

KILLALY STREET EAST

PORT COLBORNE, ONTARIO

NOISE AND VIBRATION IMPACT STUDY

RWDI #2205224

July 26, 2023

SUBMITTED TO

SG Real Estate Developments LP III
c/o John Cheung

36-620 Davenport Rd
Waterloo, Ontario, N2V 2C2
T: 289.8342.2086

johncheung@zamcaninc.com

SUBMITTED BY

Rachel Skeoch, B.E., CAPM
Project Manager

E: Rachel.Skeoch@rwdi.com

Gillian Redman, M.Sc., P.Eng
Senior Noise and Vibration Engineer

E: Gillian.Redman@rwdi.com

RWDI

600 Southgate Drive
Guelph, Ontario, N1G 4P6
T: 519.823.1311



VERSION HISTORY

Index	Date	Description	Prepared by	Reviewed by
1	June 23, 2023	Submitted for ZBA	GER	JKK
2	July 26, 2023	Addressed client comments	JKK	GER



EXECUTIVE SUMMARY

RWDI was retained to prepare a Noise and Vibration Impact Study for the proposed residential development located in Port Colborne, Ontario. The proposed development will consist of 286 townhouse units from 1.5 to 3 storeys. This assessment was completed to support the combined Zoning By-Law Amendment, Site Plan Approval, Draft Plan of Subdivision, and Draft Plan of Condominium submission as required by the City of Port Colborne.

The following noise control measures are recommended for the proposed development:

1. Design of the dwelling with the provision for adding central air conditioning at the owner's discretion
2. The inclusion of noise warning clauses related to:
 - a. Transportation sound levels at the building façade
 - b. Proximity to commercial/industrial land-use
3. Construction of a noise barrier along the southern property line

The potential noise levels from stationary sources of sound were evaluated. Based on the noise modeling results and setback distances, the land use compatibility of the proposed development with respect to the nearby industrial land-uses is considered acceptable with the implementation of a noise barrier from the noise assessment perspective. However, due to the proximity of the proposed development to the industrial facilities, a warning clause is recommended to inform prospective occupants of the potential for audible noise from these facilities.

Based on the results of the analysis including implementation of the recommendations included with this assessment, the proposed development is feasible to meet the applicable sound and vibration criteria.



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1 INTRODUCTION

RWDI was retained to prepare a Noise and Vibration Impact Study for the proposed Killaly Street East development located in Port Colborne, Ontario. The subject lands are located south of Killaly Street East, east of James Street, and north of the Friendship Trail. These lands are shown in **Figure 1**.

The proposed development will consist of approximately of 286 townhouse units from 1.5 to 3 storeys. The development lands are currently designated residential. The context site plan is shown in **Figure 1**.

The site is exposed to noise from road traffic from Killaly Street East to the north. The Land Use Compatibility Study completed by RWDI in June 2023 identifies three industries located within the area of influence: JTL Machining Limited, IMT Partnership, and Vale Canada Limited.

This assessment was completed to support the combined Zoning By-Law Amendment, Site Plan Approval, Draft Plan of Subdivision, and Draft Plan of Condominium submission as required by the City of Port Colborne. This assessment was based on design drawings dated June 5th, 2023. A copy of the drawings are included in **Appendix A**.

2 APPLICABLE CRITERIA

Applicable criteria for transportation noise sources (road and rail), stationary noise sources and rail vibration are adopted from the Ontario Ministry of the Environment, Conservation and Parks (MECP) NPC-300 Environmental Noise Guideline (MOE, 2013), with a summary of the applicable criteria included with **Appendix B**.

The proposed development site would be characterized as a "Class 2 Area", which is defined according to 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."

3 THE EFFECTS OF THE ENVIRONMENT ON THE PROPOSED DEVELOPMENT

3.1 Transportation Source Assessment

3.1.1 Road Traffic Volume Data

The roadway with the greatest potential to influence the proposed residential development is Killaly St E. Other roads in the area are minor or distant and are not expected to significantly affect the development.



A Turning Movement Count (TMC) for the intersection of Killaly St E at James St was obtained from GHD Ltd., the traffic consultant for this project. The Annual Average Daily Traffic (AADT) volume was estimated from the AM and PM peak hour counts using a conversion factor of 9% and 10% for the AM and PM peak hour counts respectively. The higher of the two AADT estimates was used for the purpose of this assessment. The truck percentage was determined from the TMC, using the higher of the AM and PM peak hour truck percentages. Traffic volumes were grown to a 20-year horizon to the year of 2043 at a growth rate of 2% per year. A 90%/10% daytime/nighttime split was applied. The traffic data used for this assessment is shown in **Table 1**. The TMC data is included in **Appendix E**.

Table 1: Road Traffic Volumes

Roadway	2043 Annual Average Daily Traffic	% Trucks	Day/Night Split
Killaly St E	4,788	8%	90% / 10%

3.1.2 Analysis and Results

Road traffic modelling was conducted using the RLS-90 algorithms implemented in the Cadna/A software package. Predicted sound levels are expected to be below the 55 / 50 dBA sound level limits for roadway noise at most locations. However, for residences located near the northern portion of the lands, the provision for the future installation of air conditioning is required in some locations along with a warning clause, as shown in Figure 2.

A review of outdoor living areas showed all locations are expected to meet the 55 dBA limit.

3.2 Stationary Source Assessment

Stationary sources could be grouped into two categories: Those that have a permit with the Ontario Ministry of the Environment, Conservation and Parks (MECP) through an Environmental Compliance Approval (ECA) or Environmental Activity and Sector Registry (EASR); and those that are exempt from ECA or EASR permit requirements.

In the case where a stationary source has an Environmental Compliance Approval (ECA) or Environmental Activity and Sector Registry (EASR) permit with the MECP, and would be put in a position where it is no longer in compliance with the applicable sound level criteria due to the encroachment of the proposed new development, source specific mitigation and/or formal classification of the proposed development lands as a “Class 4 Area” (refer to C.4.4.2 “Class 4 Area” in NPC-300) would be required. In this case, coordination and agreements between the stationary source owner, proposed new development owner, the land-use planning authority and potentially the MECP would be needed.

In the case where a stationary source is exempt from ECA or EASR permit requirements with the MECP, the noise provisions of the applicable Municipal Code / Noise By-Law and guidance from NPC-300 would be applicable. In this case, mitigation of sound levels due to stationary sources would be from a due diligence perspective to meet the sound level criteria in the local noise by-law, and to avoid nuisance complaints from future occupants of the proposed new development.



3.2.1 Land Use Compatibility

RWDI completed a Land Use Compatibility Assessment in June 2023. This report identified three industrial facilities within 1000 m of the development lands. The assigned D-6 assigned potential influence areas overlap with the development lands for two Class II facilities and one Class III facility. These facilities are summarized in **Table 2**.

Table 2: Industrial Facilities

Business Name	Address	D-6 Classification	Area of Influence	Actual Separation Distance
J.T.L. Machine Limited	857 Reuter Rd	II	300 m	80 m
IMT Partnership	837 Reuter Rd	II	300 m	190 m
Vale Canada Limited	187 Davis St	III	1000 m	100 m

Based on the results of the land use compatibility study, there is potential for noise impacts from J.T.L. Machine Limited and IMT Partnership. These facilities are discussed in further detail in the following sections.

3.2.2 Site Visit

To quantify the noise emissions from JTL Integrated Machining Ltd and IMT Partnership, RWDI completed attended sound level measurements at the development lands and surrounding area. Measurements were completed on May 25, 2022, using a sound level meter that complies with the Provincial instrumentation requirements outlined in NPC-102 document titled “Instrumentation”, and in accordance with NPC-103, “Procedures”. During the site visit, sound was audible from both facilities. Both continuous and impulsive sources of sound were identified, which are evaluated separately under the Provincial noise guidelines (i.e., NPC-300). Only continuous sound was identified from the JTL facility. Although both continuous and impulsive sounds were noted to originate from the IMT Partnership facility, only impulsive sound was clearly audible at the existing residences, and proposed development.

Measurements of continuous and impulsive sound were conducted at multiple locations on the development lands as well as at existing residences adjacent to the development lands. Impulsive measurements were logarithmically averaged in accordance with Provincial guidelines. A summary of the measured sound levels as compared to the applicable sound level limits is presented in **Table 3**.



Table 3: Summary of Sound Level Measurements

Location	Sound Type	Measured Sound Pressure Level	Applicable Sound Level Limit (Day/Night)	Compliance?
Existing Residential	Continuous	L _{EQ} 46 – 48 dBA	50/45 dBA	Meets Limit ^[1]
	Impulsive	L _{LM} 74 - 76 dBAI ^[2]	50/45 dBAI	Exceeds Limit
Development Lands	Continuous	L _{EQ} 44 - 50 dBA	50/45 dBA	Meets Limit ^[1]
	Impulsive	L _{LM} 73 - 74 dBAI ^[2]	50/45 dBAI	Exceeds Limit

Notes: [1] It is assumed that nighttime operation either does not occur or occurs at a reduced capacity, resulting in lowered emissions of sound.

