

COUNTERPOINT
LAND DEVELOPMENT BY

DILLON
CONSULTING

LBI DEVELOPMENTS INC.

NOISE AND VIBRATION ASSESSMENT

**Walker Road at Cabana Road East Redevelopment
Official Plan and Zoning By-Law Amendments**

MAY 2026 - 24-9442

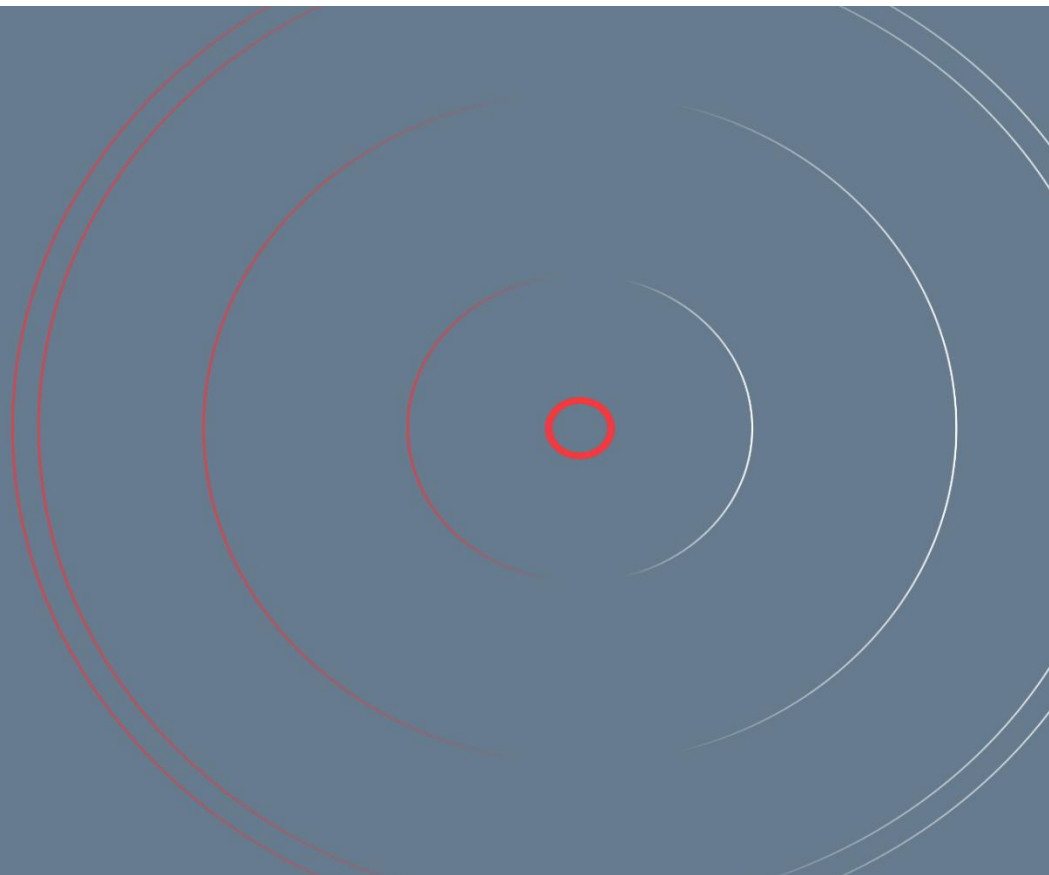


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1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

Dillon Consulting Limited (Dillon) was retained by LBI Developments Inc. (LBI) to complete a Noise and Vibration Assessment as requested by the City of Windsor for a proposed mixed-use development. The Proposed Development is located on the southeast corner of Walker Road and Cabana Road East in Windsor, Ontario. This study has been completed in support of Official Plan and Zoning By-law amendment applications for the Proposed Development.

The Noise and Vibration Assessment presented herein was prepared in accordance with the guidelines and requirements of the City of Windsor, the Ontario Ministry of Environment, Conservation and Parks (MECP) noise publication NPC-300, and MECP's Land-Use Compatibility guidelines (D-series). This assessment focuses on the noise impacts from nearby transportation sources and stationary sources (i.e., nearby industrial operations) on the Proposed Development.

1.2 THE PROJECT AND SURROUNDING AREAS

The Proposed Development is located on a vacant lot comprised of 2375 Cabana Road East, 2385 Cabana Road East, 2415 Cabana Road East, 0 Cabana Road East, 4040 Walker Road, and parts of 4096-4128 Walker Road. The land is currently zoned as Commercial Districts 2.1 and 2.2. (CD2.1 and CD2.2) and Manufacturing District 1.2 (MD1.2), per the City of Windsor's Zoning By-law 8600. The Proposed Development consists of the following buildings:

- Building 'A': A five-storey mixed-use building;
- Building 'B': A three-storey mixed-use building;
- Buildings 'C', 'D', and 'F': Commercial buildings; and,
- Building 'E': A grocery store.

The Proposed Development is surrounded by existing commercial, industrial, and residential land uses. The Proposed Development is bordered by Cabana Road East to the north, Walker Road to the west, and the CN Pelton Industrial Rail Spur to the east. This road will be referred to as Cabana Road herein. The Windsor International Airport is also located in close proximity to the Proposed Development.

The Proposed Development is surrounded by Commercial Districts to the north, east, and south, and Manufacturing Districts to the north, per the City of Windsor's Zoning District Maps. Additionally, there are Industrial and Institutional Zones to the east of the Proposed Development, per the Township of South Sandwich's Zoning District Maps.

The subject site and surrounding areas are shown in **Figures 1 and 2**. The conceptual development plan for the site and surrounding zoning maps are provided in **Appendix A**.

2.0 TRANSPORTATION NOISE AND VIBRATION

2.1 TRANSPORTATION NOISE ASSESSMENT

This section investigates noise impacts from nearby transportation sources and stationary sources on the Proposed Development.

The sources of transportation noise with the potential to impact the Proposed Development include road traffic along Cabana Road East and Walker Road, rail traffic on CN's Pelton Industrial Spur, and air traffic from the Windsor International Airport. Impacts from road, rail, and aircraft were predicted and compared against the applicable criteria in the Ontario Ministry of Environment, Conservation and Parks (MECP) noise guideline publication, *NPC-300 – Environmental Noise Guideline – Stationary and Transportation Sources – Approvals and Planning (2013)*. NPC-300 outlines noise level criteria for sensitive land uses, which assist in determining requirements for façade construction, ventilation requirements, warning clauses, and potential noise barriers for the Proposed Development.

2.1.1 Noise Criteria

The applicable transportation noise criteria, as outlined in Part C of NPC-300, is presented in **Table 1** through **Table 5**. **Table 1** summarizes the indoor sound level limits based on the type of space assessed, time of day, transportation noise source, and the maximum allowable equivalent sound levels from railway sources. The indoor noise levels are based on the assumption of closed windows and doors.

Table 1: Indoor Sound Level Limits for Road and Rail

TYPE OF SPACE	TIME PERIOD	EQUIVALENT SOUND LEVEL - L_{EQ}	
		ROAD	RAIL
General offices, reception areas, retail stores, etc.	Daytime 07:00 – 23:00	50 dBA	45 dBA
Living/dining areas of residences, hospitals, nursing homes, schools, daycares, etc.	Daytime 07:00 – 23:00	45 dBA	40 dBA
Living/dining areas of residences, hospitals, nursing homes, etc. (except schools and daycares)	Night-time 23:00 – 07:00	45 dBA	40 dBA
Sleeping quarters of residences	Daytime 07:00 – 23:00	45 dBA	40 dBA
	Night-time 23:00 – 07:00	40 dBA	35 dBA
Sleeping quarters of hotels	Night-time 23:00 – 07:00	45 dBA	40 dBA

Table 2 outlines the maximum equivalent plane-of-window sound levels for road and rail where if exceeded, a detailed building component design assessment is required to ensure the indoor sound level limits (see **Table 1**) are achieved.

Table 2: Requirements for Building Component Assessment

ASSESSMENT LOCATION	TIME PERIOD	EQUIVALENT SOUND LEVEL - L_{EQ}	
		ROAD	RAIL ^[1]
Plane of window for living area or sleeping quarters	Daytime (07:00 – 23:00)	65 dBA	60 dBA
	Night-time (23:00 – 07:00)	60 dBA	55 dBA

Note: [1] Whistle noise is included for the building component and indoor noise assessment.

The MECP's NPC-300 Noise Guideline outlines façade construction requirements for proposed residential developments within 100 metres of rail tracks, shown in **Table 3**. These requirements apply only to the first row of dwellings.

Table 3: Façade Construction Requirements

ASSESSMENT LOCATION	EQUIVALENT SOUND LEVEL – L_{EQ} 24 HR ^[1]	FAÇADE CONSTRUCTION REQUIREMENT
Plane of window for living area or sleeping quarters	> 60 dBA	Brick veneer or acoustical equivalent
	≤ 60 dBA	No requirement

Note: [1] Whistle noise is included for façade construction requirements.

Table 4 summarizes potential noise warning clauses and ventilation requirements that should be used to warn of potential annoyance due to existing noise sources related to road and rail. Whistle noise is not included in the determination of warning clause requirements.

Table 4: Ventilation and Warning Clause Requirements for Road and Rail

ASSESSMENT LOCATION	TIME PERIOD	EQUIVALENT SOUND LEVEL – L_{EQ} ROAD/RAIL	VENTILATION AND WARNING CLAUSE REQUIREMENTS
Plane of window for living area or sleeping quarters	Daytime (07:00 – 23:00)	≤ 55 dBA	No Requirement
		> 55 dBA and ≤ 65 dBA	Provision for the installation of central air conditioning with a Type C warning clause
		> 65 dBA	Installation of central air conditioning with a Type D warning clause
Plane of window for living area or sleeping quarters	Nighttime (23:00 – 7:00)	≤ 50 dBA	No Requirement
		> 50 dBA and ≤ 60 dBA	Provision for the installation of central air conditioning with a Type C warning clause
		> 60 dBA	Installation of central air conditioning with a Type D warning clause

The applicable noise criteria for Outdoor Living Areas (OLAs) specific to surface transportation are presented in **Table 5**. If the 16-Hour Equivalent Sound Level (L_{eq} 16hr) at an OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. Otherwise, prospective purchasers or tenants should be informed of potential elevated noise levels by way of a Type A warning clause. For a L_{eq} 16h of greater than 60 dBA, noise mitigation measures are required to reduce the noise levels to 55 dBA or less. Whistle noise is not included in the determination of the rail outdoor sound level.

Table 5: OLA Level Limits for Road and Rail Noise

ASSESSMENT LOCATION	EQUIVALENT SOUND LEVEL – L_{EQ} 16 HR ^{[1],[2]} ROAD/RAIL	FAÇADE CONSTRUCTION REQUIREMENT
Outdoor Living Area	≤ 55 dBA	No requirement
	> 55 dBA and ≤ 60 dBA	Installation of noise control measure OR a Type A warning clause ^[1]
	> 60 dBA	Installation of noise control measure with a Type B warning clause

Notes: [1] Daytime only (07:00 – 23:00)

[2] Whistle noise is not included in assessment of rail noise for warning clause requirements.

Aircraft noise assessment is based on the Noise Exposure Forecast (NEF) contours determined by methods approved by Transport Canada. The NEF criteria recommended by NPC-300 for noise-sensitive indoor spaces are outlined in **Table 6**. Per BPN-56, the indoor NEF values can be calculated by converting the indoor 24-hour equivalent sound level, $Leq(24)$, using the expression $NEF = Leq(24) - 31$ dBA.

Table 6: Indoor Aircraft Noise Limits (Applicable over 24-hour period)

TYPE OF SPACE	INDOOR NEF
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining/den areas of residences, hospitals, schools, nursing/retirement homes, daycares, etc.	5
Sleeping quarters	0

If a sensitive receptor location is within the NEF contours of 25 and 30, the dwelling should be designed with a provision for central air conditioning, and a Type C warning clause is recommended. Additionally, building components including windows, doors, walls, and ceiling/roof should be designed to achieve the indoor sound level limits outlined in **Table 6**.

