRE HYDRANT
[Symbol]	CATCH BASIN / MANHOLE
[Symbol]	DEPRESSED CURB
[Symbol]	LANDSCAPE LIGHT
[Symbol]	LIGHT POLE
[Symbol]	WALL MOUNTED LIGHT
[Symbol]	EXISTING GRADE ELEVATION
[Symbol]	PROPOSED GRADE ELEVATION
[Symbol]	LOT CORNERS
<b>PARKING</b>	
[Symbol]	BIKE PARKING H: HORIZONTAL 0.6M x 1.8M V: VERTICAL 0.5M x 1.5M S: STACKED 0.37M x 1.5M
[Symbol]	CAR PARKING R: RESIDENTIAL V: VISITOR
[Symbol]	BF PARKING (TYPE A) R: RESIDENTIAL V: VISITOR
[Symbol]	QUEUING SPACE DIMENSION

**GENERAL NOTES**

**NOTE A:** ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS, INCLUDING OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS. ANY DISCREPANCIES BETWEEN DRAWINGS WILL BE REPORTED TO THE PROJECT LEAD IMMEDIATELY FOR CLARIFICATION PRIOR TO COMMENCING ANY CONSTRUCTION.

**NOTE B:** ALL GENERAL SITE INFORMATION AND CONDITIONS HAVE BEEN COMPILED FROM DWG. CSI 22-3310 - 5646 MANOTICK MAIN STREET OTTAWA TOPO (RF) PRELIMINARY.

**NOTE C:** CONTRACTOR IS RESPONSIBLE TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL ERRORS AND / OR OMISSIONS TO THE ARCHITECT.

**NOTE D:** REFER TO LANDSCAPE PLAN FOR ALL EXTERIOR LANDSCAPING.

**NOTE E:** DO NOT SCALE DRAWINGS.

**NOTE F:** ALL CONTRACTORS MUST COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS.

**BOUNDARY INFO**

TOPOGRAPHIC BOUNDARY INFORMATION OF LOT 4, CONCESSION A (BROKEN FRONT), GEOGRAPHIC TOWNSHIP OF NORTH GOWER PREPARED BY MCINTOSH PERRY SURVEYING INC.



**PROJECT INFORMATION**

SITE SUMMARY	
ADDRESS	5646 Manotick Main Street
CURRENT ZONING	RC1
SITE AREA	4078.48 m <sup>2</sup>
PROPOSED USE	RC1
BUILDING AREA	361.7 m <sup>2</sup> / 3408.9 sqft

ZONING SUMMARY		REQUIRED	PROPOSED
LOT AREA	1350.00 m <sup>2</sup>	4078.48 m <sup>2</sup>	n/a
LOT WIDTH	20.00 m	n/a	n/a
MIN. LOT WIDTH	n/a	n/a	n/a
MAX. BUILDING HEIGHT	11.00 m	6.00 m	6.00 m
MAX. PARAPET HEIGHT	0.00 m	0.50 m	0.50 m
<b>SET BACKS</b>			
- FRONT YARD	7.50 m (min.)	8.50 m	n/a (max.)
- CORNER SIDE YARD	7.50 m (min.)	12.64 m	n/a (max.)
- INTERIOR SIDE YARD	3.00 m (min.)	13.90 m (min.)	4.50 m (max.)
- REAR YARD	7.50 m (min.)	28.19 m (min.)	n/a (max.)
- ADDITIONAL REQ	0.00 m	0.00 m	
MIN LANDSCAPED AREA	n/a	n/a	
LAND COVERAGE	30% Max.	8.86%	
<b>VEHICULAR PARKING</b>			
MIN PARKING SPACES	10 per 100m <sup>2</sup> - 20%	20	
MIN VISITOR PARKING SPACES	n/a	n/a	
MIN ACCESSIBLE PRKG SPACES	1	1	
<b>BIKE PARKING</b>			
MIN PARKING SPACES	n/a	3	
<b>WASTE CONTAINERS</b>			
GARBAGE (0.11 y <sup>3</sup> / unit)	TBH	TBH	
RECYCLING (0.038 y <sup>3</sup> / unit)	TBH	TBH	
ORGANICS	TBH	TBH	
<b>AMENITY AREA</b>			
PRIVATE	TBH	TBH	
COMMUNAL	TBH	TBH	