[2] Logarithmic Mean Impulsive Sound Level

RWDI has contacted both J.T.L. Machining and IMT Partnership to obtain further details regarding their operations. As of June 21, 2023, RWDI has not received a response from either industry.

3.2.1 Analysis and Modelling

Based on the measurements conducted, it is expected that continuous sound from both facilities meets sound level limits at existing residences and will meet the applicable sound level limits at the development lands. Impulsive sound from the IMT Partnership facility was measured to significantly exceed the sound level limits at existing receptors and the development lands.

To further investigate the potential impact of this impulsive sound, sound level modelling was completed of impulsive sound from the IMT Partnership facility. The sound power level of the impulsive source at IMT Partnership was estimated based on calibration points taken at various locations around the facility and in the area. Modelled sound pressure levels were found to align well with measured sound pressure levels at all locations.

The existing residences along Johnston Street are currently the limiting case for impulsive sound based on the location of the impulsive source, shielding of the JTL facility building, and setback distances. However, as the proposed development introduces closer and more elevated receptors, the potential of the proposed development to introduce additional burden to the IMT Partnership operations was investigated.

If the impulsive sound level limits were met at the existing residences, they are also expected to be met at residences on the development lands, with the inclusion of a 5 m barrier to the south of the proposed development. The location of the barrier is shown in Figure 3 and included in the drawings included in **Appendix A**.

It should be noted, the development lands are already zoned as RD - Residential Development, which allows the construction of residential dwellings up to a height of 11 m. Environmental Compliance Approvals require facilities to show compliance at vacant lots where residential, or any sensitive-use buildings be constructed.

3.3 Recommendations

Based on the noise and vibration assessment results, the following recommendations were determined for the project. Recommendations are provided for both transportation sources and stationary sources.

3.3.1 Transportation Sources

The following recommendations are provided to address transportation sources.

3.3.1.1 *Ventilation Recommendations*

Due to the transportation sound levels at the plane of the façade, provision for the future installation central air conditioning at the owner's discretion is recommended for the proposed development. Installation of central air conditioning by the occupant will allow for windows and doors to remain closed as a noise mitigation measure. Further, prospective purchasers or tenants should be informed by a warning clause "Type C".

3.3.2 Stationary Sources

Based on the noise modeling results and setback distances, a southern property line noise barrier is recommended to ensure compatibility with the existing industries. The barrier is shown in the drawings in **Appendix A** and **Figure 3**.

Due to the proximity of the proposed development to the commercial and industrial facilities, a warning clause "Type E" is recommended to inform prospective occupants of the potential for audible noise from these facilities.

3.3.3 Warning Clauses

The following warning clauses are recommended for the proposed development:

1. NPC-300 Type C to address transportation sound levels at the plane of window.
2. NPC-300 Type E to address proximity to commercial/industrial facilities.

Warning clauses are recommended to be included on all development agreements, offers of purchase and agreements of purchase and sale or lease. The wording of the recommended warning clauses is included with **Appendix C**.

4 THE EFFECTS OF THE PROPOSED DEVELOPMENT ON ITS SURROUNDINGS AND ON ITSELF

On-site stationary sources for the dwellings are expected to mainly consist of HVAC related equipment. Consideration should be given to control airborne and structure-borne noise generated within the proposed development.

Provided that best practices for the acoustical design of the building and guidelines from NPC-216 (MOE, 1993) are followed, noise from the development are expected to be feasible to meet the applicable sound level criteria due to the residential nature of the proposed dwellings.

We recommend that the potential noise effect of the proposed development is reviewed during detailed design to ensure the applicable sound level criteria will be achieved.

5 CONCLUSIONS

RWDI was retained to prepare a Noise and Vibration Impact Study for the proposed residential development located in Port Colborne, Ontario.

The following noise control measures are recommended for the proposed development:

1. Design of the dwelling with the provision for adding central air conditioning at the owner's discretion
2. The inclusion of noise warning clauses related to:
 - a. Transportation sound levels at the building façade
 - b. Proximity to commercial/industrial land-use
3. Construction of a noise barrier along the southern property line

The potential noise levels from stationary sources of sound were evaluated. Based on the noise modeling results and setback distances, the land use compatibility of the proposed development with respect to the nearby industrial land-uses is considered acceptable with the implementation of a noise barrier from the noise assessment perspective. However, due to the proximity of the proposed development to the industrial facilities, a warning clause is recommended to inform prospective occupants of the potential for audible noise from these facilities.

Based on the results of the analysis including implementation of the recommendations included with this assessment, the proposed development is feasible to meet the applicable sound and vibration criteria.



6 REFERENCES

1. Ontario Ministry of the Environment (MOE), August 2013, Publication NPC-300, Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning (MOE, 2013).
2. Ontario Ministry of the Environment and Energy (MOE), 1993, Publication NPC-216, Residential Air Conditioning Devices (MOE, 1993).
3. Richtlinien für den Lärmschutz an Strassen (RLS). BM für Verkehr, Bonn, 1990 (RLS, 1990).
4. Ontario Ministry of the Environment (MOE) Publication Guideline D-6, “Compatibility Between Industrial Facilities and Sensitive Land Uses”, July 1995 (MOE, 1995).



7 STATEMENT OF LIMITATIONS

This report entitled Noise and Vibration Impact Study – Killaly Street East was prepared by RWDI AIR Inc. (“RWDI”) for SG Real Estate Developments LP III (“Client”). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein (“Project”). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

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FIGURES



Development Lands

Port Colborne, Ontario

Drawn by: GER

Figure: 1

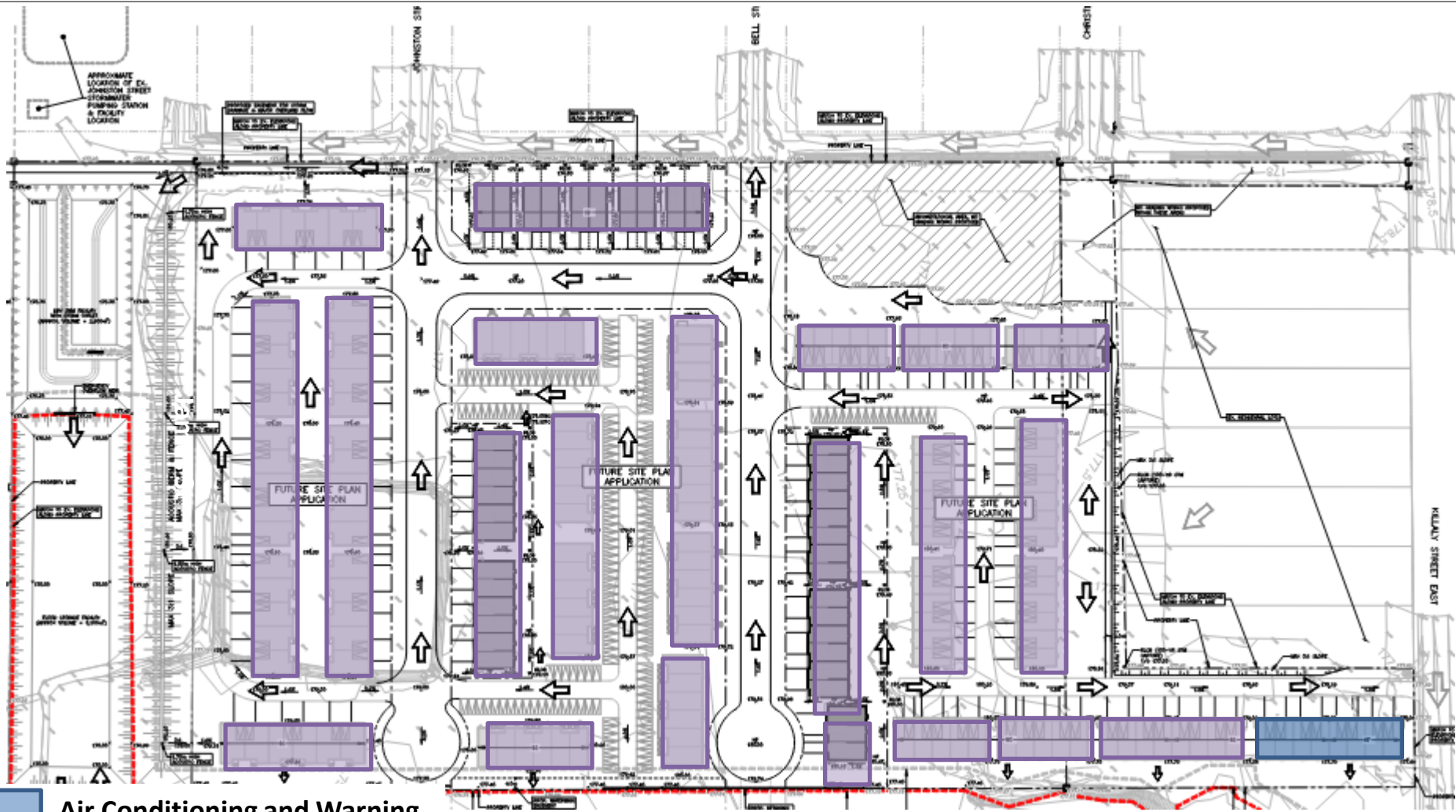
Project #:

2205224

Date:

2023-07-25





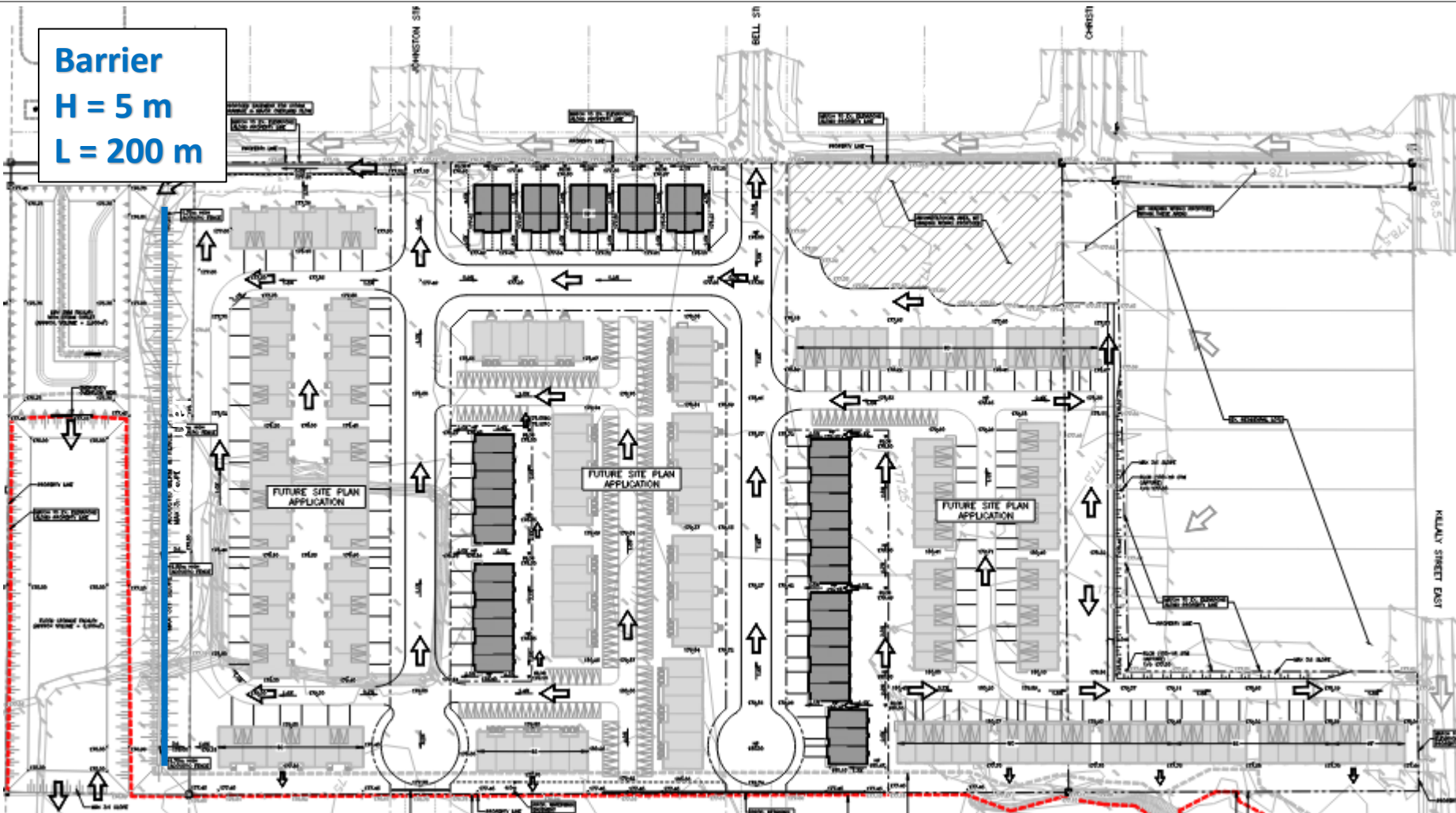
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- No Requirements

Roadway Noise Requirements

Port Colborne, Ontario

Drawn by: GER	Figure: 2
Project #:	2205224
Date:	2023-07-25





Noise Barrier Location

Port Colborne, Ontario

Drawn by: GER

Figure: 3

Project #:

2205224

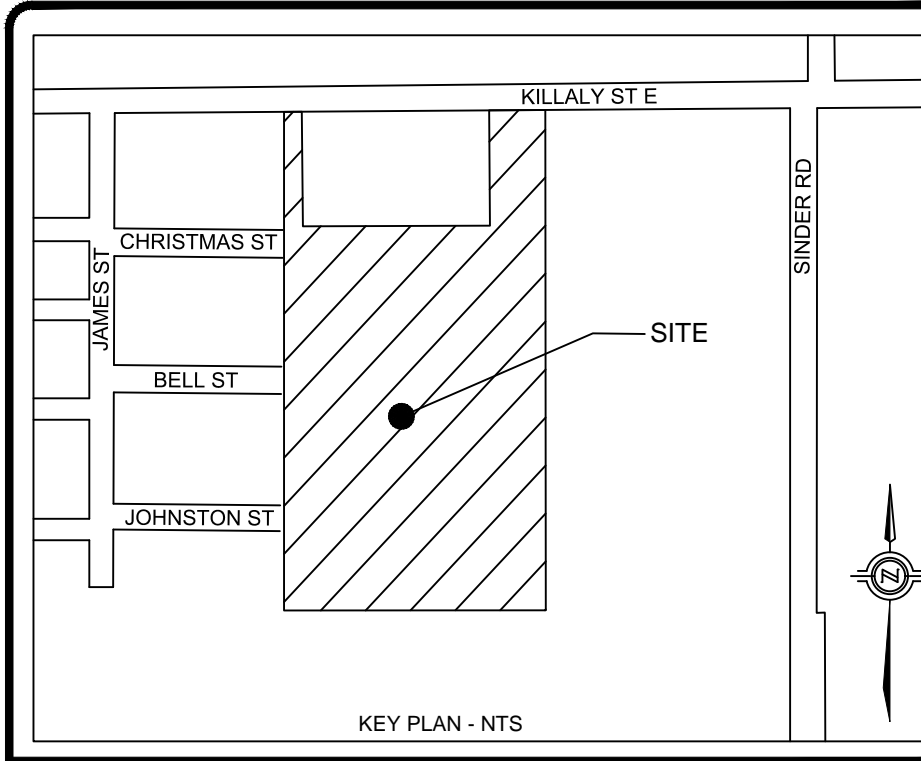
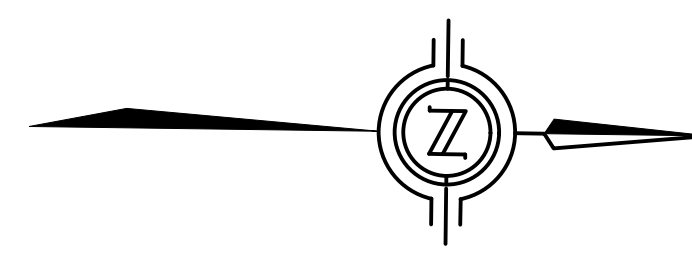
Date:

2023-07-25

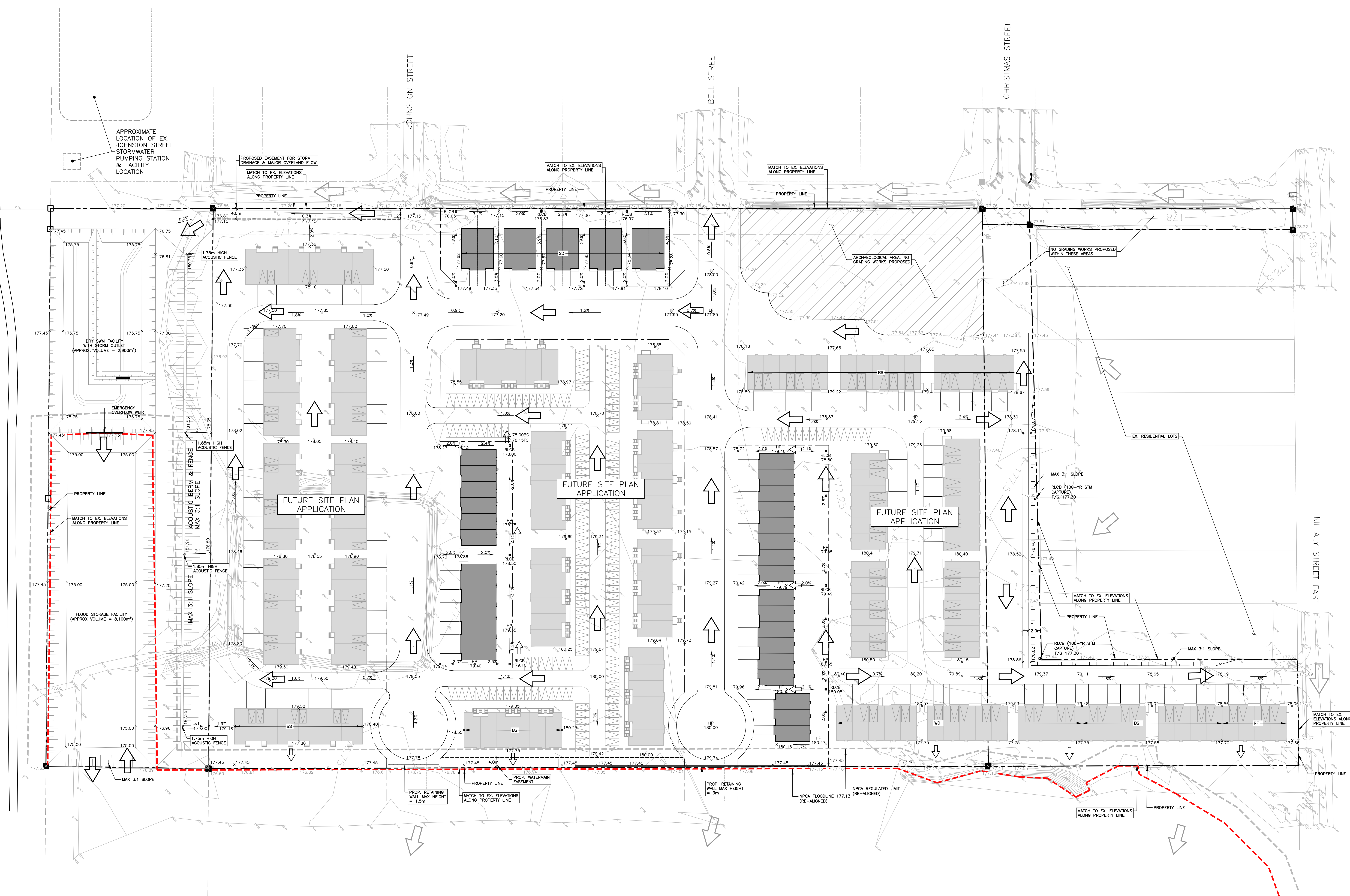


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APPENDIX A



- LEGEND**
- PROPERTY LINE
 - - - EX. CONTOUR (1.0m)
 - NEW / EX. STORM MANHOLE
 - NEW / EX. SANITARY MANHOLE
 - PROPOSED ROAD CATCHBASIN
 - PROPOSED REAR LOT CATCHBASIN
 - NEW / EX. WATER VALVE AND BOX
 - EX. HYDRANT
 - EX. LIGHT / UTILITY POLE
 - EX. FENCE
 - PROPOSED ELEVATION
 - EXISTING ELEVATION
 - 2.0% DRAINAGE ARROW / SLOPE (MAX 3:1)
 - SWALE
 - PROPOSED RETAINING WALL
 - >100 YEAR EMERGENCY OVERLAND FLOW
 - EXTERNAL EMERGENCY OVERLAND FLOW
 - SD SPLIT DRAINAGE
 - WO WALKOUT
 - RF REAR TO FRONT
 - NPFA FLOODLINE ELEVATION 177.13 (REALIGNED)
 - APPROX. NPFA REGULATED LIMITS (REALIGNED)



NOTES:

- TOPOGRAPHIC SURVEY PROVIDED BY KIRKPATRICK AND WILSON, A DIVISION OF JCB SERVICES LTD. COMPLETED IN MAY 2021
- SITE PLAN PROVIDED BY CYNTHIA ZAKORUK ARCHITECTS

NO.	ISSUED FOR COORDINATION	DATE	BY	APP.
1	ISSUED FOR COORDINATION	JUN 15 2023	JL	SP
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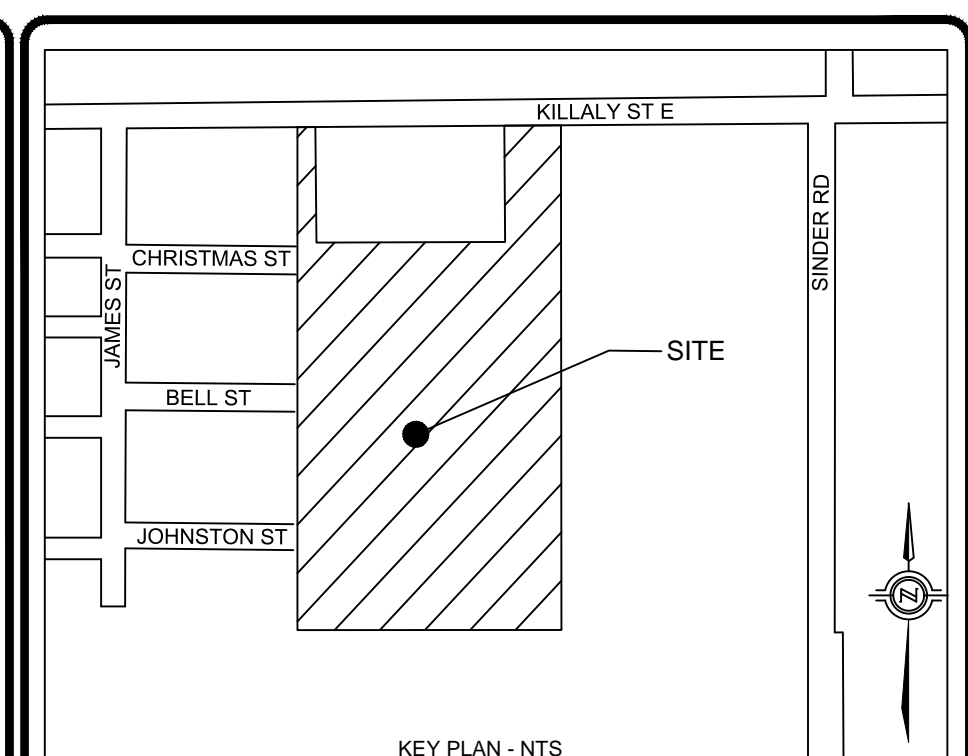
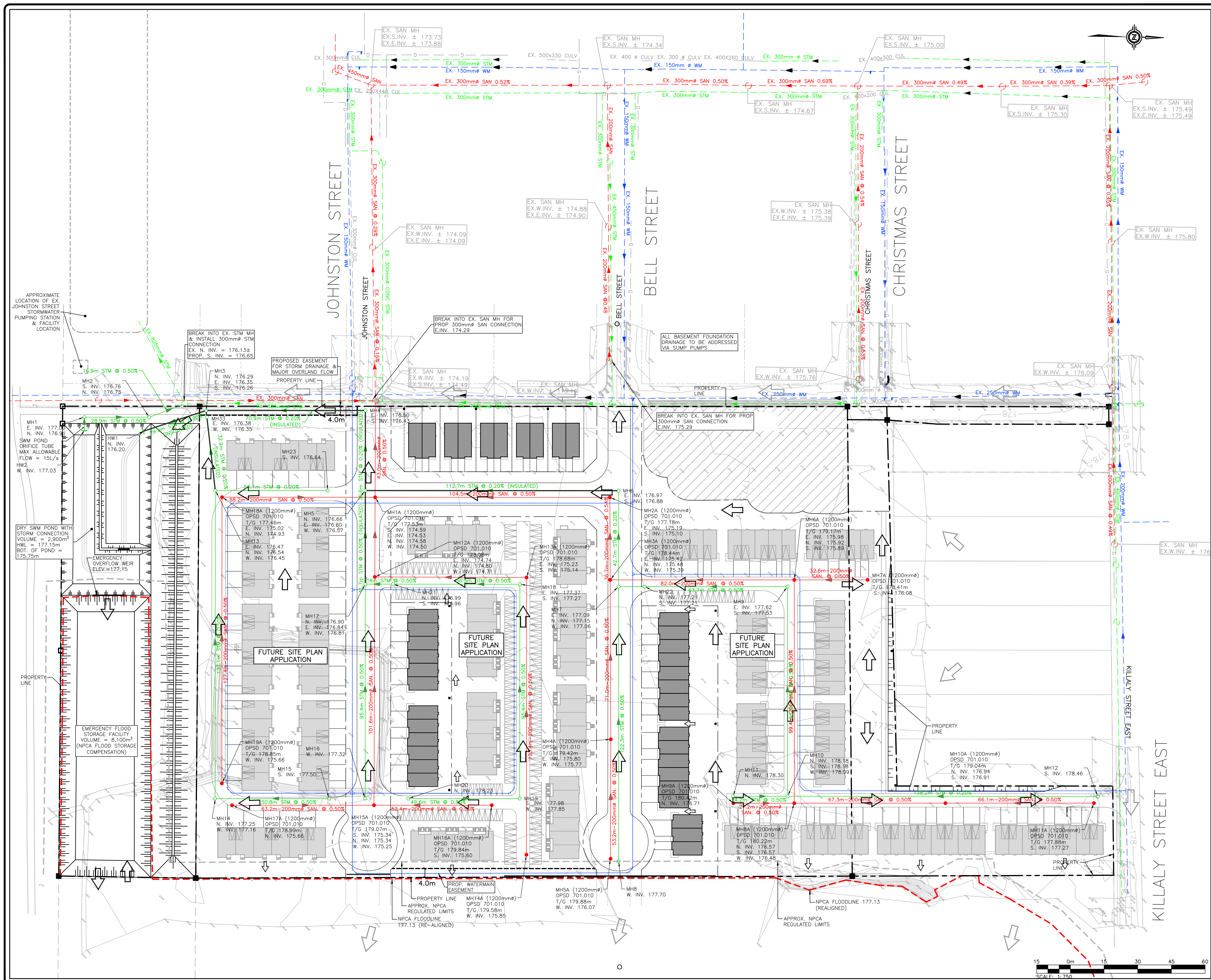
Owner/Client:
SG REAL ESTATE DEVELOPMENTS LP III