2.1.2 Transportation Sources

In assessing potential transportation noise impacts on the Proposed Development, Cabana Road East, Walker Road, and CN's Pelton Industrial Spur were analyzed as surface transportation sources. All traffic data used in modelling road and rail traffic is provided in **Appendix B**.

Road Noise Sources

The development area is located south of Cabana Road East and east of Walker Road. Average annual daily traffic (AADT) for each roadway was determined through peak-hour Turning Movement Counts (TMC) conducted by Horizon Data Services Ltd. during the week of December 10th, 2024. A 90% and 10% split for daytime and nighttime traffic volumes, respectively, were used in the analysis. The future traffic volumes (for 2036) were determined assuming an annual compounded growth rate of 2%. The percentage of heavy and medium trucks was taken from the peak hour turning movement counts. The forecasted future (2036) road traffic data is presented in **Table 7**.

Table 7: Future (2036) Road Traffic Data

ROADWAY	2036 AADT	MEDIUM TRUCKS (%)	HEAVY TRUCKS (%)	SPEED (KM/H)
Cabana Road East	16,504	2.1%	5.9%	50
Walker Road	36,704	2.8%	6.7%	60

Rail Noise Sources

The site of the Proposed Development is located directly west of CN's Pelton Industrial Spur. Daily freight rail traffic in the area was obtained from the Government of Canada's Grade Crossings Inventory (October 2024). Detailed rail traffic counts, schedules, and train consists for the Pelton Spur were requested from the rail operator but have not been provided at the time of assessment. As such, the following assumptions were applied to the rail noise analysis:

- Train passbys provided by the Grade Crossings Inventory were assessed against the nighttime (23:00-07:00) rail noise criteria set by NPC-300; and,
- Freight trains were assumed to consist of up to 4 locomotives and up to 140 rail cars per set.

Daily freight train traffic counts for the year 2036 were projected based on a per annum growth of 2%. The City of Windsor's anti-whistling by-law is in effect in the development area. However, since Cabana Road East contains an at-grade crossing, trains may use their whistles in an emergency or to warn trespassers at this location. Rail traffic data forecasted to 2036 is presented in **Table 8**.

Table 8: Future (2036) Freight Rail Traffic Data

DAYTIME CARS (07:00- 23:00)	NIGHTTIME CARS (23:00- 07:00)	DAYTIME LOCOMOTIVES (07:00-23:00)	NIGHTTIME LOCOMOTIVES (23:00-07:00)	24HR CARS	24HR LOCOMOTIVES	SPEED [KM/H]
—	560	—	16	560	16	16

Aircraft Noise Sources

Noise impacts at the Proposed Development due to aircraft movements to and from Windsor International were assessed using the airport's most recently published NEF contours (2010). The Windsor International Airport's NEF contour map is attached in **Appendix C**.

2.1.3 Methodology

The noise analysis was completed using Cadna/A, a noise propagation software. The Cadna/A software includes the implementation of the Transportation Noise Model (TNM) roadway algorithms, as well as the Federal Transit Administration/Federal Railroad Administration (FTA/FRA) railway algorithms. The model is able to incorporate complex site specific features such as elevation, berms, absorptive grounds, and barriers to accurately predict noise levels at specific receptors, pertaining to noise emissions from a particular noise source. The model accounts for reduction in sound level due to increased distance and geometrical spreading, air absorption, ground attenuation, and acoustical shielding by intervening structures and topography. The model is considered conservative as it represents atmospheric conditions that promote propagation of sound from source to receptor.

The following assumptions were applied to the noise propagation modelling:

- A global ground absorption coefficient of 0.30, representing reflective grounds between sources and receptors was incorporated in the noise model;
- A second order reflection was incorporated in the noise model; and,
- The ground within the study area is considered to be generally flat. As such, land topography was not incorporated in the modelling.

Roadway Analysis

The assessment for roadway impact noise was completed using TNM, developed by the Federal Highway Administration (FHWA), implemented through Cadna/A. The model inputs used for the TNM algorithm are outlined in **Section 2.1.2**. In order to confirm the modelling results of TNM protocol implemented through Cadna/A, a comparative analysis was completed for road traffic noise modelling, in which the results from TNM in Cadna/A were compared against those generated by ORNAMENT in STAMSON Version 5.04 model. This comparative analysis is discussed in **Section 2.1.5**.

Railway Analysis

The railway noise impact assessment was conducted using the FTA/FRA algorithm implemented through Cadna/A. The model's inputs are outlined in **Section 2.1.2**.

In order to confirm the modelling results of the FTA/FRA protocol implemented through Cadna/A, a comparative analysis was completed for rail traffic noise modelling, in which the results from FTA/FRA in Cadna/A were compared against those of generated by STEAM model in STAMSON Version 5.04 model. This comparative analysis is discussed in **Section 2.1.5**.

Aircraft Analysis

The aircraft noise impact assessment was conducted using the methodology outlined in the National Research Council (NRC) Publication Building Practice Note 56 (BPN-56): Controlling Sound Transmission into Buildings. The building components' required noise reduction parameters in order to achieve compliance with the indoor aircraft noise criteria established in NPC-300 (see **Table 6**) are predicted based on the outdoor aircraft noise level taken from the airport's NEF contours.

Sensitive Receptor Locations

For the purposes of this study, the Building Evaluation feature in Cadna/A was used to assess the worst-case façade noise impacts throughout the Proposed Development. Based on the preliminary site plan for the Proposed Development, no Outdoor Living Areas (OLAs) have been identified that require assessment of impact due to transportation noise. Any private balconies included in the Proposed Development are assumed to be less than 4 metres in depth, and therefore are not considered OLAs per MECP's NPC-300.

2.1.4 Predicted Noise Impacts

Road and Rail Noise Impacts – Plane of Window

Table 9 summarizes the predicted building façade noise levels from rail noise sources at the sensitive receptors within the Proposed Development.

Table 9: Combined Road and Rail Noise Prediction Summary Table – Façade Impacts

BUILDING ID	EQUIVALENT SOUND LEVEL - L_{EQ} ^{[1],[2]} [DBA]					
	Road Impacts		Railway Impacts		Combined Road and Rail ^[3]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
Building 'A'	67	60	—	47	67	60
Building 'B'	65	59	—	48	65	59

Notes: [1] L_{eq} represents maximum predicted impacts along façade.

[2] Predicted noise levels that exceed the applicable limits are presented in **bold**.

[3] Combined impacts may not be equal to road plus rail, as maxima may be in different locations along the façade.

Aircraft Noise Impacts

The Proposed Development is located between the airport's NEF30 and NEF25 contours. Buildings 'A' and 'B' are exposed to an outdoor aircraft noise level of NEF27 based on their location between the airport's NEF25 and NEF30 contours. Based on this NEF rating, it is predicted that Buildings 'C' through 'F' can meet the indoor NEF recommendations for commercial buildings outlined in **Table 6** using standard building components that meet the Ontario Building Code.

2.1.5 Noise Control Measures

Façade Construction Recommendations

Based on the predicted façade sound levels shown in **Table 9**, and the applicable noise criteria outlined in **Table 2**, a detailed building component design analysis is required for Building 'A'. The proposed noise-sensitive buildings are not within 100 metres of the CN Pelton Industrial Spur. As such, the façade construction requirements outlined in **Table 3** are not required.

As the Proposed Development is located between the Windsor International Airport's NEF25 and NEF30 contours, a detailed building component analysis is required for Buildings 'A' and 'B' to conform with the indoor NEF limits outlined in **Table 6**.

An initial building component analysis is shown in **Table 10**. As detailed floor plans are not yet available, typical unit layouts were assumed for the purposes of this assessment. The predicted maximum impacts for road, locomotive, train car, and aircraft noise were used to assess the required glazing for the building.

Table 10: Building Component Analysis Using Maximum Impacts

BUILDING ID	MAXIMUM REQUIRED GLAZING (STC)	
	Living/Dining Area	Sleeping Quarters
Building 'A'	32	34
Building 'B'	31	33

The above mentioned STC ratings are conservatively calculated and represent the recommended minimum STC ratings for the windows. Windows should be carefully selected to ensure the entire assembly (frame and glazing) meets the specified minimum STC ratings. Windows which meet the structural and energy saving requirements of the OBC typically have STC29 / STC30 ratings. It is recommended that manufacturer's test data and specifications be reviewed by an Acoustical Consultant upon selection.

Sensitive spaces located on corners of buildings, which have multiple façade exposure and potential contribution from multiple sources may require an STC rating increase of 3. As the design progresses, the façade and glazing requirements should be reviewed by an Acoustical Consultant, ideally at the Site Plan Approval (SPA) stage, to confirm or update the above recommended STC ratings.

The building component analysis is attached in **Appendix D**.

Ventilation Requirements and Warning Clauses

Based on the predicted façade sound levels shown in **Table 9**, the threshold criteria outlined in **Table 4**, as well as the Proposed Development's location between the airport's NEF25 and NEF30 contours, Building 'A' will require the installation of central air conditioning and the inclusion of a Type D warning clause. Furthermore, Building 'B' will require provisions for the installation of central air conditioning and the inclusion of a Type C warning clause.

All warning clauses should be included in agreements that are registered on Title for all Offers of Purchase and Sale, lease/rental agreements, and condominium declarations. The list of applicable warning clauses required for the Proposed Development are provided in **Appendix E**.

2.1.6 TNM/FTA Protocol Confirmation

In order to demonstrate appropriate implementation of Transportation Noise Model (TNM) through Cadna/A, noise modelling results obtained through the TNM protocol were compared against traffic noise modelling using MECF's ORNAMENT using STAMSON version 5.04. The partial noise level contribution from Walker Road at the fourth floor of Building 'A's west façade was used to compare the results of the two models. The results are presented in **Table 11**.

Table 11: TNM Protocol in Canda/A and ORNAMENT Comparison

ASSESSMENT LOCATION	TNM CADNA/A RESULT	ORNAMENT STAMSON RESULT	TNM CADNA/A MODELLING PARAMETERS	ORNAMENT STAMSON MODELLING PARAMETERS
Building 'A' west façade, 4 th floor (h = 10.5 m)	68 dBA	69 dBA	Ground Absorption Coefficient = 0, daytime period (16 hr)	Reflective Ground (GA = 0), daytime period (16 hr)

Similarly, noise modeling results obtained through the FTA/FRA protocol through Cadna/A were compared against rail modelling using MECP's STEAM rail noise model. The rail noise models were compared at a point on the building façade nearest to the railway at the third storey. The results are shown in **Table 12**.

Table 12: FTA/FRA Protocol in Cadna/A and STEAM Comparison

ASSESSMENT LOCATION	FTA/FRA CADNA/A RESULT	STEAM STAMSON RESULT	FTA/FRA CADNA/A MODELLING PARAMETERS	STEAM STAMSON MODELLING PARAMETERS
Building 'B' east façade, 3 rd floor (h = 7.5 m)	49 dBA	50 dBA	Ground Absorption Coefficient = 0, 24-hour time period	Reflective Ground (GA = 0), 24-hour time period

The results indicate that the predicted noise impacts obtained through TNM and FTA/FRA protocols in Cadna/A are within 1 dB with those of ORNAMENT and STEAM. This is well within the generally accepted +/- 3 dB accuracy range for model calibration and therefore considered acceptable. The receptor locations assessed in this comparative study are presented in **Figure 3**.

STAMSON calculations for road and rail noise are attached in **Appendix F**.

2.1.7 Rail Vibration

The only railway located in close proximity to the Proposed Development is a spur line. Detailed rail vibration studies are normally not required for spur lines. Furthermore, the sensitive uses (i.e., Buildings 'A' and 'B') are located more than 75 metres from the CN Pelton Industrial Spur line. As the Federation of Canadian Municipalities' and Railway Association of Canada's *Guidelines for New Development in Proximity to Railway Operations* only requires assessment of rail vibration for sensitive land uses located within 75 metres of a rail right-of-way, a detailed rail vibration study is not required for the Proposed Development.