BUILDING SUMMARY			
	UNITS	GFA - OBC	GFA - CITY
SETBACK	n/a	316.70 m <sup>2</sup>	316.70 m <sup>2</sup>
LOT LINE ABUTTING A PUBLIC STREET	9.00 m	26.92 m	
OTHER LOT LINES	3.00 m	22.70 m	41.19 m
QUEUING SPACES		22.97 m	
SETBACK	REQUIRED	PROPOSED	
RESIDENTIAL ZONE	3.00 m	3.00 m	
<b>MIN. NUMBER OF QUEUING SPACES</b>			
CAR WASH	REQUIRED	PROPOSED	
DRIVE-THRU REST. BEFORE ORDER BOARD	5	5	
TOTAL	7	7	
	11	10	

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**PROJECT TEAM / EQUIPE DU PROJET :**

**CIVIL ENGINEER**  
McIntosh Perry Consulting Engineers Ltd.  
215 Merton Rd. #104, Napanee, ON K2H 9C1  
https://www.mcintoshperry.com/

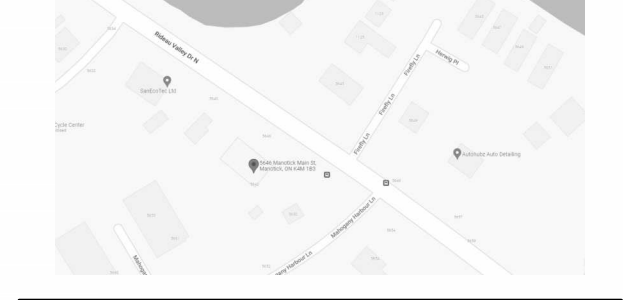
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https://www.leakor.com/

**MECHANICAL ENGINEER**  
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https://milton.com/

**LANDSCAPE ARCHITECT**  
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1285 Wellington St. W, Ottawa, ON K1Y 3A8  
https://www.nakdesignstrategies.com/

**KEY PLAN / PLAN CLÉ :**



**CLIENT :**

**HAWKINS PROPERTIES**

650a Eagleson Rd, Kanata, ON K2M 1H4  
Tel : (613) 859-2819

1.12	ISSUED FOR SPA R5	24-13-09
1.11	ISSUED FOR SPA R4	24-02-08
1.10	ISSUED FOR PERMIT	24-01-26
1.9	ISSUED FOR SPA R3	23-12-12
1.8	CO-ORDINATION	23-11-07
1.7	CO-ORDINATION	23-10-30
1.6	ISSUED FOR SPA R2	23-10-17
1.5	CO-ORDINATION	23-10-10
1.4	CO-ORDINATION	23-09-11
1.3	CO-ORDINATION	23-08-28
1.2	CO-ORDINATION	23-08-17
1.1	CO-ORDINATION	23-08-08
1.0	ISSUED FOR SPA	23-05-24
revision	description	date