Location:
**549 KILLALY STREET EAST
 CITY OF PORT COLBORNE**

Title:
PRELIMINARY GRADING PLAN

Designed By: WK Drawn By: WK Checked By: SP
 Scale: 1:500 Date: AUG. 2022 Drawing No: SG-01
 Project No: ALL-2204555-A0





LEGEND

- PROPERTY LINE
- EXISTING HYDRO POLE
- EXISTING TREE
- EXISTING TREE DRIPLINE
- EXISTING OVERHEAD HYDRO WIRES
- EXISTING FENCELINE
- EXISTING CURBS
- EX. STORM SEWER
- EX. WATERMAIN
- EX. SANITARY SEWER
- NEW/EXISTING WATER VALVE&BOX
- EXISTING/PROPOSED HYDRANT
- EX. STORM/SANITARY M.H.
- EX. CATCH BASIN
- PROP. STORM M.H.
- PROP. SANITARY M.H.
- PROP. CATCHBASIN / REAR LOT CATCHBASIN
- PROP. CATCHBASIN MANHOLE
- PROPOSED CURBS
- PROP. STORM SEWER
- PROP. WATERMAIN
- PROP. SANITARY SEWER
- PIPE TO BE INSULATED
- REALIGNED NPCA FLOODLINE ELEVATION 177.13
- APPROX. NPCA REGULATED LIMITS (EXISTING)

No.	REVISIONS	Date	By	App.

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Owner/Client:
SG REAL ESTATE DEVELOPMENTS LP III

Location:
**549 KILLALY STREET EAST
 CITY OF PORT COLBORNE**

Title:
PRELIMINARY SITE SERVICING PLAN

Designed By: WK Drawn By: WK Checked By: SP
 Scale: 1:750 Date: AUG, 2022 Drawing No.:
 Project No.: ALL-22004555-A0 **SS-01**



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APPENDIX B

CRITERIA

Transportation Sources

Guidance from the Ontario Ministry of the Environment, Conservation and Parks (MECP) NPC-300 Environmental Noise Guideline was used to assess environmental noise generated by transportation-related sources. There are three aspects to consider, which include the following:

- i. Transportation source sound levels in indoor living areas (living rooms and sleeping quarters), which determines building façade elements (windows, exterior walls, doors) sound insulation design recommendations.
- ii. Transportation source sound levels at the plane of the window, which determines air-conditioning and ventilation system recommendations and associated warning clauses which inform the future occupants that windows and doors must be closed in order to meet the indoor sound level criteria.
- iii. Transportation source sound levels in Outdoor Living Areas (OLAs), which determines OLA noise mitigation and related warning clause recommendations.

Road and Rail

Indoor Sound Level Criteria

For assessing sound originating from transportation sources, NPC-300 defines sound level criteria as summarized in **Table 1** for indoor areas of sensitive uses. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed.

Table 1: Indoor Sound Level Criteria for Road and Rail Sources

Type of Space	Source	Sound Level Criteria (Indoors)	
		Daytime Leq,16-hr 07:00h – 23:00h	Nighttime Leq,8-hr 23:00h – 07:00h
Living Quarters Examples: Living, dining and den areas of residences, hospitals, nursing homes, schools and daycare centres	Road	45 dBA	
	Rail	40 dBA	
Sleeping Quarters	Road	45 dBA	40 dBA
	Rail	40 dBA	35 dBA

NPC-300 also provides guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The guideline sound level criteria presented in **Table 2** are provided to inform good-practice design objectives.

Table 2: Supplementary Indoor Sound Level Criteria for Road and Rail Sources

Type of Space	Source	Sound Level Criteria (Indoors)	
		Daytime $L_{eq,16-hr}$ 07:00h – 23:00h	Nighttime $L_{eq,8-hr}$ 23:00h – 07:00h
General offices, reception areas, retail stores, etc.	Road	50 dBA	-
	Rail	45 dBA	-
Theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	Road	45 dBA	-
	Rail	40 dBA	-
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	Road	-	40 dBA
	Rail	-	35 dBA
Sleeping quarters of hotels/motels	Road	-	45 dBA
	Rail	-	40 dBA

Outdoor Living Areas (OLAs)

Outdoor Living Areas (OLAs) would include outdoor areas intended and designed for the quiet enjoyment of the outdoor environment and which are readily accessible from the building.

OLAs may include any common outdoor amenity spaces associated with a multi-unit residential development (e.g. courtyards, roof-top terraces), and/or private backyards and terraces with a minimum depth of 4m provided they are the only outdoor living area for the occupant. The sound level criteria for outdoor living areas is summarized in **Table 3**.

Table 3: Sound Level Criteria – Outdoor Living Area

Assessment Location	Sound Level Criteria (Outdoors)	
	Daytime $L_{eq,16-hr}$ 07:00h – 23:00h	Nighttime $L_{eq,8-hr}$ 23:00h – 07:00h
Outdoor Living Area (OLA) (Combined Road and Rail)	55 dBA	-

Outdoor and Plane of Window Sound Levels

In addition to the sound level criteria, noise control measures and requirements for ventilation and warning clauses requirements are recommended for residential land-uses based on predicted transportation source sound levels incident in the plane of window at bedrooms and living/dining rooms, and/or at outdoor living areas. These recommendations are summarized in **Table 4** below.

Table 4: Ventilation, Building Component, and Warning Clauses Recommendations for Road/Rail Sources

Assessment Location	Transportation Sound Level (Outdoors)		Recommendations
	Daytime $L_{eq,16-hr}$ 07:00h – 23:00h	Nighttime $L_{eq,8-hr}$ 23:00h – 07:00h	
Plane of Window (Road)	> 65 dBA	> 60 dBA	<p>Installation of air conditioning to allow windows to remained closed.</p> <p>The sound insulation performance of building components must be specified and designed to meet the indoor sound level criteria.</p> <p>Warning clause “Type D” is recommended.</p>
	> 55 dBA	> 50 dBA	<p>Applicable for low and medium density development: Forced-air ventilation system to allow for the future installation of air-conditioning. Warning clause “Type C” is recommended.</p> <p>Applicable for high density development: Air conditioning to allow windows to remained closed. Warning clause “Type D” is recommended.</p>
Plane of Window (Rail ^{1,2})	> 60 dBA	> 55 dBA	<p>The acoustical performance of building façade components should be specified such that the indoor sound level limits are predicted to be achieved.</p> <p>Warning clause “Type D” is recommended.</p>
	> 60 dBA ($L_{eq,24hr}$) and < 100m from tracks		<p>Exterior walls consisting of a brick veneer or masonry equivalent for the first row of dwellings.</p> <p>Warning clause “Type D” is recommended.</p>
Outdoor Living Area (Combined Road and Rail ³)	<p>≤ 60 dBA</p> <p>> 55 dBA</p>	-	<p>If sound levels are predicted to exceed 55 dBA, but are less than 60 dBA, noise controls may be applied to reduce the sound level to 55 dBA.</p> <p>If noise control measures are not provided, a warning clause “Type A” is recommended.</p>
	> 60 dBA	-	<p>Noise controls (barriers) should be implemented to meet the 55 dBA criterion.</p> <p>If mitigation is not feasible to meet the 55 dBA criterion for technical, economic or administrative reasons, an exceedance of 5 dB may be acceptable (to a maximum sound level of 60 dBA). In this case a warning clause “Type B” would be recommended.</p>

Note(s):

1. Whistle noise is included (if applicable) in the determination of the sound level at the plane of window.
2. Some railway companies (e.g. CN, CP) may require that the exterior walls include a brick veneer or masonry equivalent for the façade facing the railway line, regardless of the sound level.
3. Whistle noise is not included in the determination of the sound level at the OLA.

