


**Noise Feasibility Study,
Proposed Residential Development
5150 Wellington Road 27
(Rockwood) Township of Guelph-Eramosa, Ontario**

Prepared for:

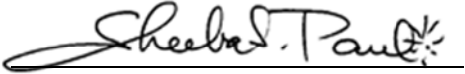
North Rockwood Developments Inc.
143 Dennis Street
P.O. Box 760
Rockwood, Ontario
N0B 2K0

Prepared by



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Yvonne Lo, B.A.Sc., P.Eng

Reviewed by



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January 31, 2020

HGC Project No.: 01800795

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1 Introduction & Summary

HGC Engineering was retained by North Rockwood Developments Inc. to conduct a noise feasibility study for their proposed residential development to be located at 5150 Wellington County Road 27, in Rockwood, Township of Guelph/Eramosa, Ontario. There is a GO Transit/Metrolinx railway line that runs further to the south of the site. The development will consist of blocks of townhouses and an associated roadway. The study is required by the Municipality as part of their planning and approvals process.

This study is being updated to reflect the latest grading plan prepared by GM BluePlan Engineering dated January 2020.

The primary noise sources impacting the site were determined to be road traffic on Wellington County Road 27 with secondary contributions from rail traffic on the GO Transit/Metrolinx railway line, leased and operated by Goderich-Exeter Railway (GEXR). Relevant road and rail traffic data was obtained from the County of Wellington, and HGC Engineering project files originally obtained from GEXR personnel and GO Transit/Metrolinx personnel. The data was used to predict future traffic sound levels at the various locations of the proposed dwelling facades and in rear yard outdoor living areas. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation and Parks (MECP) and the Municipality.

The sound level predictions indicate that the future road traffic sound levels will exceed MECP guidelines at the proposed dwelling units. With suitable noise control measures integrated into the design of buildings, it is feasible to achieve the indoor MECP guideline sound levels. Acoustic barriers are required for the rear yards of the dwelling units with flanking exposure to Wellington County Road 27. Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant is required for the dwelling units closest to Wellington County Road 27. Warning clauses are also recommended in order to inform future owners/tenants of the sound level excesses and the proximity to existing institutional and emergency facilities.



2 Site Description & Noise Sources

The site is located on the west side of Wellington County Road 27. Figure 1 is a key plan showing the location of the proposed site. A proposed grading plan of the development prepared by GM BluePlan dated January 2020 is shown as Figure 2, also showing prediction locations. The proposed development will include blocks of townhouse units for a total of 51 units.

A site visit was made by HGC Engineering personnel on January 16, 2019 to make observations of the acoustic environment and to identify the significant noise sources in the vicinity. Road traffic on Wellington County Road 27 and rail traffic on the GO Transit/Metrolinx/GEXR railway line were found to be the dominant sound sources. The subject site is currently vacant. There are existing residential uses south of the subject site and proposed residential uses to the north and west. The Sacred Heart Catholic School is located south of the site separated by a driveway and parking areas. An Ontario Provincial Police station and Rockwood Fire Station #20 is located to the east of the proposed development. Noise was not audible from the fire station, police station and the existing school over traffic noise during the site visit. Nevertheless, due to the proximity of the site to existing institutional and emergency facilities, it is recommended that a noise warning clause to identify that such institutional and fire station uses may be audible at times be included in the property and tenancy agreements, as described in Section 5.4. There are no other stationary sources of sound within 500 meters of the subject site.

The GO Transit/Metrolinx railway right of way is located more than 75 meters from the closest proposed dwelling, thus ground-borne vibration measurements are not required.

3 Noise Level Criteria

3.1 Road and Rail Traffic Noise

Guidelines for acceptable levels of road and rail traffic noise impacting residential developments are given in the MECP publication NPC-300, “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, Part C release date October 21, 2013, and are listed in Table I below. The values in Table I are energy equivalent (average) sound levels [LEQ] in units of A-weighted decibels [dBA].

Table I: MECP Road and Rail Traffic Noise Criteria (dBA)

Space	Daytime $L_{EQ}(16 \text{ hour})$ Road / Rail	Nighttime $L_{EQ}(8 \text{ hour})$ Road / Rail
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA / 40 dBA	45 dBA / 40 dBA
Inside Bedrooms	45 dBA / 40 dBA	40 dBA / 35 dBA

Daytime refers to the period between 07:00 and 23:00, while night-time refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The MECP guidelines allow the daytime sound levels in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

Indoor guidelines are 5 dBA more stringent for rail noise than for road noise, to account for the low frequency (rumbling) character of locomotive sound, and its greater potential to transmit through exterior wall/window assemblies.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where night-time sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom or living/dining room windows exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning by the occupant is required when night-time sound levels at bedroom or living/dining room windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom or living/dining room windows are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window night-time sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road and rail traffic noise. Sound attenuating building

constructions are required when the night-time sound level is greater than 55 dBA or greater than 60 dBA during the daytime due to road and rail traffic noise.