3.0 STATIONARY NOISE ASSESSMENT

A review of the site and surrounding area has been conducted to identify potential stationary sources (e.g., industrial / commercial) that have the potential to impact the proposed sensitive use. A site visit was completed by Dillon staff on January 17th, 2025, for the purpose of classifying facilities in proximity to the Proposed Developments, identifying potential sources of noise, and classifying the acoustic environment.

3.1 MECP GUIDELINE D-6

The MECP's land-use compatibility guidelines (D-series) are intended to prevent or minimize the encroachment of sensitive land uses upon industrial/commercial land uses and vice versa, as these two types of land uses are normally incompatible, due to possible adverse effects (e.g., noise) on the sensitive land use. As per the guideline, new land uses should meet the recommended minimum separation distances and the potential noise impacts from commercial / industrial establishments within the area of influence should be assessed (see **Table 13**).

Table 13: Guideline D-6 Potential Influence Area and Recommended Minimum Separation Distance

INDUSTRIAL CLASSIFICATION ^[1]	AREA OF INFLUENCE	RECOMMENDED MINIMUM SEPARATION DISTANCE
Class I	70 m	20 m
Class II	300 m	70 m
Class III	1000 m	300 m

Note: [1] Industrial classifications are outlined in Guideline D-6, and presented in **Appendix G**.

3.1.1 Facilities

The land use planning guide, D-6 Compatibility between Industrial Facilities, was used for the classification of the surrounding industrial facilities and the applicable setback distances in relation to the proposed sensitive land use. The criteria for classification of industrial categories are presented in **Appendix G**.

Table 14 describes the industries that were identified with the potential to have noise impacts on the Proposed Development. This includes all Class I industries within 70 metres, and all Class II industries within 300 metres, as shown on **Figure 2**. There were no Class III industries identified within 1000 metres of the Proposed Development.

Table 14: Facilities with Proximity to Proposed Development

	Walker Way Forum	RJ Truck Centre	Reactive Manufacturing	Petro Canada	Tim Horton's
Address	4044, 4050, and 4072 Walker Rd.	2619 Cabana Rd E.	4155 Walker Rd.	2295 Cabana Rd E.	3998 Walker Rd.
Industrial Classification	I	II	II	I	I
Description	Commercial Plaza	Trucking Logistics	Machine Shop	Gas Station with Car Wash	Commercial Building
Dominant Noise Sources	Rooftop HVAC Units	Truck Movements	Rooftop HVAC Units	Car Wash Blower	Rooftop HVAC Units
ECA/EASR?	n/a	No	No	No	n/a
Actual Setback Distance	48 m ^[1]	150 m ^[1]	275 m ^[1]	45 m ^[1]	48 m ^[1]
Recommended Minimum Setback Distance	20 m	70 m	70 m	20 m	20 m
Potential Area of Influence	70 m	300 m	300 m	70 m	70 m
D-6 Compliance?	Yes, Additional Study Required	Yes, Additional Study Required	Yes, Additional Study Required	Yes, Additional Study Required	Yes, Additional Study Required

Notes: [1] Setback distance includes parking lots, which are considered an Ancillary Land Use under the D-6 guideline.

3.1.2 Future Development of Vacant Lots

The Proposed Development is located in close proximity to several vacant parcels of land zoned for industrial and/or commercial use. Per the D-6 Guideline, such lands must be assessed for their worst-case potential noise impacts on noise-sensitive spaces based on their allowable land uses.

The vacant land parcel at 4055 Walker Road, located 35 metres west of the Proposed Development, is currently classified as Commercial District 3.3, per the City of Windsor's Zoning By-law. Given the allowable uses under District Classification CD3.3, it was determined that an automobile repair garage with an adjacent automatic car wash would be treated as the likely worst-case land use currently allowable, from a noise emissions perspective.

The vacant land parcel at 2450 Cabana Road East, located 30 metres north of the Proposed Development, is currently classified as Manufacturing District 2.1 (MD2.1) under the City of Windsor's Zoning By-law. Given the allowable uses under District Classification MD2.1, it was determined that an automobile collision shop (noted under the By-law's definition of "Industrial Use") would be treated as the likely worst-case land use currently allowable, from a noise emissions perspective.

Table 15 describes the vacant lots that were identified with the potential to have noise impacts on the Proposed Development.

Table 15: Vacant Lots with Proximity to Proposed Development

	Vacant Lot (West)	Vacant Lot (North)
Address	4055 Walker Rd.	2450 Cabana Rd E.
Zoning	Commercial (CD3.3)	Manufacturing (MD2.1)
Industrial Classification	I	I
Actual Setback Distance	25 m	70 ^[1]
Recommended Minimum Setback Distance	20 m	20 m
Potential Area of Influence	70 m	70 m
D-6 Compliance?	Yes, Additional Study Required	Yes, Additional Study Required

Notes: [1] Setback distance includes parking lots, which are considered an Ancillary Land Use under the D-6 guideline.

3.1.3 Results

The D-6 Compatibility Assessment finds that the noise-sensitive uses (Buildings 'A' and 'B') of the Proposed Development will comply with the recommended minimum setback distances at all existing facilities and currently vacant lots. It was further found that Buildings 'A' and 'B' are within the potential area of influence for the 7 properties identified above. A detailed Stationary Noise Assessment is therefore required to determine compatibility, which is provided in **Section 3.2** below.

3.2 STATIONARY NOISE ASSESSMENT

3.2.1 Stationary Noise Criteria

MECP Publication NPC-300 outlines applicable noise criteria for the Proposed Development associated with surrounding industrial and commercial stationary noise sources. The noise criteria are defined using area classifications (not to be confused with the D-6 industrial classifications), which are based on the receptor's existing acoustical environment. NPC-300 classification are as follows:

- Class 1 – Urban Area;
- Class 2 – Semi-Urban / Semi – Rural;
- Class 3 – Rural Area; and,
- Class 4 – Areas of Redevelopment and Infill (typically in proximity of lawfully operating industrial / commercial facilities).

The NPC-300 minimum noise limits for each area classification are presented in **Table 16**.

Table 16: Exclusionary Limits for Stationary Noise Sources

ASSESSMENT LOCATION	TIME PERIOD	EXCLUSIONARY SOUND LEVEL LIMIT – L _{EQ} (1HR)			
		Class 1	Class 2	Class 3	Class 4
Plane of window for living area or sleeping quarters	Daytime (07:00 - 19:00)	50 dBA	50 dBA	45 dBA	60 dBA
	Evening (19:00 - 23:00)	50 dBA	50 dBA	40 dBA	60 dBA
	Nighttime (23:00 - 07:00)	45 dBA	45 dBA	40 dBA	55 dBA
Outdoor points of reception	Daytime (07:00 - 19:00)	50 dBA	50 dBA	45 dBA	55 dBA
	Evening (19:00 - 23:00)	50 dBA	45 dBA	40 dBA	55 dBA

During the site visit conducted on January 17th, 2025, it was observed that the acoustic environment surrounding the Proposed Development is dominated by transportation noise and human activity, consistent with at Class 1 (Urban) area.

3.2.2 Elevated Noise Limits

NPC-300 allows for elevated noise limits in areas with high background road noise, such as the Proposed Development Site. In these scenarios, the noise limits are the higher of the exclusionary limits or the minimum hourly background sound level, L_{EQ} (1hr). The minimum hourly traffic summarized in **Table 17** were determined by applying typical urban traffic patterns (ITE, 2015) to the previously calculated 2024 AADT. The average truck percentages were applied, rather than the peak hour percentages of **Section 2.1.2**, to conservatively represent the quietest hourly traffic.

Table 17: 2024 Minimum Road Traffic Data

ROADWAY	MINIMUM 1-HOUR TRAFFIC COUNT			MEDIUM TRUCKS (%)	HEAVY TRUCKS (%)	SPEED (KM/H)
	Daytime (07:00 - 19:00)	Evening (19:00 - 23:00)	Nighttime (23:00 - 07:00)			
Cabana Road East	624	351	39	1.9	4.5	50
Walker Road	1389	781	86	1.4	4.0	60

The results of this road traffic noise assessment determined that the elevated noise limits summarized in **Table 18** would apply to Buildings A and B, in accordance with NPC-300.

Table 18: Applicable Noise Limits for Stationary Noise Sources

BUILDING ID	FAÇADE	APPLICABLE L _{EQ} (1HR) NOISE LIMIT PLANE OF WINDOW [DBA]		
		Daytime (07:00 - 19:00)	Evening (19:00 - 23:00)	Nighttime (23:00 - 07:00)
Building A	North	64	60	52
	East	59	55	47
	South	61	58	49
	West	64	61	52
Building B	North	63	58	50
	East	58	54	46
	South	56	52	45
	West	58	54	46

3.2.3 Impulsive Noise Limits

NPC-300 establishes separate exclusion limits for sources of impulsive noise based on area classification and frequency of impulses. Impulsive noise is characterized by loud, short duration events, such as metal-on-metal contact from truck coupling. The impulsive noise limits can also be increased based on elevated background noise from road traffic, and the applicable NPC-300 criteria for frequent (i.e., more than 9 impulses per hour) impulsive noise sources are presented in **Table 19**.

Table 19: Exclusionary Limits for Impulsive Noise Sources

BUILDING ID	FAÇADE	APPLICABLE L _{LM} NOISE LIMIT PLANE OF WINDOW [DBAI]		
		Daytime (07:00 - 19:00)	Evening (19:00 - 23:00)	Nighttime (23:00 - 07:00)
Building A	North	64	60	52
	East	59	55	47
	South	61	58	49
	West	64	61	52
Building B	North	63	58	50
	East	58	54	46
	South	56	52	45
	West	58	54	46

3.3 METHODOLOGY

3.3.1 Significant Noise Sources

The noise sources associated with the industries identified in **Section 3.1.1** are outlined below in **Table 20**. Relevant noise source information was gathered from previous environmental approvals. The facilities and their corresponding locations are presented on **Figure 2**.

Table 20: Stationary Noise Sources

NOISE SOURCE ^[1]	ASSOCIATED FACILITY	# OF SOURCES	SOURCE TYPE
Rooftop HVAC Unit	Walker Way Forum	26	Point
	Tim Horton's	4	Point
	Vacant Lot (2450 Cabana)	1	Point
	Reactive Manufacturing	4	Point
	Vacant Lot (4055 Walker)	1	Point
Car Wash Blower	Petro Canada & Car Wash	1	Point
	Vacant Lot (4055 Walker)	1	Point
Pneumatic tools	Vacant Lot (2450 Cabana)	1	Point
	Vacant Lot (4055 Walker)	1	Point
Paint Spray Booth Exhaust	Vacant Lot (2450 Cabana)	1	Point
Blower	Reactive Manufacturing	1	Point
Idling Truck	RJ Truck Centre	2	Point
Truck Coupling ^[2]	RJ Truck Centre	1	Point
Truck Movement	RJ Truck Centre	2/h	Line
	Reactive Manufacturing	2/h	Line

Note: [1] Sound power levels of noise sources are provided in **Appendix H**.

[2] Impulsive noise source.

3.3.2 Noise-sensitive Points of Reception

As per the MECP noise guidelines NPC-300, a Point of Reception (POR), as it applies to impact assessments of stationary sources, means any location on a noise-sensitive land use where noise from a stationary source is received. Noise-sensitive land uses include the following lands:

- Permanent, seasonal, or rental residences;
- Hotels, motels, and campgrounds;
- Schools, universities, libraries, and daycare centres;
- Hospitals and clinics, nursing / retirement homes; and,
- Places of worship.

Buildings 'A' and 'B' were assessed as noise-sensitive PORs. No outdoor points of reception were identified within the Proposed Development at the time of assessment.

3.3.3 Methodology

The noise analysis was completed using CADNA/A, an outdoor noise propagation model, based on ISO Standard 9613, Part 1: Calculation of the absorption of sound by the atmosphere, 1993 and Part 2: General method of calculation (ISO-9613-2:1996). The model is capable of incorporating various site-specific features, such as elevation, berms, absorptive grounds, and barriers to accurately predict noise levels at specific receptors, pertaining to noise emissions from a particular source / source. The ISO based model accounts for reduction in sound level due to increased distance and geometrical spreading, air absorption, ground attenuation, and acoustical shielding by intervening structures and topography. The model is considered conservative as it represents atmospheric conditions that promote propagation of sound from the source to the receiver.