**PROJECT NAME / NOM DU PROJET :**

**5646 & 5650 Manotick Main**

5646 & 5650 Manotick Main St, Manotick, ON K4M 1B3

**DRAWING NAME / NOM DU DESSIN :**

**SITE PLAN - PROPOSED**

**DRAWING INFORMATION / INFORMATION DU DESSIN :**

PROJECT NO. / NO. DE PROJET : **22199**

DATE : **2023-08-08**

DRAWN BY / DESSINÉ PAR : **M.S.**

REVIEWED BY / VÉRIFIÉ PAR : **LaG**

SCALE / ÉCHELLE : **As Indicated**

PROJECT PHASE / PHASE DU PROJET : **1**

DWG NO. / NO. DESSIN : **A050.2**

REVISION NO. / NO. DE RÉVISION : **1.12**



Figure C3

Equipment Location Plan

Proposed Car Wash Facility

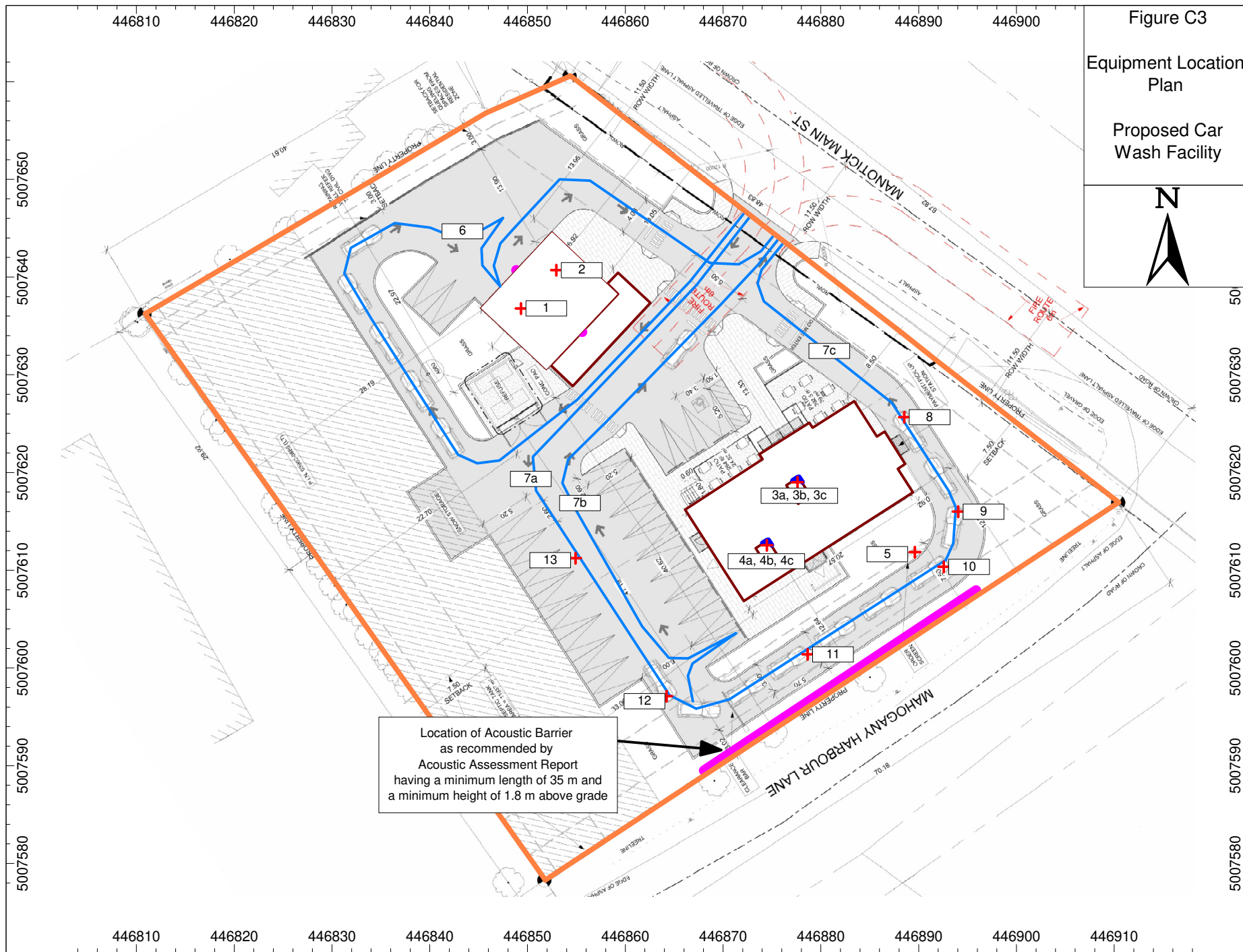
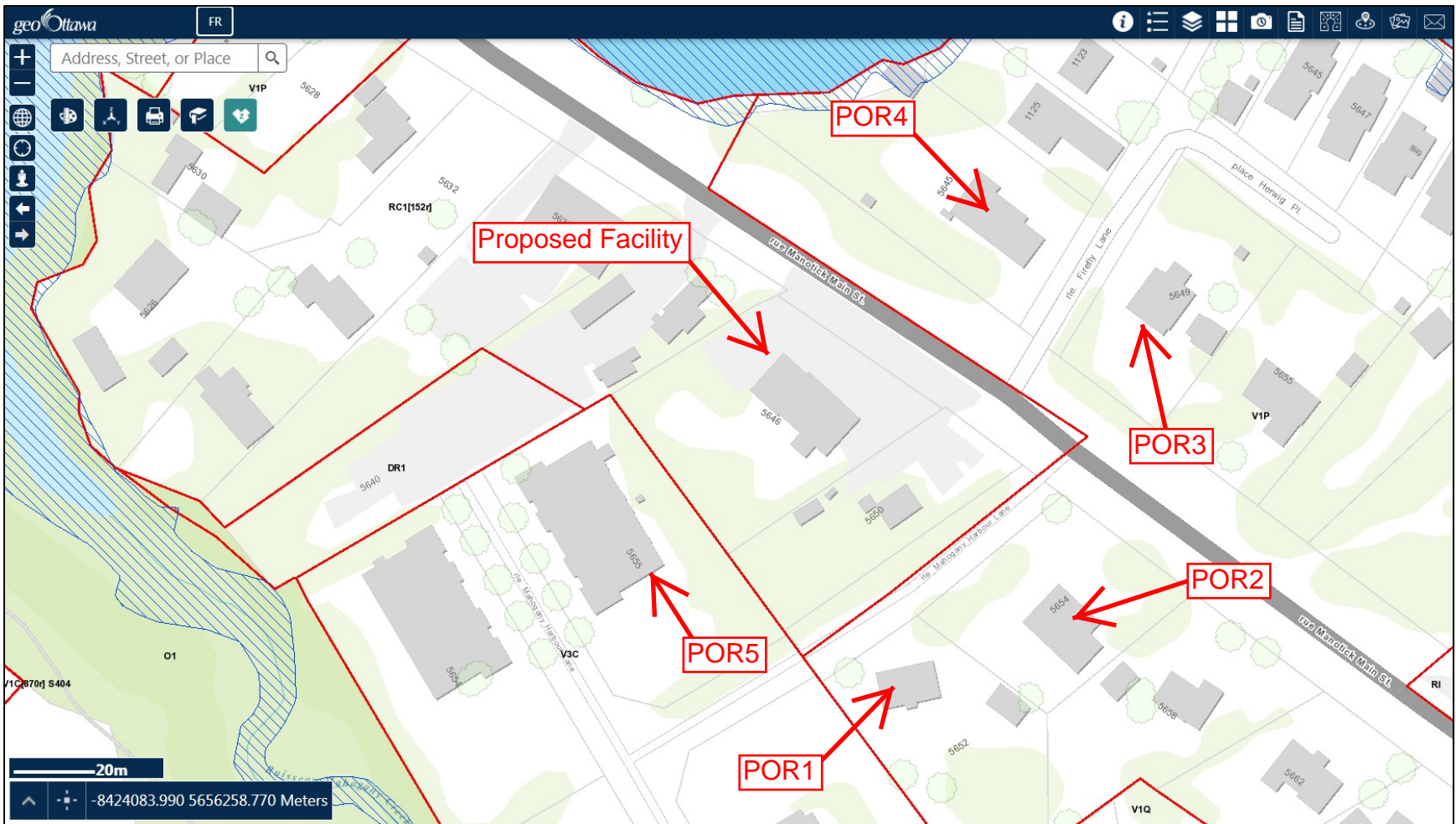