Warning clauses to notify future residents of possible excesses are also required when night-time sound levels exceed 50 dBA at the plane of the bedroom or living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom or living/dining room window due to road and rail traffic.

The railways also provide minimum requirements for safety as well as sound and vibration for proposed residential developments located near their right-of-way. Appendix A provides GO Transit/Metrolinx principal mainline requirements.

4 Traffic Noise Predictions

4.1 Road Traffic

Road traffic data for Wellington County Road 27 was obtained from the County of Wellington in the form of Average Annual Daily Traffic (AADT) information, and is provided in Appendix B. An AADT of 5 232 vehicles per day was applied. Commercial vehicle percentages of 5.5% medium trucks and 6.6% heavy trucks was included in the analysis. A posted speed limit of 60 km/h was used along with a day/night split of 90%/10%. Traffic volumes were conservatively assumed to grow at a typical rate of 2.0% per year to the year of 2030. The resulting future traffic volumes are listed in Table II.

Table II: Projected Road Traffic Data for 2030

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Wellington Road 27	Daytime	5 461	342	410	6 213
	Night-time	607	38	46	690
	Total	6 068	380	456	6 904

4.2 Rail Traffic

Rail traffic data for the GEXR Guelph Subdivision were obtained from HGC Engineering project files for recent projects in the area, originally obtained from GEXR railway personnel and Metrolinx personnel and are attached in Appendix B. This line is used for passenger and freight operations and is classified as a principal main track. The maximum permissible train speed in the area of the site is 89 kph (55 mph) for freight trains and 113 kph (70 mph) for passenger trains. In conformance with GEXR/Metrolinx assessment requirements, the maximum speeds, maximum number of cars and locomotives per train were used in the traffic noise analysis to yield a worse case estimate of train noise. The data was projected to the year 2030 using a growth rate of 2.5% per year. Table III summarises the GEXR and GO Transit rail traffic data used in the analysis.

Table III: GEXR and GO Rail Traffic Data Projected to Year 2030

Type of Train	Maximum Number of Cars	Maximum Speed (km/h)	Maximum Number of Locomotives	Volume Day/Night
Freight	75	89	2	2.8/0
GO Transit	12	113	1	11.3/1
Passenger (VIA)	4	113	1	5.5/0

4.3 Road and Rail Traffic Noise Prediction

To assess the levels of road and rail traffic noise which will impact the site in the future, predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Sample STAMSON output is included in Appendix C. Whistles are not sounded in the area and therefore have not been included in the analysis.

Prediction locations were chosen around the proposed residential development to obtain a representation of the future sound levels. The results of these predictions are summarized in Table IV. The acoustic requirements may be subject to modifications if the site plan is changed significantly.

Table IV: Predicted Road & Rail Traffic Sound Levels [dBA], Without Mitigation

Prediction Location	Unit No.	Description	OLA L _{EQ} (16 Hr)	Daytime L _{EQ} (16 Hour)			Night-time L _{EQ} (8 Hour)		
				Road	Rail	Total	Road	Rail	Total
				[A]	1, 51	Dwelling unit with flanking exposure to Wellington Road 27	60	62	<55
[B]	2 – 4, 47 – 50	Dwelling unit with some exposure to Wellington Road 27 and the railway	59	58	<55	58	52	<50	52
[C]	5, 46	Dwelling unit with some exposure to Wellington Road 27	55	55	<55	55	50	<50	50
[D]	--	Common Amenity Area	<55	--	--	--	--	--	--

5 Traffic Noise Recommendations

The predictions indicate that the future traffic sound levels will exceed MECP guidelines at the proposed residential dwellings with some exposure to Wellington County Road 27. The following discussion outlines preliminary recommendations for ventilation requirements, building façade constructions, and warning clauses to achieve the noise criteria stated in Table I.

5.1 Outdoor Living Areas

The predicted sound level in the rear yards of dwelling units with flanking exposure to Wellington County Road 27 and with some exposure to the railway (prediction location [A]) will be up to 60 dBA, 5 dBA in excess of the MECP’s limit of 55 dBA. An acoustic barrier 1.8 m in height will reduce sound levels in these areas to 55 dBA. The approximate location and extent of the acoustic barriers are indicated in Figure 3. The acoustic fence for the rear yard of Lot 1 may not be required if the acoustic fence for Lot 56 (lot to the north of Lot 1) extends far enough as shown in Figure 3.

The predicted sound level in the rear yards of dwelling units with some exposure to Wellington County Road 27 and the railway (prediction location [B]) will be up to 59 dBA, 4 dBA in excess of the MECP’s limit of 55 dBA. This 4 dBA excess is acceptable to the MECP and the City with the inclusion of a noise warning clause and is within the discretionary range. Physical mitigation will not

be required. With physical mitigation provided for Lots 1 and 51, the predicted sound level in the second rear yards will also be reduced.