3.4 PREDICTED NOISE IMPACTS

3.4.1 Stationary Noise

The stationary noise model incorporated the same applicable assumptions as the transportation model, as outlined in **Section 2.1.3**. For the purposes of the stationary assessment, the Building Evaluation feature in Cadna/A was used to determine building facades noise impacts (worst-case).

Impacts from the stationary noise sources were predicted through noise propagation modelling. The predicted receptor noise levels (at the Proposed Development site) were compared against the applicable criteria, as specified in NPC-300 (see **Table 18** and **Table 19**).

Table 21 summarizes the predicted worst case building façade noise levels from stationary noise sources from the surrounding industries at the Proposed Development.

Table 21: Stationary Noise Impact Summary Table – Surrounding Industries on Proposed Development

INDUSTRY	BUILDING ID	FAÇADE	WORST CASE NOISE IMPACT L _{EQ} (1HR) (DBA) ^[1]			MECP COMPLIANCE? ^[2]
			Daytime (07:00 - 19:00)	Evening (19:00 - 23:00)	Nighttime (23:00 - 07:00)	
Walker Way Forum	Building A	North	29	29	26	Yes
		East	46	46	43	Yes
		South	48	48	45	Yes
		West	37	37	34	Yes
	Building B	North	29	29	27	Yes
		East	32	32	29	Yes
		South	48	48	45	Yes
		West	47	47	44	Yes
RJ Truck Centre	Building A	North	30	-	-	Yes
		East	40	-	-	Yes
		South	38	-	-	Yes
		West	19	-	-	Yes
	Building B	North	30	-	-	Yes
		East	41	-	-	Yes
		South	42	-	-	Yes
		West	29	-	-	Yes
Reactive Manufacturing	Building A	North	20	17	14	Yes
		East	31	30	25	Yes
		South	36	33	30	Yes
		West	36	33	30	Yes
	Building B	North	21	18	16	Yes
		East	22	21	18	Yes
		South	34	33	30	Yes
		West	34	33	30	Yes
Petro Canada	Building A	North	36	36	29	Yes
		East	47	47	40	Yes
		South	54	54	47	Yes
		West	53	53	46	Yes
	Building B	North	28	28	21	Yes
		East	25	25	18	Yes
		South	49	49	42	Yes
		West	51	51	44	Yes
Tim Horton's	Building A	North	45	45	42	Yes
		East	33	33	30	Yes
		South	23	23	20	Yes
		West	36	36	33	Yes
	Building B	North	41	41	38	Yes
		East	24	24	21	Yes
		South	19	19	16	Yes
		West	41	41	38	Yes
Vacant Lot (4055 Walker Rd.)	Building A	North	35	35	28	Yes
		East	49	47	40	Yes
		South	55	53	46	Yes

INDUSTRY	BUILDING ID	FAÇADE	WORST CASE NOISE IMPACT L _{EQ} (1HR) (DBA) ^[1]			MECP COMPLIANCE? ^[2]
			Daytime (07:00 - 19:00)	Evening (19:00 - 23:00)	Nighttime (23:00 - 07:00)	
	Building B	West	55	54	47	Yes
		North	34	31	24	Yes
		East	38	29	23	Yes
		South	51	50	43	Yes
		West	53	52	45	Yes
Vacant Lot (2450 Cabana Rd E.)	Building A	North	52	46	43	Yes
		East	52	46	43	Yes
		South	40	30	27	Yes
		West	28	25	22	Yes
	Building B	North	58	50	47	Yes
		East	57	49	46	Yes
		South	42	34	31	Yes
		West	49	43	40	Yes

Note: [1] Predicted noise levels that exceed the applicable limits are presented in **bold**.

[2] See **Table 18**

Stationary noise impacts from the surrounding industries at the Proposed Development are shown graphically on **Figures 4** through **10**.

Impulsive Noise

Table 22 summarizes the predicted worst-case impulsive noise impacts from the surrounding industrial and commercial properties at the Proposed Development.

Table 22: Impulsive Noise Impact Table – Surrounding Industries on Proposed Development

INDUSTRY	BUILDING ID	FAÇADE	WORST CASE NOISE IMPACT L _{LLM} (DBAI) ^[1]			MECP COMPLIANCE? ^[2]
			Daytime (07:00 - 19:00)	Evening (19:00 - 23:00)	Nighttime (23:00 - 07:00)	
RJ Truck Centre	Building A	North	43	---	---	Yes
		East	50	---	---	Yes
		South	50	---	---	Yes
		West	31	---	---	Yes
	Building B	North	33	---	---	Yes
		East	49	---	---	Yes
		South	54	---	---	Yes
		West	40	---	---	Yes

Note: [1] Predicted noise levels that exceed the applicable limits are presented in **bold**

[2] See Table 19

3.4.2 Results

As shown in **Table 21** and **Table 22**, and graphically on **Figures 4** through **10**, the predicted worst case noise levels associated with the surrounding stationary noise sources (and potential future noise sources at the adjacent vacant lots) comply with the applicable MECP NPC-300 noise limits at the Proposed Development. The Proposed Development is therefore considered compatible from a stationary noise perspective under the MECPs D-6 and NPC-300 guidance documents.

4.0 RECOMMENDATIONS

Transportation Noise Assessment

As outlined in **Section 2.1.4**, Dillon recommends the following noise controls to ensure future land use compatibility and meet the applicable noise limits:

- Construct the glazing components of Buildings 'A' and 'B' in conformance with the STC ratings outlined in **Table 10**, and have these reviewed by a qualified practitioner once detailed architectural plans are available.
- Requiring the inclusion of central air conditioning and a Type D warning clause (see **Appendix E**) for Building 'A' that is registered on Title for all Offers of Purchase and Sale, lease/rental agreements, and condominium declarations; and,
- Requiring the inclusion of provisions for the installation of central air conditioning in the construction of Building 'B', as well as a Type C warning clause (see **Appendix E**) that is registered on Title for all Offers of Purchase and Sale, lease/rental agreements, and condominium declarations;
- Update this Transportation Assessment if any Outdoor Living Areas are added to of the Planned Development, such as residential balconies greater than 4 m, a residential rooftop patio, or a park/green space within 30 metres of Buildings A or B.

Vibration Assessment

Dillon recommends the following to ensure future land use compatibility and meet the applicable vibration limits:

- All residential buildings (Buildings 'A' and 'B'), and any future vibration-sensitive commercial occupants or tenants, be maintained at distances greater than 75 metres from the rail spur line;
- A Vibration Impact Study be completed by a qualified practitioner in the future if any vibration-sensitive locations are to be moved within 75 metres of the CN rail spur line.

Stationary Noise Assessment

Dillon recommends the following to ensure land use compatibility and meet the applicable noise limits:

- Any relocation of the residential buildings (Buildings 'A' and 'B') be reviewed by a qualified practitioner to ensure compliance with the MECP D-6 and NPC-300 planning guidance documents;
- A Noise Impact Assessment be completed by a qualified practitioner of the Proposed Development on itself, once detailed mechanical plans are available;
- A Noise Impact Assessment noise impact assessment be completed by a qualified practitioner of the Proposed Development on the surrounding noise-sensitive locations, once detailed mechanical plans are available.

5.0 CONCLUSIONS

Dillon Consulting Limited (Dillon) was retained by LBI Developments Inc. (LBI) to complete a Noise and Vibration Assessment as requested by the City of Windsor for the proposed mixed-use development located at the intersection of Cabana Road East at Walker Road in Windsor, Ontario. This Assessment has been completed in support of Official Plan and Zoning By-law Amendment applications for the Proposed Development.

The results of this assessment confirm that the Proposed Development is feasible from a land use perspective, as all applicable noise and vibration limits can be met with the recommendations and noise controls detailed in **Section 4.0**.

6.0 CLOSURE

This Noise and Vibration Assessment has been prepared based on the information provided and/or approved by LBI Developments Inc. (LBI). This report was prepared by Dillon for the sole benefit of the LBI. The material in the report reflects Dillon's judgement in light of the information available to Dillon at the time of this report preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust that the report is to your satisfaction. Please do not hesitate to contact the undersigned if you have any further questions on this report.

Respectfully Submitted:

DILLON CONSULTING LIMITED

Prepared by:

Thom Wright
Environmental EIT

Reviewed by:



Matthew Brenner, P.Eng.
Associate

7.0 REFERENCES

Guidelines for New Development in Proximity to Railway Operations, Railway Association of Canada and Federation of Canadian Municipalities, May 2013.

Traffic Pattern Groups Based on Hourly Traffic Variations in Urban Areas, Regehr et al., Journal of Transportation of the Institute of Transportation Engineers, December 2015.

MECP Environmental land use planning guides, 1995.

Ontario Ministry of Environment Publication NPC-300, Environmental Noise Guideline, Stationary and Transportation Sources- Approval and Planning, October 2013.