Rail Layover Sites

NPC-300 provides a sound level limit for rail layover sites to be the higher of the background sound level or 55 dBA $L_{eq,1-hr}$, for any one-hour period.

Rail Vibration Criteria

An assessment of rail vibration is generally recommended for developments within 75m of a rail corridor or rail yard, and adjacent to or within a setback of 15m of a transit (subway or light-rail) rail line.

The generally accepted vibration criterion for sensitive land-uses is the threshold of perception for human exposure to vibration, being a vibration velocity level of 0.14 mm/s RMS in any one-third octave band centre frequency in the range of 4 Hz to 200 Hz.

This vibration criterion is based on a one-second exponential time-averaged maximum hold root-mean-square (RMS) vibration velocity level and is consistent with the Railway Associations of Canada (RAC, 2013) guideline, the U.S. Federal Transit Authority (FTA, 2018) criterion for residential land-uses, the Toronto Transit Commission (TTC) guidelines for the assessment of potential vibration impact of future expansion (MOEE/TTC, 1993).

Aircraft

Land-use compatibility in the vicinity of airports is addressed in Ministry of the Environment, Conservation, and Parks (MECP) Guideline NPC-300 (MOE, 2013). The guideline provides recommendations for ventilation, and noise control for different Noise Exposure Forecast (NEF) values, which would be based on NEF contour maps available from the airport authority. The NEF values can be expressed as $L_{A,eq,24hr}$ sound levels by using the expression $NEF = L_{A,eq,24hr} - 32$ dBA.

Table 5: Indoor Sound Level Criteria for Aircraft Sources

Assessment Location	Indoor Sound Level Criteria NEF ($L_{eq, 24hr}$) ¹
Living/dining/den areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, etc.	NEF- 5 (37 dBA)
Sleeping quarters	NEF-0 (32 dBA)

NPC-300 also provides guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The guideline sound level criteria presented in **Table 6** are provided to inform good-practice design objectives.

Table 6: Supplementary Indoor Sound Level Criteria for Aircraft Sources

Assessment Location	Indoor Sound Level Criteria ¹
General offices, reception areas, retail stores, etc.	NEF-15 (47 dBA)
Individual or semi-private offices, conference rooms, etc.	NEF-10 (42 dBA)
Sleeping quarters of hotels/motels, theatres, libraries, places of worship, etc.	NEF-5 (37 dBA)

Table 7: NPC-300 Sound Level Criteria for Aircraft (Outdoors)

Assessment Location	Outdoor Sound Level Criteria ¹
Outdoor areas, including OLA	NEF-30 (62 dBA)

Table 8: Ventilation, Building Component, and Warning Clauses Recommendations for Aircraft Sources

Assessment Location	Aircraft Sound Level	NPC-300 Requirements
	NEF ($L_{EQ,24-hr}$)	
Outdoors	\geq NEF 30	<p>Air conditioning to allow windows to remained closed.</p> <p>The sound insulation performance of building components must be specified and designed to meet the indoor sound level criteria.</p> <p>Warning clauses "Type D" and "Type B" are recommended.</p>
	$<$ NEF 30 \geq NEF 25	<p>The sound insulation performance of building components must be specified and designed to meet the indoor sound level criteria.</p> <p>Applicable for low and medium density development: Forced-air ventilation system to allow for the future installation of air-conditioning. Warning clause "Type C" is recommended.</p> <p>Applicable for high density development: Air conditioning to allow windows to remained closed. Warning clause "Type D" is recommended.</p>
	$<$ NEF 25	Further assessment not required

Stationary Sources

NPC-300 Sound Level Criteria – Stationary Sources

Guidance from the MECP NPC-300 Environmental Noise Guideline is used to assess environmental noise generated by stationary sources, for example industrial and commercial facilities.

Noise from stationary sources is treated differently from transportation sources and requires sound levels be assessed for the predictable worst-case one-hour average sound level (L_{eq}) for each period of the day. For assessing sound originating from stationary sources, NPC-300 defines sound level criteria for two types of Points of Reception (PORs): outdoor and plane of window.

The assessment criteria for all PORs is the higher of either the exclusion limit per NPC-300 or the minimum background sound level that occurs or is likely to occur at a POR. The applicable exclusion limit is determined based on the level of urbanization or "Class" of the area. The NPC-300 exclusion limits for continuously operating stationary sources are summarized in **Table 9**.

Table 9: NPC-300 Exclusion Limits – Continuous and Quasi-Steady Impulsive Stationary Sources (LAeq-1hr)

Time Period	Class 1 Area		Class 2 Area		Class 3 Area		Class 4 Area	
	Outdoor	Plane of Window	Outdoor	Plane of Window	Outdoor	Plane of Window	Outdoor	Plane of Window
Daytime 0700-1900h	50 dBA	50 dBA	50 dBA	50 dBA	45 dBA	45 dBA	55 dBA	60 dBA
Evening 1900-2300h	50 dBA	50 dBA	45 dBA	50 dBA	40 dBA	40 dBA	55 dBA	60 dBA
Nighttime 2300-0700h	--	45 dBA	--	45 dBA	--	40 dBA	--	55 dBA

Note(s):

1. The applicable sound level criterion is the background sound level or the exclusion limit, whichever is higher.
2. Class 1, 2 and 3 sound level criteria apply to a window that is assumed to be open.
3. Class 4 area criteria apply to a window that is assumed closed. Class 4 area requires formal designation by the land-use planning authority.
4. Sound level criteria for emergency backup equipment (e.g. generators) operating in non-emergency situations such as testing or maintenance are 5 dB greater than the applicable sound level criteria for stationary sources.

For impulsive sound, other than quasi-steady impulsive sound, from a stationary source, the sound level criteria at a POR is expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}), and is summarized in **Table 10**.

Table 10: NPC-300 Exclusion Limits - Impulsive Stationary Sources (LM)

Time Period	Number of Impulses in Period of One-Hour	Class 1 and 2 Areas		Class 3 Areas		Class 4 Areas	
		Outdoor	Plane of Window	Outdoor	Plane of Window	Outdoor	Plane of Window
Daytime (0700-2300h)	9 or more	50 dBAI	50 dBAI	45 dBAI	45 dBAI	55 dBAI	60 dBAI
Nighttime (2300-0700h)		-	45 dBAI	-	40 dBAI	-	55 dBAI
Daytime (0700-2300h)	7 to 8	55 dBAI	55 dBAI	50 dBAI	50 dBAI	60dBAI	65 dBAI
Nighttime (2300-0700h)		-	50 dBAI	-	45 dBAI	-	60 dBAI
Daytime (0700-2300h)	5 to 6	60 dBAI	60 dBAI	55 dBAI	55 dBAI	65 dBAI	70 dBAI
Nighttime (2300-0700h)		-	55 dBAI	-	50 dBAI	-	65 dBAI
Daytime (0700-2300h)	4	65 dBAI	65 dBAI	60 dBAI	60 dBAI	70 dBAI	75 dBAI
Nighttime (2300-0700h)		-	60 dBAI	-	55 dBAI	-	70 dBAI
Daytime (0700-2300h)	3	70 dBAI	70 dBAI	65 dBAI	65 dBAI	75 dBAI	80 dBAI
Nighttime (2300-0700h)		-	65 dBAI	-	60 dBAI	-	75 dBAI
Daytime (0700-2300h)	2	75 dBAI	75 dBAI	70 dBAI	70 dBAI	80 dBAI	85 dBAI
Nighttime (2300-0700h)		-	70 dBAI	-	65 dBAI	-	80 dBAI
Daytime (0700-2300h)	1	80 dBAI	80 dBAI	75 dBAI	75 dBAI	85 dBAI	90 dBAI
Nighttime (2300-0700h)		-	75 dBAI	-	70 dBAI	-	85 dBAI

Note(s):

1. The applicable sound level criterion is the background sound level or the exclusion limit, whichever is higher.

D-Series Guidelines

The MECP D-series guidelines (MOE, 1995) provide direction for land use planning to maximize compatibility of industrial uses with adjacent land uses. The goal of Guideline D-6 is to minimize encroachment of sensitive land uses on industrial facilities and vice versa, in order to address potential incompatibility due to adverse effects such as noise, odour and dust.