The predicted sound level in the common amenity area (prediction location [D]) will be less than 55 dBA. Physical mitigation in the form of an acoustic barrier is not required.

When grading information is available, the acoustic barrier height and location should be refined. An acoustic barrier may be a combination of an acoustic wall and an earth berm. The wall component of the barrier should be of a solid construction with a surface density of no less than 20 kg/m². The walls may be constructed from a variety of materials such as wood, brick, pre-cast concrete or other concrete/wood composite systems provided that it is free of gaps or cracks. The heights and extents of the barriers should be chosen to reduce the sound levels in the OLA's to below 60 dBA and as close to 55 dBA as is technically, administratively and economically feasible, subject to the approval of the municipality respecting any applicable fence height by-laws.

5.2 Indoor Living Areas and Ventilation Requirements

Provision for Central Air Conditioning

The predicted future daytime sound levels outside the windows of dwelling units with some exposure to Wellington County Road 27 (prediction locations [A] and [B]) will be between 56 dBA and 65 dBA and between 51 dBA and 60 dBA during the nighttime. This dwelling unit requires the provision for the future installation of central air conditioning systems. This requirement is typically satisfied through the installation of forced air ventilation systems with ductwork sized for the future installation of central air conditioning by the occupant. These units are indicated in Figure 3. The location, installation and sound rating of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300. Associated warning clauses are also recommended.

Window or through-the-wall air conditioning units are not recommended for any residential units because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope.

All remaining units will have daytime sound levels less than 55 dBA and less than 50 dBA during nighttime. There are no specific ventilation requirements for the remaining units.

5.3 Building Facade Constructions

The dwelling units in the development will have future sound levels that are less than 65 dBA during the daytime and 60 dBA during the nighttime. Any glazing and building construction meeting the minimum requirements of the Ontario Building Code will provide sufficient insulation.

5.4 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for all proposed dwelling units in the residential development with anticipated traffic sound level excesses.

Suggested wording for future dwelling units with daytime OLA sound levels exceeding the MECP criteria by 6 dB or more, for which physical mitigation has been provided is given below.

Type A:

Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and rail traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

Suitable wording for future dwellings with minor sound level excesses is given below.

Type B:

Purchasers/tenants are advised that sound levels due to increasing road and rail traffic may occasionally interfere with some activities of the dwelling unit occupants as the sound levels exceed the Municipality's and the Ministry of the Environment, Conservation and Parks' noise criteria.

Suitable wording for future dwellings requiring forced air ventilation systems is given below.

Type C:

This dwelling unit has been fitted with a forced air heating system and the ducting etc., was sized to accommodate central air conditioning. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the criteria of the Municipality and the Ministry of the Environment, Conservation and Parks. (Note: The location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MECP publication NPC-300 as applicable.)

Suitable wording to inform future residents of the adjacent institutional and emergency facilities and that sounds from these facilities may at times be audible.

Type D:

Purchasers/tenants are advised that due to the proximity of this development to nearby institutional and emergency facilities, sound levels from the facilities may at times be audible.

These sample clauses are provided by the MECP as examples and can be modified by the Municipality as required.

6 Summary of Recommendations

The following list and Table V summarize the recommendations made in this report. The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.

1. Acoustic barriers are required for the rear yards of the proposed dwelling units flanking onto Wellington County Road 27. When grading plans are available, the acoustic barrier heights should be refined.
2. Forced air ventilation systems with ductwork sized for the future installation of central air conditioning by the occupant will be required for dwellings closest to Wellington County Road 27. The location, installation and sound ratings of the air conditioning devices should comply with NPC-300, as applicable.

3. Any building construction meeting the minimum construction requirements of the Ontario Building Code (OBC) will provide sufficient acoustical insulation for the proposed dwelling units in the development.
4. Warning clauses are required in the property and tenancy agreements and offers of purchase and sale in order to inform future owners/tenants of the sound level excesses and the proximity to nearby institutional and emergency facilities.

Table V: Summary of Noise Control Requirements and Noise Warning Clauses

Prediction Location	Lot No.	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Upgraded Building Constructions
[A]	1, 51	✓	Forced Air	A, C, D	OBC
[B]	2, 3, 4, 47 – 50	--	Forced Air	B, C, D	OBC
[C]	5, 46	--	--	D	OBC
[D]	Common Amenity Space	--	--	--	--
--	Remaining Dwelling Units	--	--	D	OBC

Notes:

-- no specific requirement

* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300.

OBC-Ontario Building Code

✓ Outdoor living areas require acoustic barriers. Refer to Section 5.1. When grading plans are available, the acoustic barrier heights should be refined.