US FTA Transit Noise and Vibration Impact Assessment Manual, 2018

FIGURES



Scale 1:3,000

Figure 1

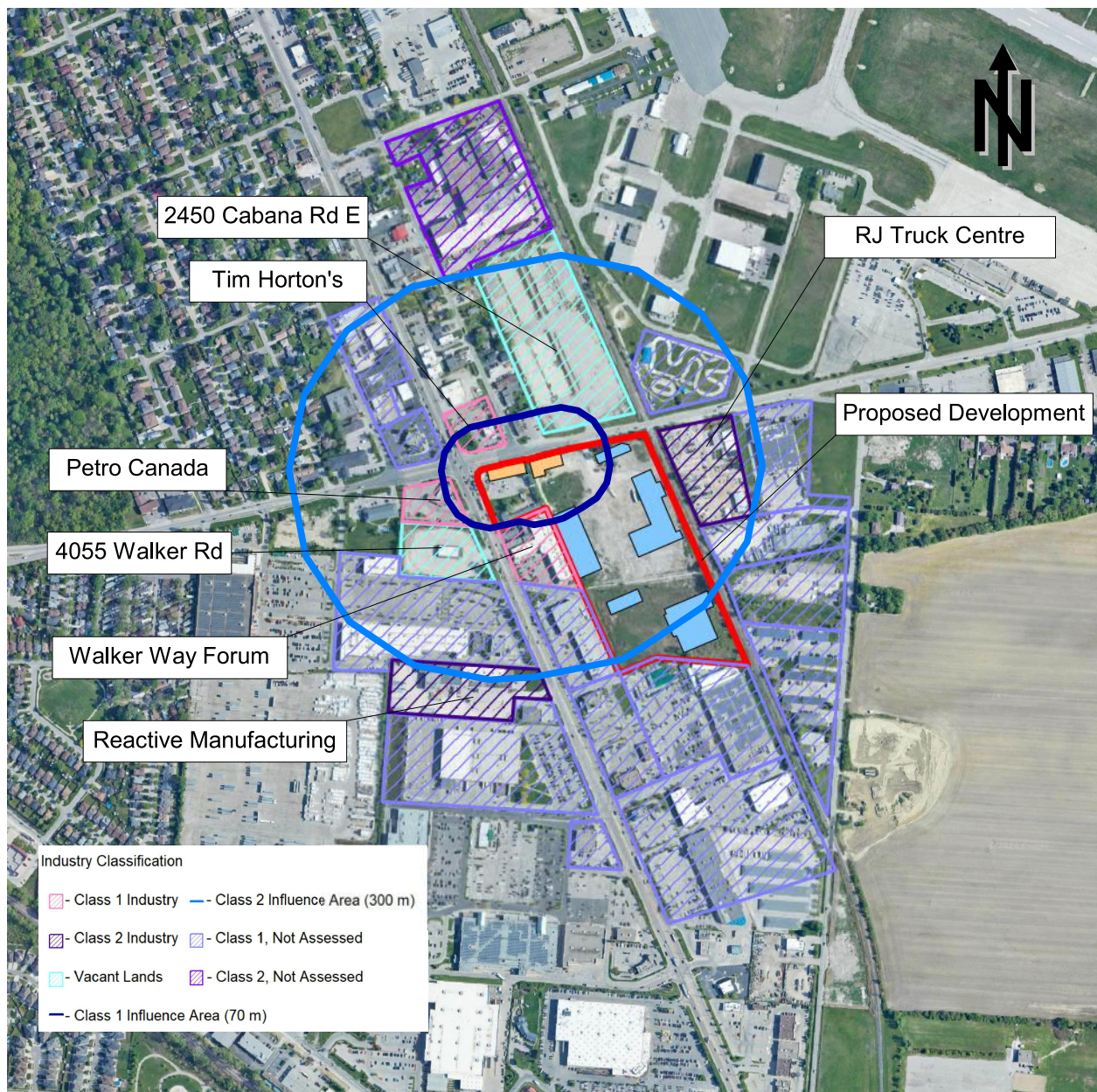
Project # 24-9442

June 2025

Development Site Plan

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:10,000

Figure 2

Project # 24-9442

June 2025

Surrounding Area with MECP D-6 Setbacks

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:2,000

Figure 3

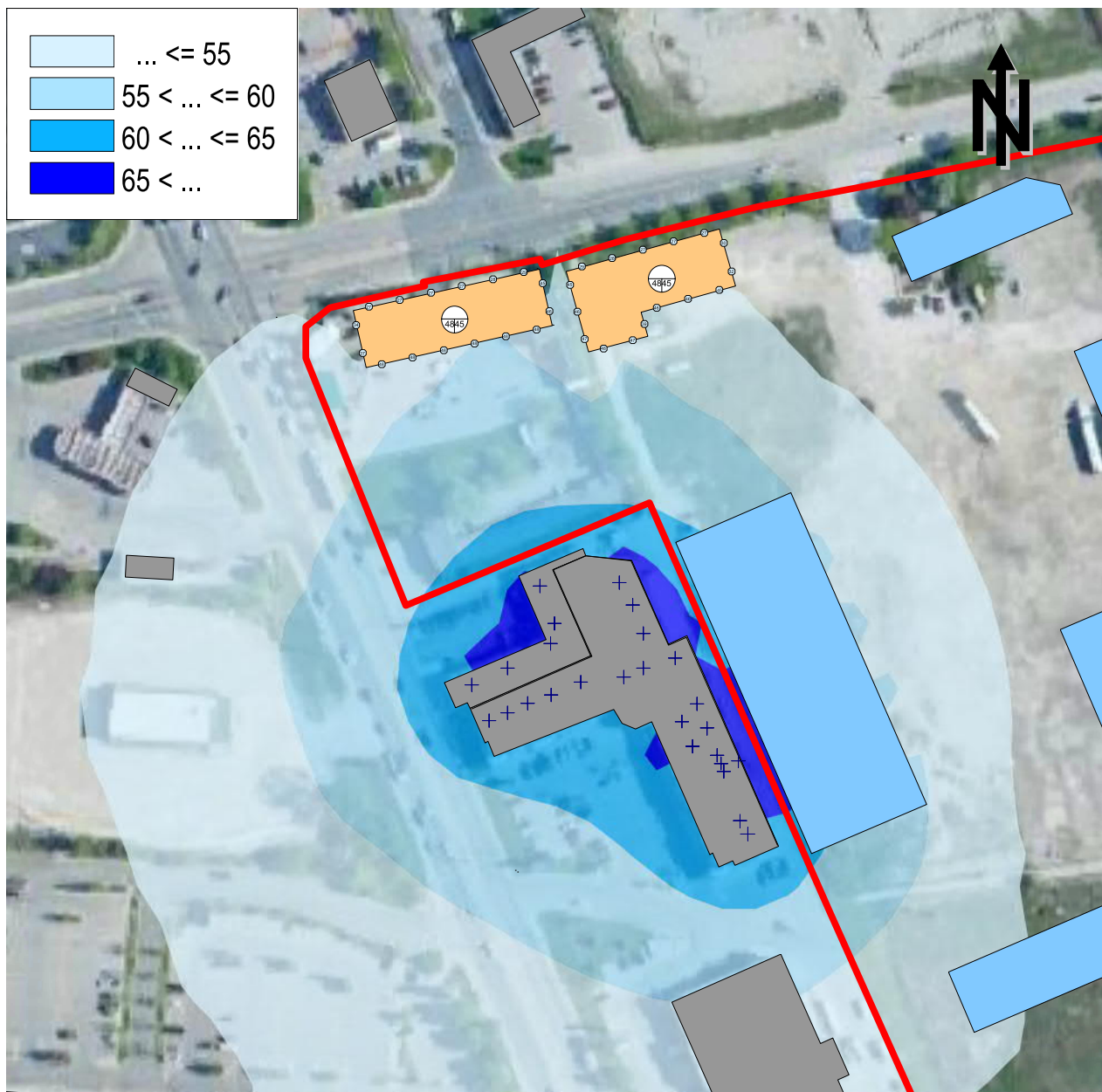
Project # 24-9442

June 2025

Comparison of ORNAMENT and TNM/FRA Algorithms

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:2,000

Figure 4

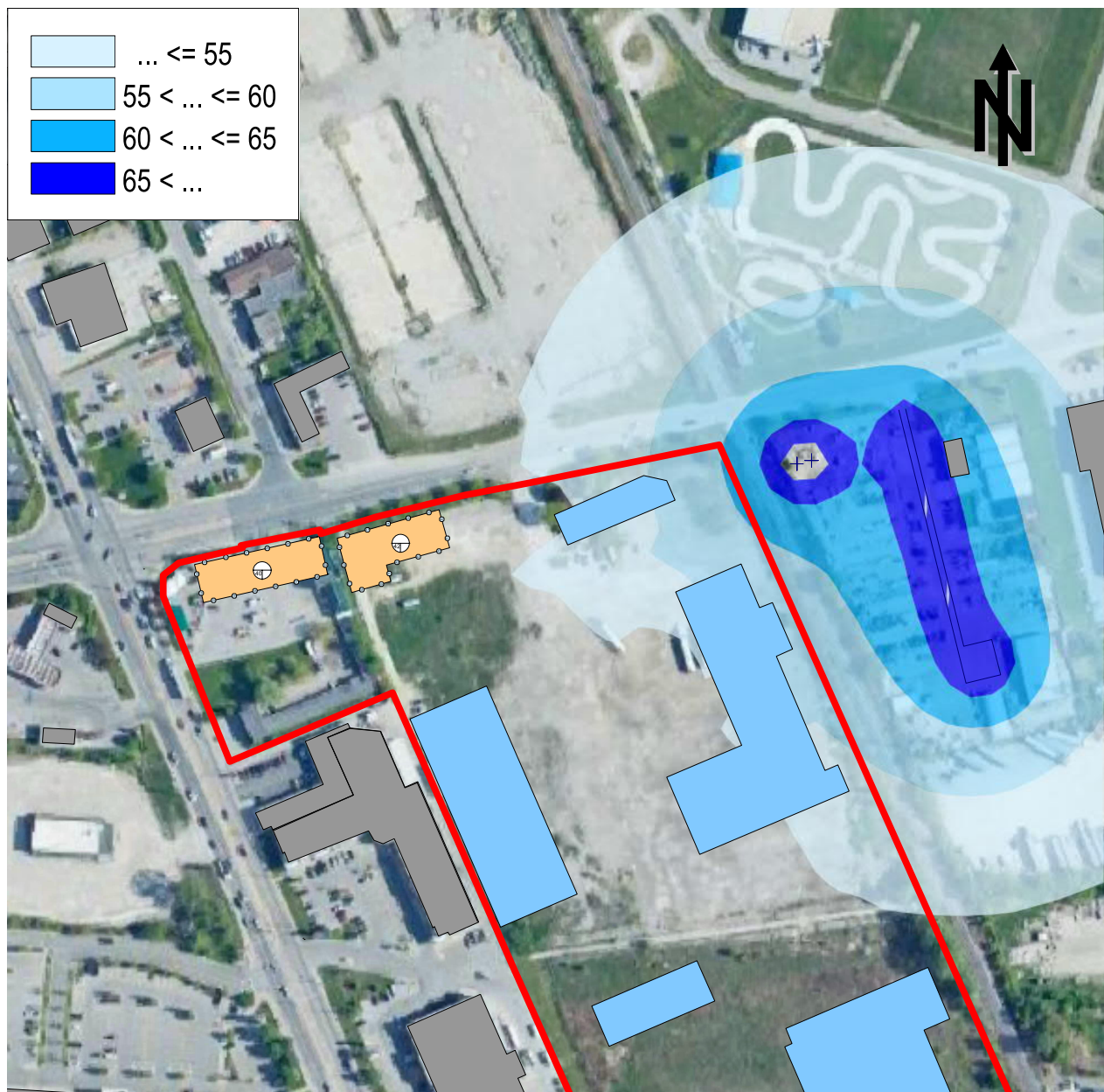
Project # 24-9442

June 2025

Stationary Noise Impacts - Day Walker Way Forum (h=7.5 m)

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:3,000

Figure 5

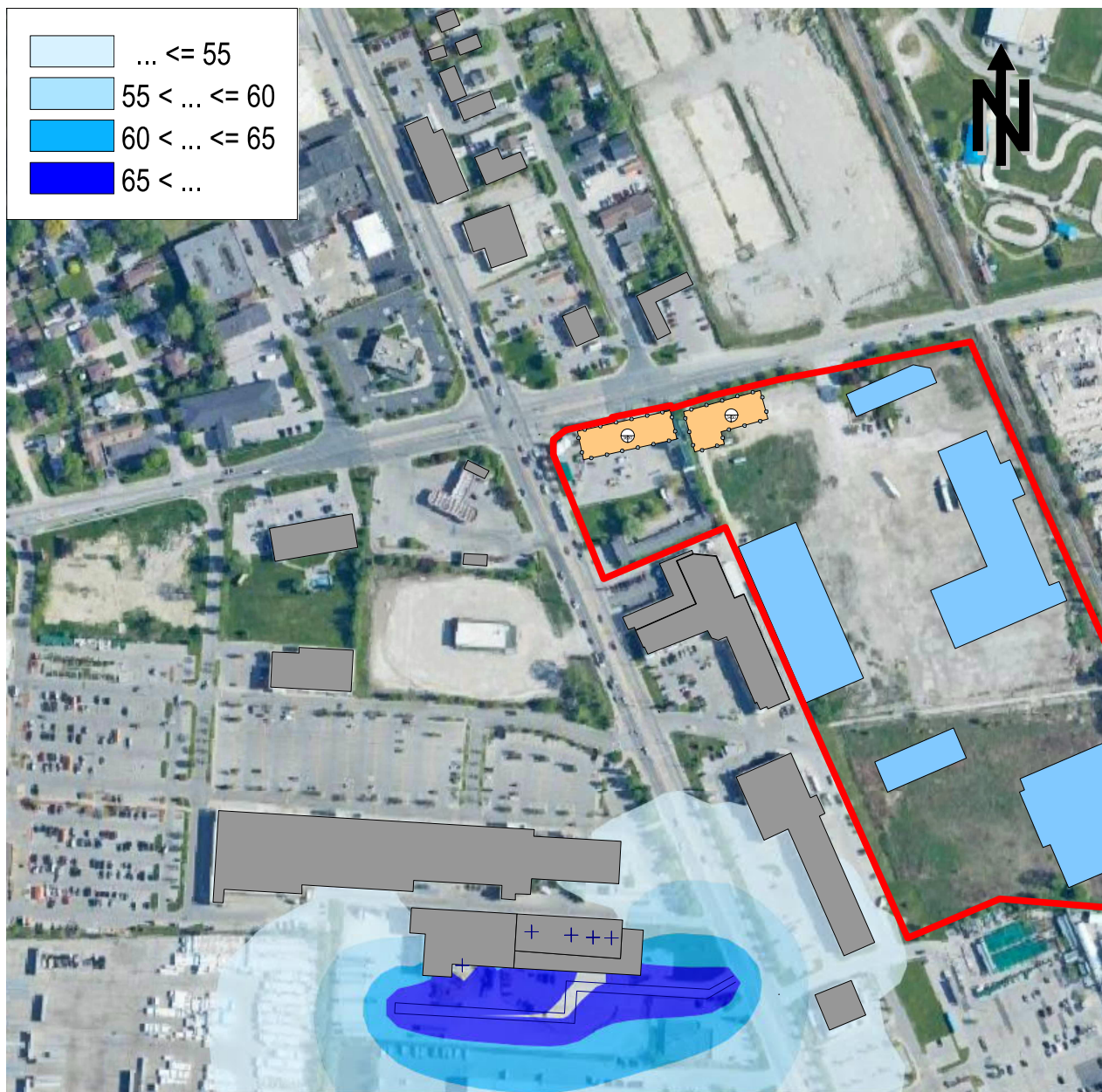
Project # 24-9442

June 2025

Stationary Noise Impacts - Day RJ Truck Centre (h=7.5m)