Figure C4: Partial Zoning Plan



Reference: <https://maps.ottawa.ca/geottawa/>

	(I) Zone Name	(II) Zone Code
Residential Zones	(1) Residential First Density Zone	R1
	(2) Residential Second Density Zone	R2
	(3) Residential Third Density Zone	R3
	(4) Residential Fourth Density Zone	R4
	(5) Residential Fifth Density Zone	R5
	(6) Mobile Home Park Zone	RM
Institutional zones	(7) Minor Institutional Zone	I1
	(8) Major Institutional Zone	I2
Open space and leisure zones	(9) Parks and Open Space Zone	O1
	(10) Community Leisure Facility Zone	L1
	(11) Major Leisure Facility Zone	L2
	(12) Central Experimental Farm Zone	L3
Environmental zone	(13) Environmental Protection Zone	EP
Commercial/Mixed use zones	(14) Local Commercial Zone	LC
	(15) General Mixed Use Zone	GM
	(16) Traditional Mainstreet Zone	TM
	(17) Arterial Mainstreet Zone	AM
	(18) Mixed Use Centre Zone	MC
	(19) Mixed Use Downtown Zone	MD
Industrial zones	(20) Business Park Industrial Zone	IP
	(21) Light Industrial Zone	IL
	(22) General Industrial Zone	IG
	(23) Heavy Industrial Zone	IH

	(I) Zone Name	(II) Zone Code
Transportation zones	(24) Air Transportation Facility Zone	T1
	(25) Ground Transportation Facility Zone	T2
Rural zones	(26) Agricultural Zone	AG
	(27) Mineral Extraction Zone	ME
	(28) Mineral Aggregate Reserve Zone	MR
	(29) Rural Commercial Zone	RC
	(30) Rural General Industrial Zone	RG
	(31) Rural Heavy Industrial Zone	RH
	(32) Rural Institutional Zone	RI
	(33) Rural Residential Zone	RR
	(34) Rural Countryside Zone	RU
	(35) Village Mixed Use Zone	VM
	(36) Village Residential First Density Zone	V1
(37) Village Residential Second Density Zone	V2	
(38) Village Residential Third Density Zone	V3	
Other zones	(39) Development Reserve Zone	DR

## Section 36

Subzones are created by adding a number or a capital letter to the primary zone code, and have the effect of modifying the uses or the regulations of the primary zone to the extent set out in the text of the provisions for that subzone.

## Section 37

Exception zones are created by adding a number in square brackets, e.g. [1], to the zone code on the zoning maps, and that have the effect of:

- (1) allowing a use that would not be permitted otherwise;
- (2) prohibiting a use that would be permitted otherwise; or
- (3) incorporating other modifications to the zoning by-law as are set out in the table for that exception, while retaining the un-modified provisions of the primary zone or subzone, as the case may be.

## Section 38



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