LRDR – Living Room/Dining Room

BR – Bedroom

6.1 Implementation

To ensure that the noise control recommendations outlined above are fully implemented, it is recommended that:

- 1) When grading information is available, the acoustic barrier heights should be refined.
- 2) Prior to the issuance of occupancy permits for this development, the Municipality’s building inspector or a Professional Engineer qualified to perform acoustical engineering

services in the Province of Ontario should certify that the noise control measures have been properly incorporated, installed and constructed.



ACOUSTICS



NOISE

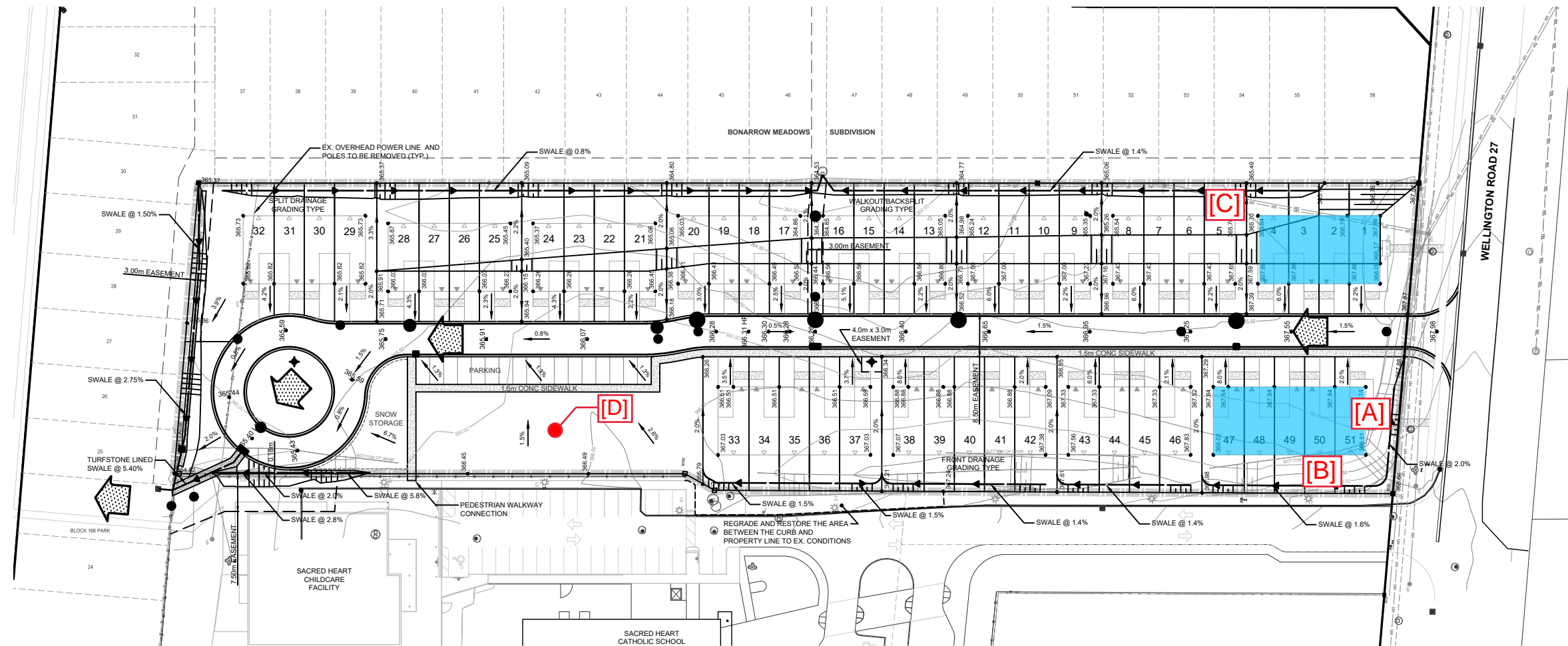
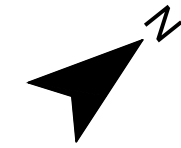


VIBRATION








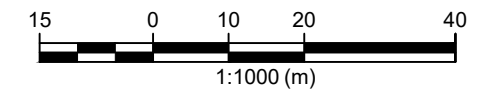
Figure 1: Key Plan

Functional Servicing and
Stormwater Management Report
North Rockwood Developments Inc.
5150 Wellington Road 27, Rockwood
Township of Guelph-Eramosa



LEGEND

-  SITE BOUNDARY
-  ORIGINAL TOPOGRAPHICAL CONTOUR
-  APPROX. PROPOSED SLOPE
-  APPROX. PROPOSED GRADE
-  DIRECTION OF MAJOR/ EMERGENCY FLOW ROUTE