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:4,000

Figure 6

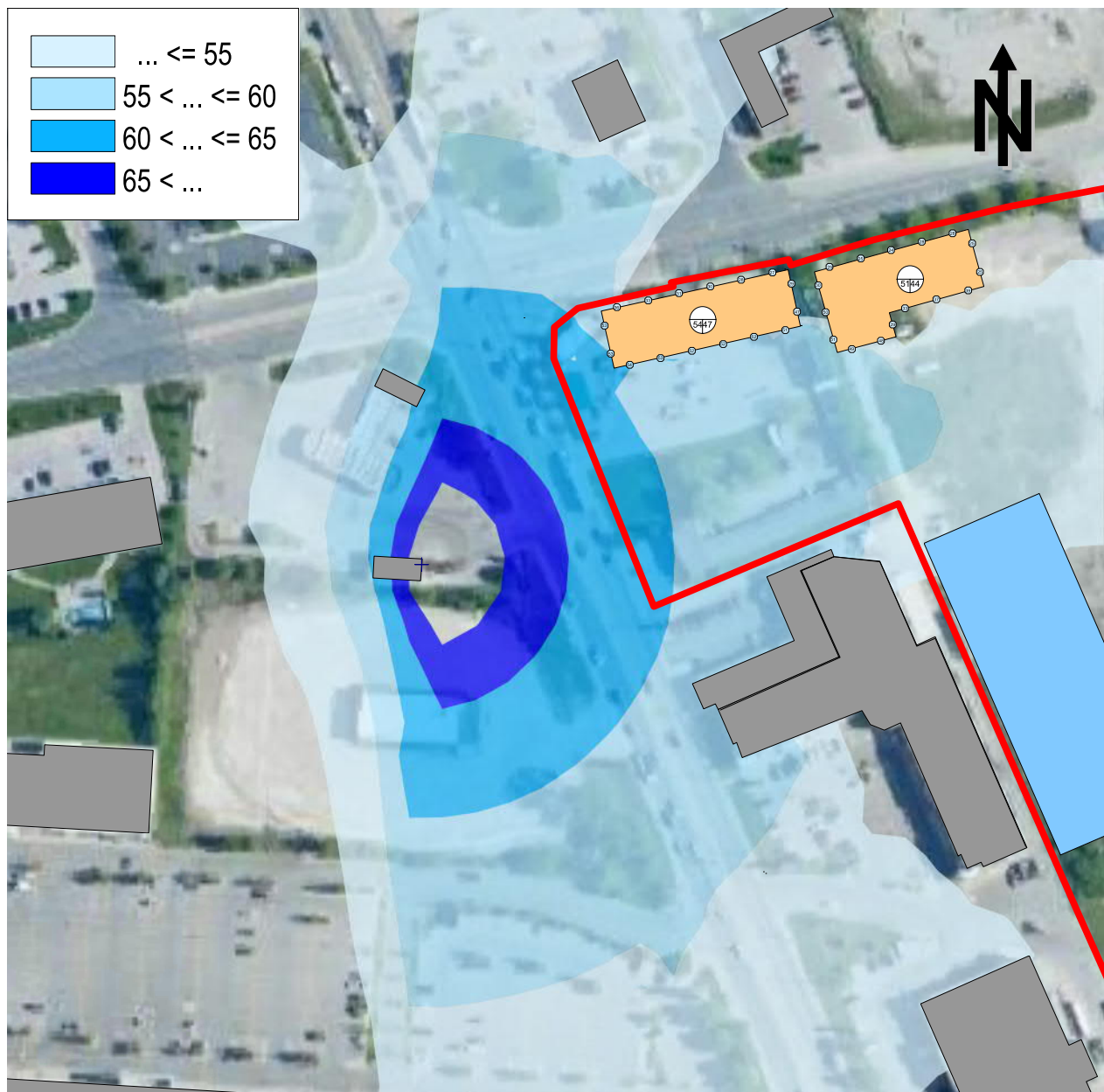
Project # 24-9442

June 2025

Stationary Noise Impacts - Day Reactive Manufacturing (h=7.5m)

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:2,000

Figure 7

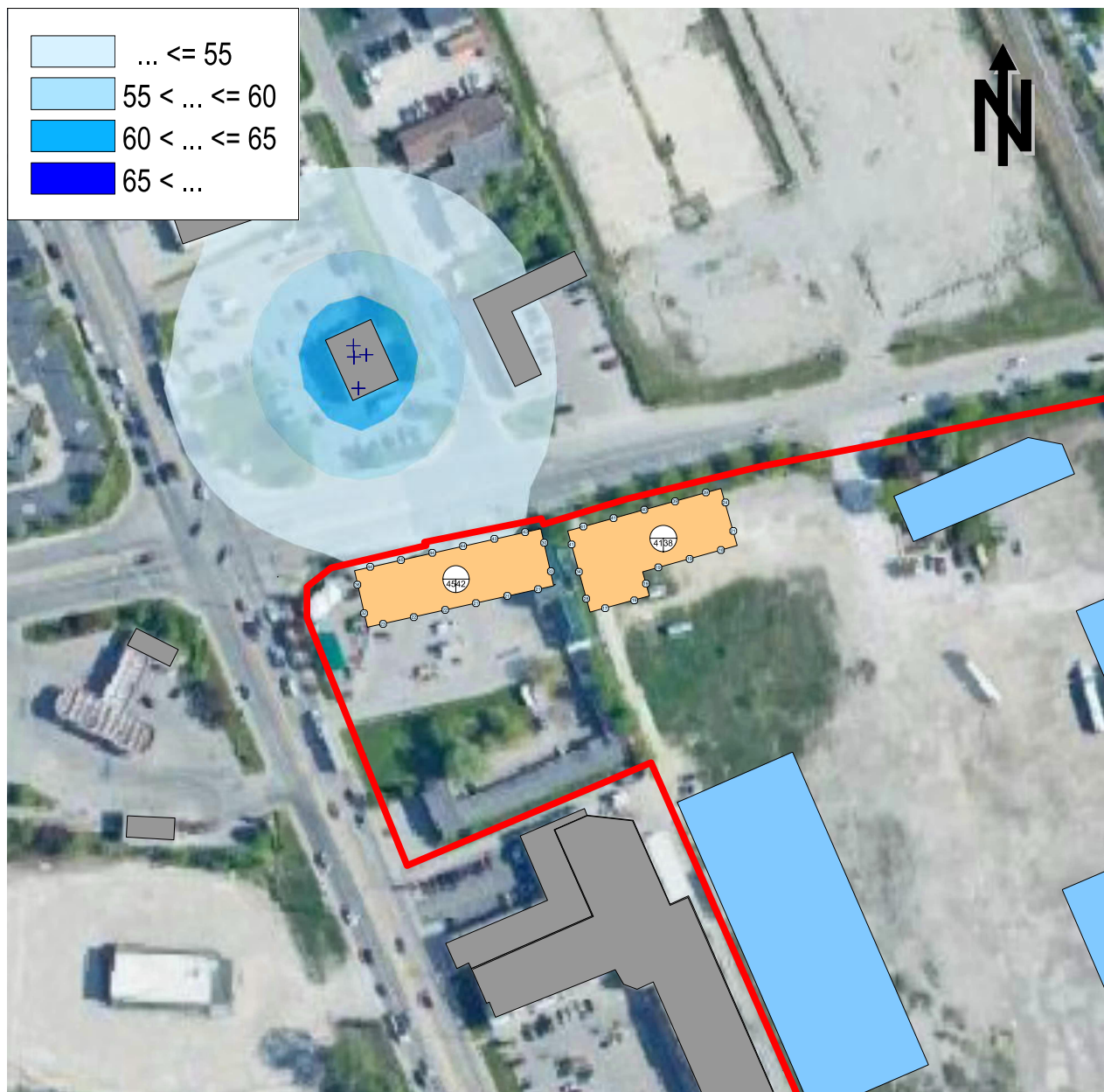
Project # 24-9442

June 2025

Stationary Noise Impacts - Day Petro Canada (h=7.5m)

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:2,000

Figure 8

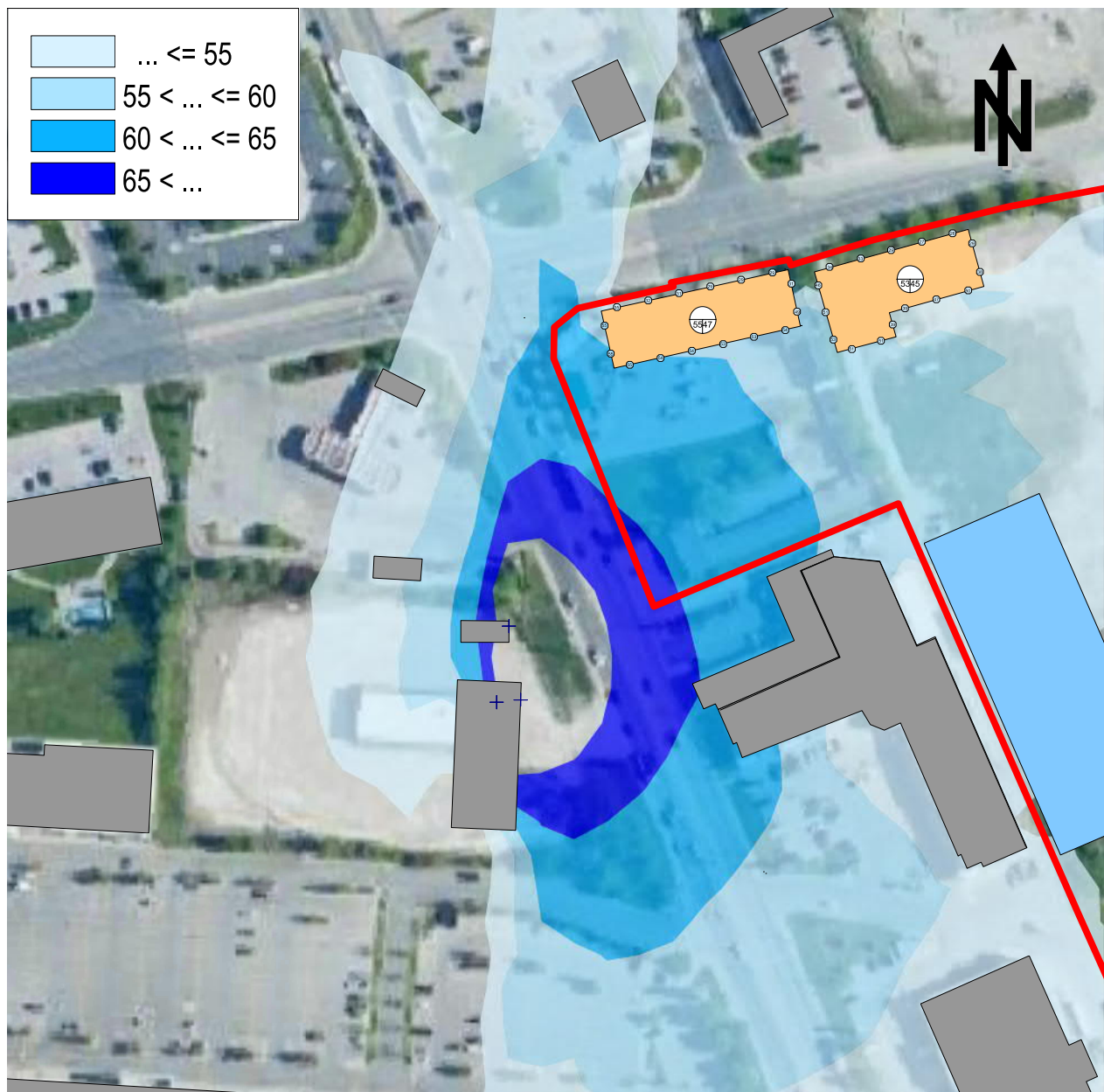
Project # 24-9442

June 2025

Stationary Noise Impacts - Day Tim Horton's (h=7.5 m)