For each class of industry, the guideline provides an estimate of potential influence area and states that this influence area shall be used in the absence of the recommended technical studies. Guideline D-6 also recommends a minimum separation distance between each class of industry and sensitive land uses (see **Table 11**). Section 4.10 of D-6 identifies exceptional circumstances with respect to redevelopment, infill and mixed-use areas. In these cases, the guideline suggests that separation distances at, or less than, the recommended minimum separation distance may be acceptable if a justifying impact assessment is provided.

Table 11: Summary of Guideline D-6

Industry Class	Definition	Potential Influence Area	Recommended Minimum Separation Distance (property line to property line)
Class I	Small scale, self-contained, daytime only, infrequent heavy vehicle movements, no outside storage.	70 m	20 m
Class II	Medium scale, outdoor storage of wastes or materials, shift operations and frequent heavy equipment movement during the daytime.	300 m	70 m
Class III	Large scale, outdoor storage of raw and finished products, large production volume, continuous movement of products and employees during daily shift operations.	1000 m	300 m

Guideline D-6 provides criteria for classifying industrial land uses, based on their outputs, scale of operations, processes, schedule and intensity of operations. **Table 12** provides the classification criteria and examples.

Table 12: Guideline D-6 Industrial Categorization Criteria

Criteria	Class I	Class II	Class III
Outputs	<ul style="list-style-type: none"> • Sound not audible off property • Infrequent dust and/ or odour emissions and not intense • No ground-borne vibration 	<ul style="list-style-type: none"> • Sound occasionally audible off property • Frequent dust and/ or odour emissions and occasionally intense • Possible ground-borne vibration 	<ul style="list-style-type: none"> • Sound frequently audible off property • Persistent and intense dust and/ or odour emissions • Frequent ground-borne vibration
Scale	<ul style="list-style-type: none"> • No outside storage • Small scale plant or scale is irrelevant in relation to all other criteria 	<ul style="list-style-type: none"> • Outside storage permitted • Medium level of production 	<ul style="list-style-type: none"> • Outside storage of raw and finished products • Large production levels
Process	<ul style="list-style-type: none"> • Self-contained plant or building which produces / stores a packaged product • Low probability of fugitive emissions 	<ul style="list-style-type: none"> • Open process • Periodic outputs of minor annoyance • Low probability of fugitive emissions 	<ul style="list-style-type: none"> • Open process • Frequent outputs of major annoyances • High probability of fugitive emissions
Operation / Intensity	<ul style="list-style-type: none"> • Daytime operations only • Infrequent movement of products and/or heavy trucks 	<ul style="list-style-type: none"> • Shift operations permitted • Frequent movements of products and/or heavy trucks with majority of movements during daytime hours 	<ul style="list-style-type: none"> • Continuous movement of products and employees • Daily shift operations permitted
Examples	<ul style="list-style-type: none"> • Electronics Manufacturing • Furniture refinishing • Beverage bottling • Auto parts • Packaging services • Dairy distribution • Laundry and linen supply 	<ul style="list-style-type: none"> • Magazine printing • Paint spray booths • Metal command • Electrical production • Dairy product manufacturing • Feed packing plant 	<ul style="list-style-type: none"> • Paint and varnish manufacturing • Organic chemicals manufacturing • Breweries • Solvent recovery plant • Soap manufacturing • Metal manufacturing

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APPENDIX C

NOISE MITIGATION GUIDANCE

Acoustic/Noise Barrier

Generally, noise controls to attenuate transportation sound levels at Outdoor Living Areas (OLAs) would consist of the implementation of acoustic/noise barriers with materials that would meet the guidance included in NPC-300, for example:

- A wall, earthen berm, wall/earthen berm combination or similar structure, used as a noise control measure, and high enough to break the line-of-sight between the source and the receptor.
- The minimum surface density (face weight) is 20 kg/m²
 - Many materials could satisfy the surface density requirement, e.g. wood, glass, concrete, Plexiglas, Acrylite.
 - The required thickness can be determined by dividing the 20 kg/m² face weight by the material density (kg/m³). Typically, this would imply:
 - 50 mm (2") thickness of wood
 - 13 mm (0.5") thickness of lighter plastic (like Plexiglas or PVC)
 - 6 mm (0.25") thickness of heavier material (like aluminum, glass, concrete)
- The barrier should be structurally sound, appropriately designed to withstand wind and snow load, and constructed without cracks or surface gaps. Joints between panels may need to be overlapped to ensure surfaces are free of gaps, particularly for wood construction.
- Any gaps under the barrier that are necessary for drainage purposes should be minimized and localized, so that the acoustical performance of the barrier is maintained.
- If a sound absorptive face is to be included in the barrier design, the minimum noise reduction coefficient is recommended to be NRC 0.7.

Building Ventilation and Air Conditioning

The use of air conditioning itself is not a noise control measure; however, it allows for windows and doors to remain closed, thereby reducing the indoor sound levels.

NPC-300 provides the following guidance with respect to implementation of building ventilation and air conditioning:

- a. the noise produced by the proposed ventilation system in the space served does not exceed 40 dBA. In practice, this condition usually implies that window air conditioning units are not acceptable;
- b. the ventilation system complies with all national, provincial and municipal standards and codes;
- c. the ventilation system is designed by a heating and ventilation professional; and
- d. the ventilation system enables the windows and exterior doors to remain closed.

Air conditioning systems also need to comply with Publication NPC-216, and/or any local municipal noise by-law that has provisions relating to air conditioning equipment.

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APPENDIX D

WARNING CLAUSES

Warning clauses are recommended to be included on all development agreements, offers of purchase and agreements of purchase and sale or lease. Warning clauses may be used individually or in combination.

The following warning clauses are recommended based on the applicable guidelines; however, wording may be modified/customized during consultation with the planning authority to best suit the proposed development:

Transportation Sources

NPC-300 Type A: Recommended to address surface transportation sound levels in OLAs if sound level is in the range of >55 dBA but ≤ 60 dBA, and noise controls have not been provided.

"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air 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."

NPC-300 Type B: Recommended to address surface transportation sound levels in OLAs if the sound level is in the range of >55 dBA but ≤ 60 dBA, and noise controls have been provided. Recommended to address outdoor aircraft sound levels ≥NEF 30.

"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 traffic (rail traffic) (air traffic) may on occasions 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."

NPC-300 Type C: Applicable for low and medium density developments only, recommended to address transportation sound levels at the plane of window.

"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

NPC-300 Type D: Recommended to address transportation sound levels at the plane of window.

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

Proximity to Railway Line: Metrolinx/CN/CP/VIA Warning Clause for developments that are within 300 metres of the right-of-way

"Warning: [Canadian National Railway Company] [Metrolinx / GO] [Canadian Pacific Railway Company] [VIA Rail Canada Inc.] or its assigns or 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 the railway or its assigns or successors as aforesaid may expand its 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). CNR/Metrolinx/GO/CPR/VIA 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."

Stationary Sources

NPC-300 Type E: Recommended to address proximity to commercial/industrial land-use

"Purchasers/tenants are advised that due to the proximity of the adjacent industrial/commercial land-uses, noise from the industrial/commercial land-uses may at times be audible."

NPC-300 Type F: Recommended to for Class 4 Area Notification

"Purchasers/tenants are advised that sound levels due to the adjacent industry (facility) (utility) are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."

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APPENDIX E



Turning Movement Count (1 . KILLALY STREET EAST & JAMES STREET)

Start Time	E Approach KILLALY STREET EAST					S Approach JAMES STREET					W Approach KILLALY STREET EAST					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
07:00:00	8	0	0	0	8	1	5	0	0	6	3	20	0	0	23	37	
07:15:00	18	0	0	0	18	2	2	0	0	4	1	17	0	0	18	40	
07:30:00	14	0	0	0	14	1	3	0	0	4	1	13	0	0	14	32	
07:45:00	21	0	0	0	21	1	8	0	0	9	2	17	0	0	19	49	158
08:00:00	24	0	0	0	24	2	5	0	0	7	0	28	0	0	28	59	180
08:15:00	22	0	0	0	22	1	2	0	0	3	1	24	0	0	25	50	190
08:30:00	39	1	0	0	40	3	1	0	0	4	2	34	0	0	36	80	238
08:45:00	64	3	0	0	67	2	2	0	3	4	0	43	0	0	43	114	303
BREAK																	
16:00:00	27	0	0	0	27	1	1	0	0	2	2	38	0	0	40	69	
16:15:00	36	1	0	0	37	0	1	0	0	1	3	36	0	0	39	77	
16:30:00	35	4	0	0	39	1	2	0	0	3	0	31	0	0	31	73	
16:45:00	36	3	0	0	39	0	2	0	0	2	5	30	0	0	35	76	295
17:00:00	27	5	0	0	32	0	2	0	0	2	3	29	0	0	32	66	292
17:15:00	43	1	0	0	44	1	2	0	0	3	1	29	0	0	30	77	292
17:30:00	21	1	0	0	22	3	4	0	0	7	4	34	0	0	38	67	286
17:45:00	33	0	0	0	33	0	5	0	0	5	8	27	0	0	35	73	283
Grand Total	468	19	0	0	487	19	47	0	3	66	36	450	0	0	486	1039	-
Approach%	96.1%	3.9%	0%		-	28.8%	71.2%	0%		-	7.4%	92.6%	0%		-	-	-
Totals %	45%	1.8%	0%		46.9%	1.8%	4.5%	0%		6.4%	3.5%	43.3%	0%		46.8%	-	-
Heavy	33	0	0		-	0	0	0		-	0	23	0		-	-	-
Heavy %	7.1%	0%	0%		-	0%	0%	0%		-	0%	5.1%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (12.35 °C)