**CONCEPTUAL
GRADING PLAN**

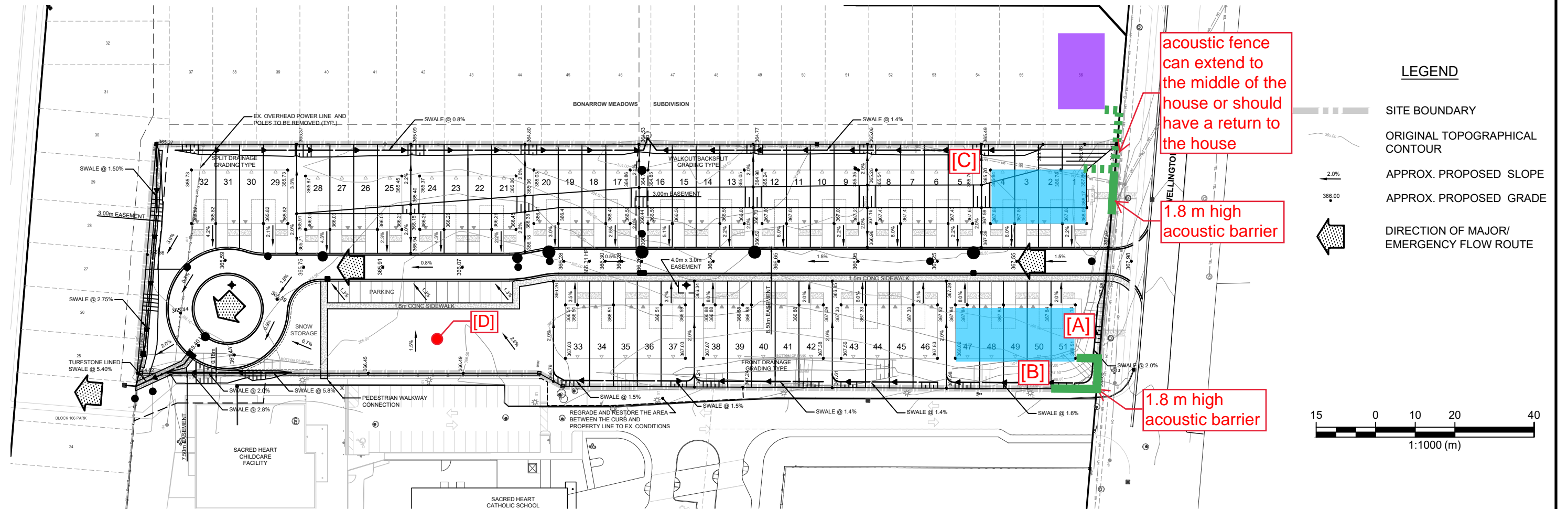
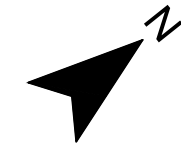
Figure No. 4



Figure 2: Proposed Grading Plan Indicating Prediction Locations

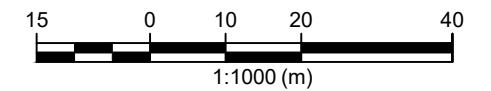
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 PLOTTED BY: [Name]

Functional Servicing and Stormwater Management Report
 North Rockwood Developments Inc.
 5150 Wellington Road 27, Rockwood
 Township of Guelph-Eramosa



LEGEND

- SITE BOUNDARY
- ORIGINAL TOPOGRAPHICAL CONTOUR
- 2.0% APPROX. PROPOSED SLOPE
- 366.00 APPROX. PROPOSED GRADE
- ➔ DIRECTION OF MAJOR/ EMERGENCY FLOW ROUTE



LEGEND

- Acoustic Barrier
- Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant is required

CONCEPTUAL GRADING PLAN

Figure No. 4



Figure 3: Proposed Grading Plan Showing Ventilation and Barrier Requirements

APPENDIX A

GO Transit/Metrolinx Principal Main Line Requirements



PRINCIPAL MAIN LINE REQUIREMENTS FOR NEW DEVELOPMENT

- A. Safety setback of dwellings from the railway rights-of-way to be a minimum of 30 metres in conjunction with a safety berm. The safety berm shall be adjoining and parallel to the railway rights-of-way with returns at the ends, 2.5 metres above grade at the property line, with side slopes not steeper than 2.5 to 1.
- B. Noise attenuation barrier shall be adjoining and parallel to the railway rights-of-way, having returns at the ends, and a minimum total height of 5.5 metres above top-of-rail. Acoustic fence to be constructed without openings and of a durable material weighing not less than 20 kg. per square metre of surface area. Subject to the review of the noise report, GO Transit may consider other measures recommended by an approved Noise Consultant.
- C. Ground-borne vibration transmission to be evaluated in a report through site testing to determine if dwellings within 75 metres of the railway rights-of-way will be impacted by vibration conditions in excess of 0.14 mm/sec RMS between 4 Hz and 200 Hz. The monitoring system should be capable of measuring frequencies between 4 Hz and 200 Hz, ± 3 dB with an RMS averaging time constant of 1 second. If in excess, isolation measures will be required to ensure living areas do not exceed 0.14 mm/sec RMS on and above the first floor of the dwelling.
- D. The Owner shall install and maintain a chain link fence of minimum 1.83 metre height along the mutual property line.
- E. The following clause should be inserted in all development agreements, offers to purchase, and agreements of Purchase and Sale or Lease of each dwelling unit within 300m of the railway right-of-way.