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:2,000

Figure 9

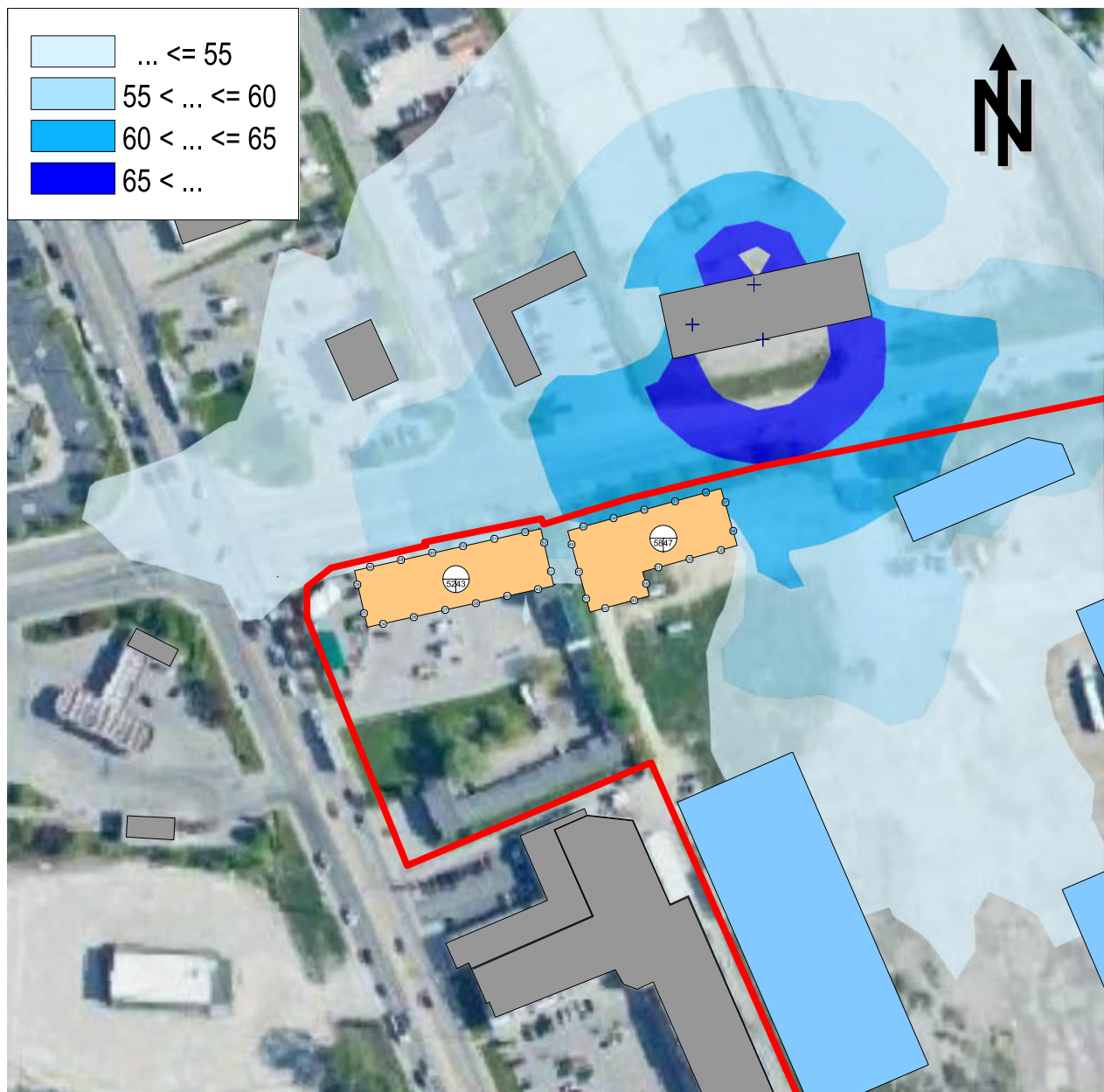
Project # 24-9442

June 2025

Stationary Noise Impacts - Day 4055 Walker Road (h=7.5m)

Cabana Rd E and Walker Rd, Windsor, Ontario





Scale 1:2,000

Figure 10

Project # 24-9442

June 2025

Stationary Noise Impacts - Day 2450 Cabana Rd E (h=7.5m)

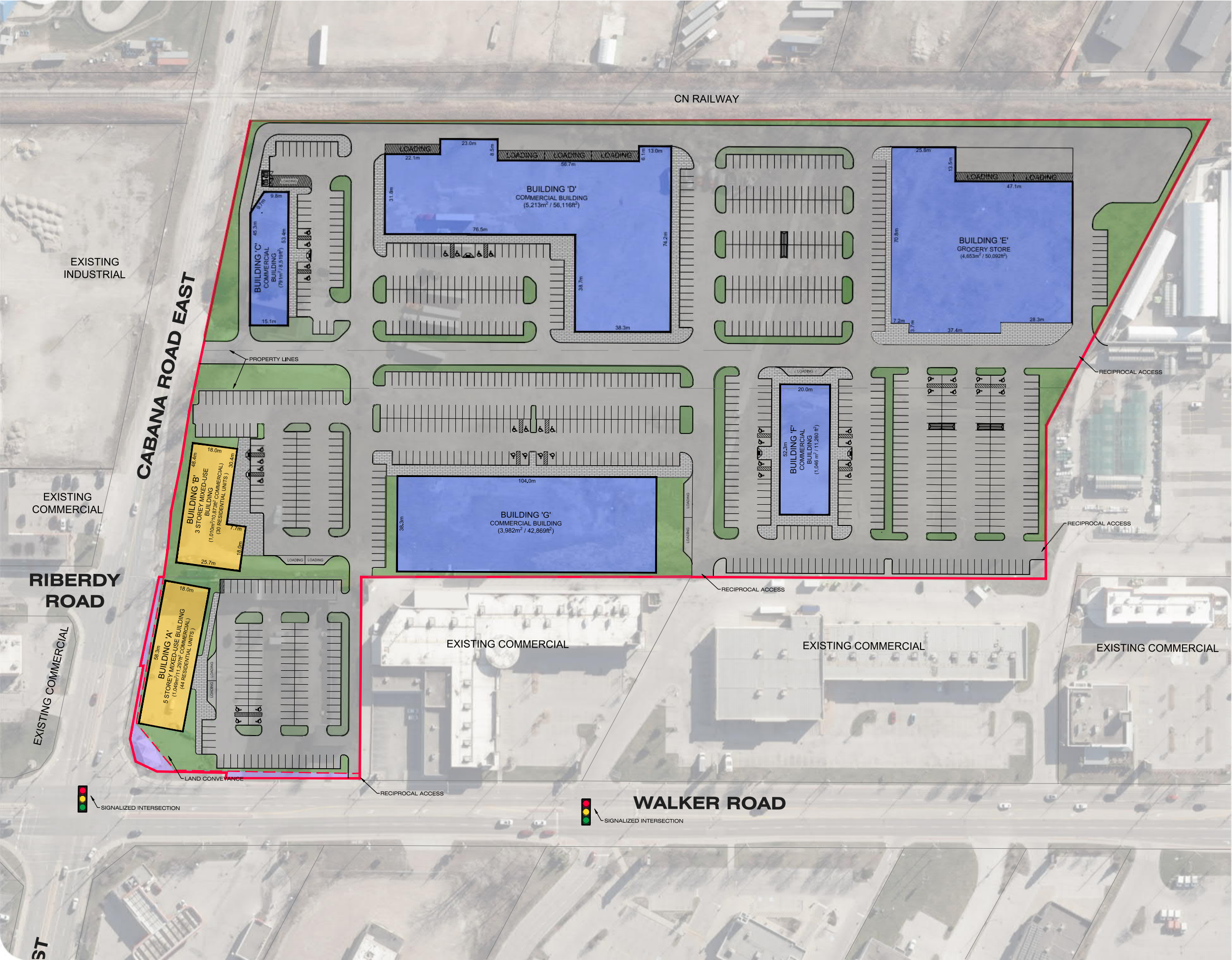
Cabana Rd E and Walker Rd, Windsor, Ontario



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APPENDIX A

Development Site Plan



LB1 DEVELOPMENTS INC.
WALKER ROAD AT CABANA ROAD
REDEVELOPMENT

CONCEPTUAL DEVELOPMENT PLAN
FIGURE 1.0

- SUBJECT AREA
(± 7.30ha / 18.05ac)
- PROPOSED COMMERCIAL
BUILDINGS
- PROPOSED MIXED-USE
BUILDINGS

SITE DATA MATRIX

	REQUIRED	PROVIDED
MAJOR USE	N/A	COMMERCIAL, MIXED-USE
LOT AREA	N/A	73,061.38m²
AREA: BUILDING 'A'	N/A	1049m² COMMERCIAL & 44 RESIDENTIAL UNITS
AREA: BUILDING 'B'	N/A	1010m² COMMERCIAL & 30 RESIDENTIAL UNITS
AREA: BUILDING 'C'	N/A	791m²
AREA: BUILDING 'D'	N/A	5,213m²
AREA: BUILDING 'E'	N/A	4,563m²
AREA: BUILDING 'F'	N/A	1,046m²
AREA: BUILDING 'G'	N/A	3,982m²
BUILDING AREA TOTAL	N/A	17,654m²
BUILDING 'A' - MIXED USE	101 SPACES (1 space per 22.5m² commercial & 1.25 spaces per unit)	113 SPACES
BUILDING 'B' - MIXED USE	81 SPACES (1 space per 22.5m² commercial & 1.25 spaces per unit)	81 SPACES
BUILDING 'C' - COMMERCIAL USE	35 SPACES (1 space per 22.5m² commercial)	40 SPACES
BUILDING 'D' - COMMERCIAL USE	231 SPACES (1 space per 22.5m² commercial)	232 SPACES
BUILDING 'E' - GROCERY STORE	202 SPACES (1 space per 22.5m² commercial)	223 SPACES
BUILDING 'F' - COMMERCIAL USE	46 SPACES (1 space per 22.5m² commercial)	87 SPACES
BUILDING 'G' - COMMERCIAL USE	176 SPACES (1 space per 22.5m² commercial)	180 SPACES
TOTAL PARKING	872 SPACES	956 SPACES

SCALE: 1:1500 (11x17)



MAP/DRAWING INFORMATION:
THIS DRAWING IS FOR INFORMATION PURPOSES ONLY. ALL DIMENSIONS AND
BOUNDARY INFORMATION SHOULD BE VERIFIED BY AN O.L.S PRIOR TO CONSTRUCTION.