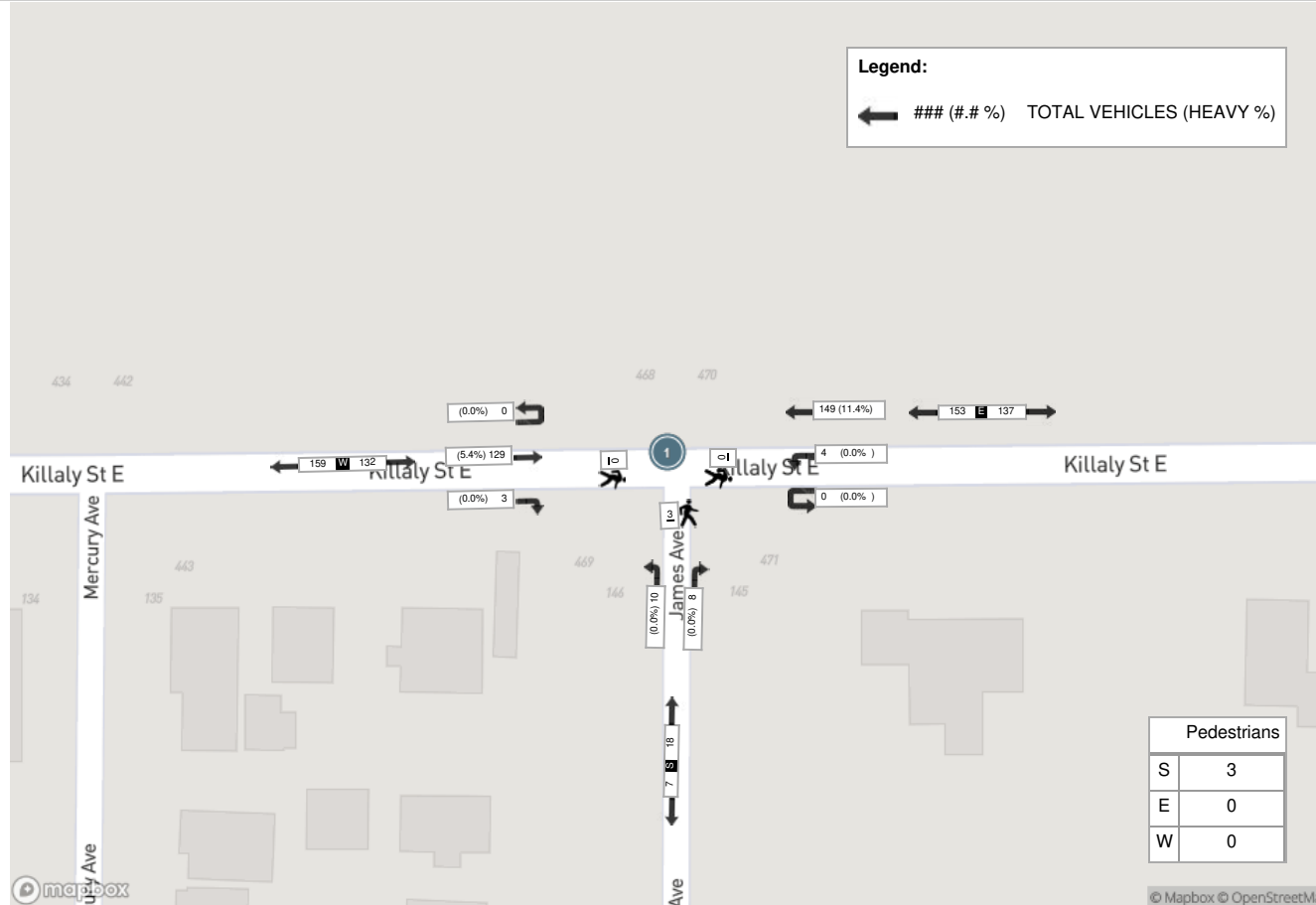
Start Time	E Approach KILLALY STREET EAST					S Approach JAMES STREET					W Approach KILLALY STREET EAST				Int. Total (15 min)	
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds		Approach Total
08:00:00	24	0	0	0	24	2	5	0	0	7	0	28	0	0	28	59
08:15:00	22	0	0	0	22	1	2	0	0	3	1	24	0	0	25	50
08:30:00	39	1	0	0	40	3	1	0	0	4	2	34	0	0	36	80
08:45:00	64	3	0	0	67	2	2	0	3	4	0	43	0	0	43	114
Grand Total	149	4	0	0	153	8	10	0	3	18	3	129	0	0	132	303
Approach%	97.4%	2.6%	0%		-	44.4%	55.6%	0%		-	2.3%	97.7%	0%		-	-
Totals %	49.2%	1.3%	0%		50.5%	2.6%	3.3%	0%		5.9%	1%	42.6%	0%		43.6%	-
PHF	0.58	0.33	0		0.57	0.67	0.5	0		0.64	0.38	0.75	0		0.77	-
Heavy	17	0	0		17	0	0	0		0	0	7	0		7	-
Heavy %	11.4%	0%	0%		11.1%	0%	0%	0%		0%	0%	5.4%	0%		5.3%	-
Lights	132	4	0		136	8	10	0		18	3	122	0		125	-
Lights %	88.6%	100%	0%		88.9%	100%	100%	0%		100%	100%	94.6%	0%		94.7%	-
Single-Unit Trucks	5	0	0		5	0	0	0		0	0	3	0		3	-
Single-Unit Trucks %	3.4%	0%	0%		3.3%	0%	0%	0%		0%	0%	2.3%	0%		2.3%	-
Buses	11	0	0		11	0	0	0		0	0	4	0		4	-
Buses %	7.4%	0%	0%		7.2%	0%	0%	0%		0%	0%	3.1%	0%		3%	-
Articulated Trucks	1	0	0		1	0	0	0		0	0	0	0		0	-
Articulated Trucks %	0.7%	0%	0%		0.7%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-



Peak Hour: 04:00 PM - 05:00 PM Weather: Few Clouds (16.49 °C)

Start Time	E Approach KILLALY STREET EAST					S Approach JAMES STREET					W Approach KILLALY STREET EAST				Int. Total (15 min)	
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds		Approach Total
16:00:00	27	0	0	0	27	1	1	0	0	2	2	38	0	0	40	69
16:15:00	36	1	0	0	37	0	1	0	0	1	3	36	0	0	39	77
16:30:00	35	4	0	0	39	1	2	0	0	3	0	31	0	0	31	73
16:45:00	36	3	0	0	39	0	2	0	0	2	5	30	0	0	35	76
Grand Total	134	8	0	0	142	2	6	0	0	8	10	135	0	0	145	295
Approach%	94.4%	5.6%	0%		-	25%	75%	0%		-	6.9%	93.1%	0%		-	-
Totals %	45.4%	2.7%	0%		48.1%	0.7%	2%	0%		2.7%	3.4%	45.8%	0%		49.2%	-
PHF	0.93	0.5	0		0.91	0.5	0.75	0		0.67	0.5	0.89	0		0.91	-
Heavy	2	0	0		2	0	0	0		0	0	4	0		4	-
Heavy %	1.5%	0%	0%		1.4%	0%	0%	0%		0%	0%	3%	0%		2.8%	-
Lights	132	8	0		140	2	6	0		8	10	131	0		141	-
Lights %	98.5%	100%	0%		98.6%	100%	100%	0%		100%	100%	97%	0%		97.2%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	3	0		3	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	2.2%	0%		2.1%	-
Buses	1	0	0		1	0	0	0		0	0	1	0		1	-
Buses %	0.7%	0%	0%		0.7%	0%	0%	0%		0%	0%	0.7%	0%		0.7%	-
Articulated Trucks	1	0	0		1	0	0	0		0	0	0	0		0	-
Articulated Trucks %	0.7%	0%	0%		0.7%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (12.35 °C)



Peak Hour: 04:00 PM - 05:00 PM Weather: Few Clouds (16.49 °C)