Warning: Metrolinx, carrying on business as GO Transit, and its assigns and successors in interest has or have a right-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that GO Transit or any railway entering into an agreement with GO Transit to use the right-of-way or their assigns or successors as aforesaid may expand their operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way.

- F. Any proposed alterations to the existing drainage pattern affecting the railway right-of-way must receive prior concurrence from GO Transit and be substantiated by a drainage report to the satisfaction of GO Transit.
- G. The Owner shall through restrictive covenants to be registered on title and all agreements of purchase and sale or lease provide notice to the public that the safety berm, fencing and vibration isolation measures implemented are not to be tampered with or altered and further that the Owner shall have sole responsibility for and shall maintain these measures to the satisfaction of GO Transit.
- H. The Owner enter into an Agreement stipulating how GO Transit's concerns will be resolved and will pay GO Transit's reasonable costs in preparing and negotiating the agreement.
- I. The Owner may be required to grant GO Transit an environmental easement for operational emissions, registered on title against the subject property in favour of GO.

APPENDIX B

Road & Rail Traffic Information

Yvonne Lo

From: Pasquale Costanzo <pasqualec@wellington.ca>
Sent: January 15, 2019 1:34 PM
To: Yvonne Lo
Subject: RE: Road Traffic Data Request

Hello Yvonne,

That's alright! I have a traffic count station #2702, AADT 5,232 counted in 2016 located 20m North of railway crossing Main St., Rockwood.

Vehicle classification station S2701 completed in 2017

- Passenger car – 2,589 (87.9%)
- Small Truck – 162 (5.5%)
- Truck Buses – 130 (4.4%)
- Tractor Trailer – 66 (2.2%)

Any questions call.

Pasquale Costanzo, C.E.T.

Technical Services Supervisor | Roads Division
County of Wellington | 519.837.2601 Ext. 2250

From: Yvonne Lo <ylo@hgcengineering.com>
Sent: Monday, January 14, 2019 10:22 AM
To: Pasquale Costanzo <pasqualec@wellington.ca>
Subject: RE: Road Traffic Data Request

Hi Pasquale,

My apologies. My previous e-mail indicates that Andrew is the recipient; the e-mail should be addressed to you.

Thank you.

Best,

Yvonne Lo, BAsC, PEng
Project Consultant

HGC Engineering [NOISE](#) / [VIBRATION](#) / [ACOUSTICS](#)

Howe Gastmeier Chapnik Limited

2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7

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From: Yvonne Lo
Sent: January 14, 2019 10:18 AM

To: 'pasqualec@wellington.ca' <pasqualec@wellington.ca>

Subject: Road Traffic Data Request

Hi Andrew,

HGC Engineering is conducting a noise feasibility study for a proposed residential development located east of Main Street North (Wellington Road 27) and north of the railway corridor, specifically at 5150 Wellington Road 27. A google link is included for your reference:

<https://goo.gl/maps/bJeriKpbz132>

Do you have road traffic data for Wellington Road 27 E available in this vicinity? We require ultimate AADT if available and commercial vehicle percentages.

Thank you.

Best,

Yvonne Lo, BAsC, PEng
Project Consultant

HGC Engineering [NOISE / VIBRATION / ACOUSTICS](#)

Howe Gastmeier Chapnik Limited

2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7

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Victor Garcia

From: Brandon Gaffoor <Brandon.Gaffoor@metrolinx.com>
Sent: November-03-17 2:13 PM
To: Victor Garcia
Cc: Adam Snow
Subject: RE: Rail Traffic Verification

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Victor – the data that I provided Sheeba on June 23, 2016 is no longer valid. Please refer to the information below;

Further to your request dated October 24, 2017, the subject site (5156 Wellington County Road 27, Township of Guelph/Eramosa) is located within 300 metres of GO Transit's Kitchener rail corridor.

It's anticipated that GO Service along this corridor will be comprised of diesel trains within (at least) a 10 year time horizon. The preliminary midterm weekday train volume forecast at this location, including both revenue and equipment trips is in the order of 12 trains (11 day, 1 night). Trains will be comprised of a single locomotive and up to 12 passenger cars.

The current maximum design speed of this corridor is 70 mph (113 km/h).

It should be noted that VIA and GEXR operates trains in this area. It would be prudent to contact those organizations directly for rail traffic information.

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

I trust that this information is useful. Please feel free to contact me should you have any additional questions.

Brandon Gaffoor, B.E.S.

Intern | Rail Corridor Management Office | Rail Corridor Infrastructure | GO Transit
METROLINX | 335 Judson Street | Toronto | Ontario | M8Z 1B2
T. 416.202.7294 M. 647.289.1958

From: Victor Garcia [mailto:vgarcia@hgcengineering.com]
Sent: October-24-17 9:40 AM
To: Brandon Gaffoor
Cc: Adam Snow
Subject: Rail Traffic Verification

Hi Brandon,

HGC Engineering is performing an update to a noise study located on 5156 Wellington County Road 27 in Rockwood, Township of Guelph/Eramosa, Ontario. A google link is included for your reference:

<https://goo.gl/maps/oG1evkDAYq92>

We have the attached data on file for the location. Is this data still valid?

Regards,

Victor Garcia, P.Eng
Project Engineer

HGC Engineering [NOISE / VIBRATION / ACOUSTICS](#)

Howe Gastmeier Chapnik Limited

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a Genesee & Wyoming Company

Victor Garcia, BAsC, EIT
HGC Engineering
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2000 Argentia Road, Plaza One, Suite 203
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November 29, 2017

Re: Rail Traffic Data – Rockwood Ontario, Guelph Subdivision.

As per your request, the following information is provided for the operation of Goderich-Exeter trains on the Guelph Subdivision in the Town of Rockwood.

The typical daily rail traffic volumes are representative of a twenty four (24) hour period, seven (7) days per week, but I must caution that such volumes are subject to overall economic conditions and will fluctuate with varying traffic demands, weather conditions, track maintenance programs and statutory holidays.

The Guelph Subdivision is currently a single track main line with both freight and passenger trains operating at any time in a 24 hour period. The subdivision extends from mile 30 in the City of Georgetown, Ontario west to mile 118.8 in the City of London, Ontario. It is federally regulated. There are a number of public road crossings in the area of study and a rail passenger station approximately one and one quarter of a mile to the west. These crossings require the ringing of the engine bell as prescribed by Canadian Rail Operating Rule 13 and sounding of the engine horn as prohibited (N.T.A. 1988-R-825).

Daily, the number of trains which are scheduled to operate between 0600hrs and 1800hrs starting in the morning are: An eastbound GO train at approximately 0545hrs with one (1) locomotive and ten (10) coaches, another eastbound GO passenger train at approximately 0625 with one (1) engine and 10 coaches, another GO passenger train at approximately 0710hrs with one (1) engine and 10 coaches, another GO passenger train at approximately 0730 with one (1) engine and 10 coaches. An eastbound manifest freight train which normally operates with two (2) locomotives and on average fifty to seventy five (50-75) rail cars at approximately 0930hrs and an eastbound VIA train at approximately 0955hrs with one (1) locomotive and four (4) coaches. There is then a westbound passenger train with one (1) locomotive and two (2) coaches at approximately 1215hrs. Anytime between 1300hrs and 1700hrs there is a westbound manifest freight train which normally operates with two (2) locomotives and on average fifty to seventy five (50-75) rail cars.

Goderich-Exeter Railway 101 Shakespeare Street, 2nd Floor Stratford, ON N5A 3W5 Canada
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Daily between the hours of 1800 and 0600 there is a westbound GO passenger train at approximately 1825hrs with one (1) locomotive and ten (10) coaches, followed by a westbound VIA passenger train at approximately 1900hrs with one (1) locomotive and on average four (4) coaches then another westbound GO passenger train at approximately 1930hrs with one (1) locomotive and ten (10) coaches another westbound GO passenger train at approximately 2030hrs with one (1) locomotive and ten (10) coaches. One eastbound VIA passenger train at approximately 2200hrs with one (1) locomotive and ten (10) coaches.

Current maximum speed on this line in this area is thirty (70) miles per hour for passenger trains and thirty (55) miles per hour for freight trains.

If you have any further questions please feel free to contact me at 519 271-1983.

Yours truly,



J. Wesley Logan
Interim Manager, Marketing & Sales
Goderich-Exeter Railway

APPENDIX C

Sample STAMSON 5.04 Output

Filename: a.te Time Period: Day/Night 16/8 hours
 Description: **Future daytime and nighttime sound levels at the dwelling units (units 1 and 51) with flanking exposure to Wellington Road 27, Prediction Location [A].**

Rail data, segment # 1: GEXR (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
* 1. Freight	2.8/0.0	88.0	2.0	75.0	Diesel	No
* 2. Go	11.3/1.0	113.0	1.0	12.0	Diesel	No
* 3. Via	5.5/0.0	113.0	1.0	4.0	Diesel	No

* The identified number of trains have been adjusted for future growth using the following parameters:

Train No	Name	Unadj. Trains	Annual % Increase	Years of Growth
1.	Freight	2.0/0.0	2.50	13.00
2.	Go	11.0/1.0	2.50	1.00
3.	Via	4.0/0.0	2.50	13.00

Data for Segment # 1: GEXR (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 450.00 / 450.00 m
 Receiver height : 7.50 / 7.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Results segment # 1: GEXR (day)

LOCOMOTIVE (0.00 + 44.72 + 0.00) = 44.72 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.41	69.48	-20.75	-4.00	0.00	0.00	0.00	44.72

WHEEL (0.00 + 38.64 + 0.00) = 38.64 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.51	65.15	-22.30	-4.20	0.00	0.00	0.00	38.64

Segment Leq : 45.68 dBA

Total Leq All Segments: 45.68 dBA

Results segment # 1: GEXR (night)

LOCOMOTIVE (0.00 + 33.73 + 0.00) = 33.73 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.41	58.49	-20.75	-4.00	0.00	0.00	0.00	33.73

WHEEL (0.00 + 27.73 + 0.00) = 27.73 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.51	54.24	-22.30	-4.20	0.00	0.00	0.00	27.73

Segment Leq : 34.70 dBA

Total Leq All Segments: 34.70 dBA

Road data, segment # 1: Wellington (day/night)

Car traffic volume : 5461/607 veh/TimePeriod *
Medium truck volume : 342/38 veh/TimePeriod *
Heavy truck volume : 410/46 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 5232
Percentage of Annual Growth : 2.00
Number of Years of Growth : 14.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 6.60
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Wellington (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 26.50 / 26.50 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Wellington (day)

Source height = 1.60 m

ROAD (0.00 + 62.30 + 0.00) = 62.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.48	67.08	0.00	-3.65	-1.13	0.00	0.00	0.00	62.30

Segment Leq : 62.30 dBA

Total Leq All Segments: 62.30 dBA

Results segment # 1: Wellington (night)

Source height = 1.61 m

ROAD (0.00 + 55.80 + 0.00) = 55.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.48	60.58	0.00	-3.65	-1.13	0.00	0.00	0.00	55.80

Segment Leq : 55.80 dBA

Total Leq All Segments: 55.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.39

(NIGHT): 55.83



Filename: a_ola.te Time Period: 16 hours
 Description: **Future daytime sound levels at the rear yard of the dwelling units (units 1 and 51) with flanking exposure to Wellington Road 27, Prediction Location [A], with no mitigation.**

Rail data, segment # 1: GEXR

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
* 1. Freight	2.8/0.0	88.0	2.0	75.0	Diesel	No
* 2. Go	11.3/1.0	113.0	1.0	12.0	Diesel	No
* 3. Via	5.5/0.0	113.0	1.0	4.0	Diesel	No

* The identified number of trains have been adjusted for future growth using the following parameters:

Train No	Name	Unadj. Trains	Annual % Increase	Years of Growth
1.	Freight	2.0/0.0	2.50	13.00
2.	Go	11.0/1.0	2.50	1.00
3.	Via	4.0/0.0	2.50	13.00

Data for Segment # 1: GEXR

Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 450.00 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Train # 1: Freight, Segment # 1: GEXR

LOCOMOTIVE (0.00 + 37.57 + 0.00) = 37.57 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.58	65.32	-23.41	-4.34	0.00	0.00	0.00	37.57

WHEEL (0.00 + 32.74 + 0.00) = 32.74 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.66	61.73	-24.52	-4.47	0.00	0.00	0.00	32.74

Segment Leq : 38.80 dBA

Train # 2: Go, Segment # 1: GEXR

LOCOMOTIVE (0.00 + 38.26 + 0.00) = 38.26 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.58	66.01	-23.41	-4.34	0.00	0.00	0.00	38.26

WHEEL (0.00 + 32.78 + 0.00) = 32.78 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.66	61.76	-24.52	-4.47	0.00	0.00	0.00	32.78

Segment Leq : 39.34 dBA

Train # 3: Via, Segment # 1: GEXR

LOCOMOTIVE (0.00 + 33.93 + 0.00) = 33.93 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.58	61.68	-23.41	-4.34	0.00	0.00	0.00	33.93

WHEEL (0.00 + 25.50 + 0.00) = 25.50 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.66	54.49	-24.52	-4.47	0.00	0.00	0.00	25.50

Segment Leq : 34.51 dBA

Total Leq All Segments: 42.79 dBA

Road data, segment # 1: Wellington

Car traffic volume : 5461 veh/TimePeriod *
Medium truck volume : 342 veh/TimePeriod *
Heavy truck volume : 410 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Wellington

Angle1 Angle2 : -45.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 29.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)

Reference angle : 0.00

Segment # 1: Wellington

Source height = 1.60 m

ROAD (0.00 + 60.05 + 0.00) = 60.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	90	0.66	67.08	0.00	-4.74	-2.28	0.00	0.00	0.00	60.05

Segment Leq : 60.05 dBA

Total Leq All Segments: 60.05 dBA

TOTAL Leq FROM ALL SOURCES: 60.13



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