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DESIGNED BY: ESB

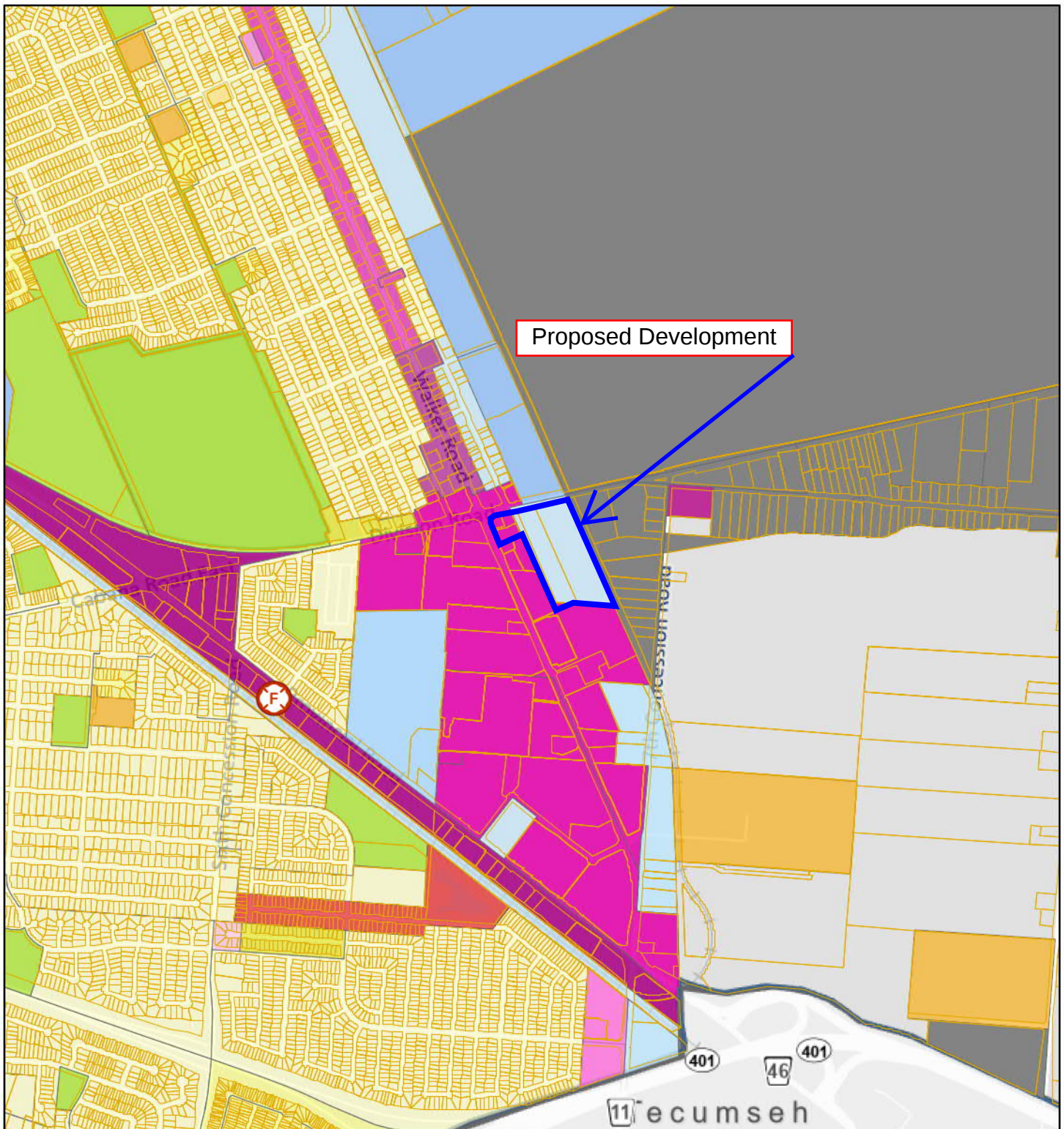
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PHOTOGRAPHY (2023)

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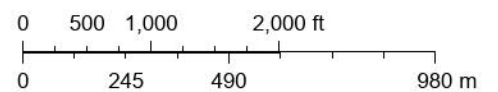
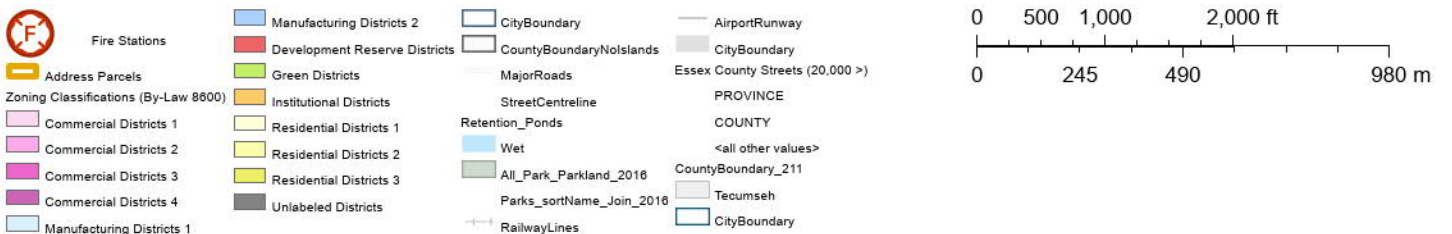
PROJECT: 24-9442
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DATE: 03/25/2025

ArcGIS Web Map



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APPENDIX B

Road/Rail Traffic Data

Your Traffic Count Specialist

File Name : Walker Road at Division Road
Site Code : Loc-9
Start Date : 2024-12-10
Page No : 1

Groups Printed- Cars - Trucks - Heavies - Cyclists																						
	Walker Rd From North					Division Rd From East					Walker Rd From South					Cabana Rd E From West						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total	
07:00 AM	27	163	12	3	205	22	22	18	1	63	13	150	9	1	173	11	31	29	0	71	512	
07:15 AM	18	159	26	0	203	19	34	23	0	76	12	180	7	0	199	11	29	43	0	83	561	
07:30 AM	19	183	19	8	229	11	57	27	0	95	6	181	9	1	197	8	51	52	3	114	635	
07:45 AM	24	160	23	1	208	29	50	45	3	127	17	223	8	0	248	12	48	55	1	116	699	
Total	88	665	80	12	845	81	163	113	4	361	48	734	33	2	817	42	159	179	4	384	2407	
08:00 AM	25	136	22	0	183	28	44	30	0	102	17	181	12	0	210	13	46	53	0	112	607	
08:15 AM	26	133	32	0	191	18	69	40	1	128	13	179	19	2	213	18	37	73	0	128	660	
08:30 AM	21	169	20	7	217	23	45	41	0	109	11	180	10	1	202	21	43	60	2	126	654	
08:45 AM	29	194	29	2	254	24	52	46	1	123	20	200	16	0	236	23	33	57	1	114	727	
Total	101	632	103	9	845	93	210	157	2	462	61	740	57	3	861	75	159	243	3	480	2648	
04:00 PM	25	260	23	2	310	28	67	35	0	130	47	244	48	1	340	41	45	43	1	130	910	
04:15 PM	28	229	29	0	286	26	53	36	0	115	24	225	57	0	306	42	52	43	0	137	844	
04:30 PM	20	243	32	2	297	30	96	39	3	168	31	226	47	0	304	56	55	44	0	155	924	
04:45 PM	33	245	19	3	300	15	71	41	1	128	29	256	47	2	334	53	45	57	2	157	919	
Total	106	977	103	7	1193	99	287	151	4	541	131	951	199	3	1284	192	197	187	3	579	3597	
05:00 PM	23	252	18	3	296	41	80	71	0	192	43	231	38	0	312	41	59	53	4	157	957	
05:15 PM	25	249	30	3	307	29	82	47	0	158	35	229	44	0	308	38	44	32	1	115	888	
05:30 PM	36	211	11	4	262	20	75	47	0	142	21	223	53	0	297	42	30	51	4	127	828	
05:45 PM	25	205	16	0	246	10	44	33	0	87	30	193	56	0	279	32	45	47	0	124	736	
Total	109	917	75	10	1111	100	281	198	0	579	129	876	191	0	1196	153	178	183	9	523	3409	
Grand Total	404	3191	361	38	3994	373	941	619	10	1943	369	3301	480	8	4158	462	693	792	19	1966	12061	
Apprch %	10.1	79.9	9	1		19.2	48.4	31.9	0.5		8.9	79.4	11.5	0.2		23.5	35.2	40.3	1			
Total %	3.3	26.5	3	0.3	33.1	3.1	7.8	5.1	0.1	16.1	3.1	27.4	4	0.1	34.5	3.8	5.7	6.6	0.2	16.3		
Cars	377	3052	326	38	3793	318	903	565	10	1796	300	3141	467	8	3916	460	666	768	19	1913	11418	
% Cars	93.3	95.6	90.3	100	95	85.3	96	91.3	100	92.4	81.3	95.2	97.3	100	94.2	99.6	96.1	97	100	97.3	94.7	
Trucks	5	32	9	0	46	18	12	7	0	37	5	54	3	0	62	1	15	15	0	31	176	
% Trucks	1.2	1	2.5	0	1.2	4.8	1.3	1.1	0	1.9	1.4	1.6	0.6	0	1.5	0.2	2.2	1.9	0	1.6	1.5	
Heavies	22	106	26	0	154	37	26	47	0	110	64	106	10	0	180	1	12	9	0	22	466	
% Heavies	5.4	3.3	7.2	0	3.9	9.9	2.8	7.6	0	5.7	17.3	3.2	2.1	0	4.3	0.2	1.7	1.1	0	1.1	3.9	
Cyclists	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
% Cyclists	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Horizon Data Services Ltd

(416) 840-6619

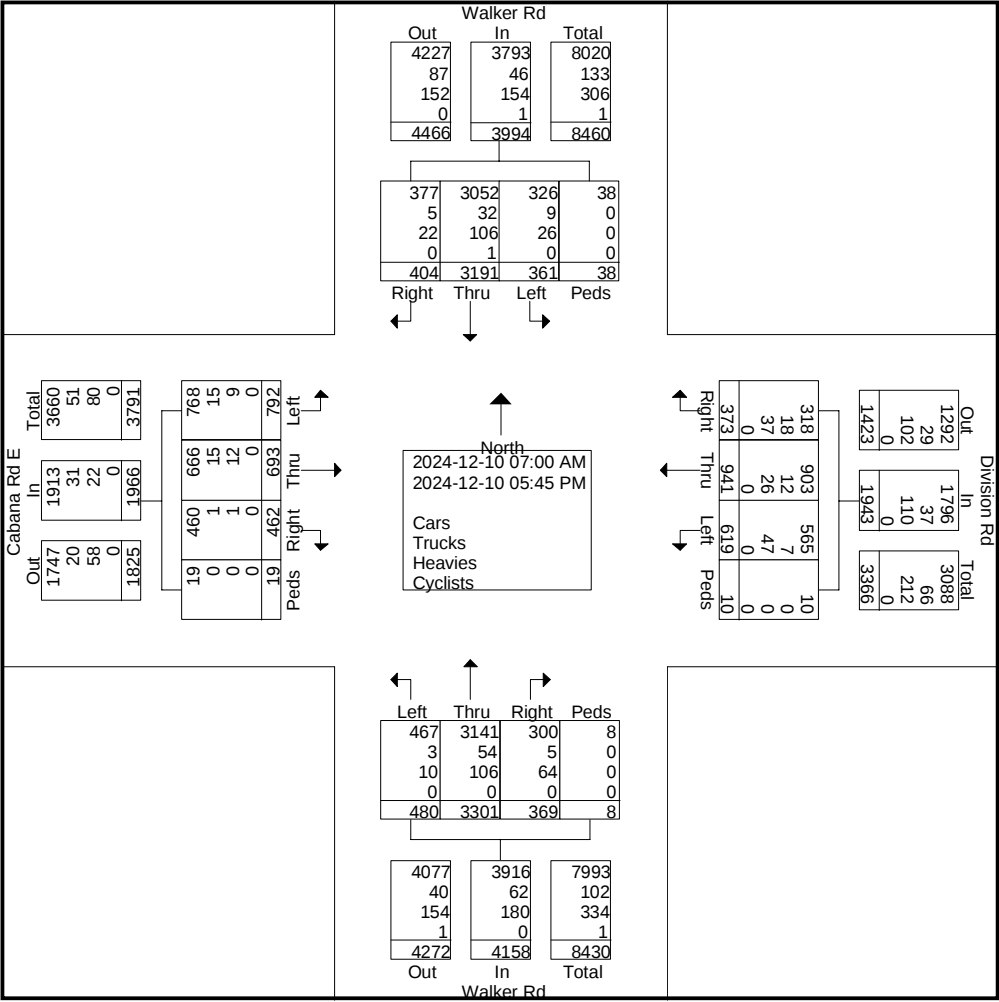
Your Traffic Count Specialist

File Name : Walker Road at Division Road

Site Code : Loc-9

Start Date : 2024-12-10

Page No : 2



[illegible]

Horizon Data Services Ltd

(416) 840-6619

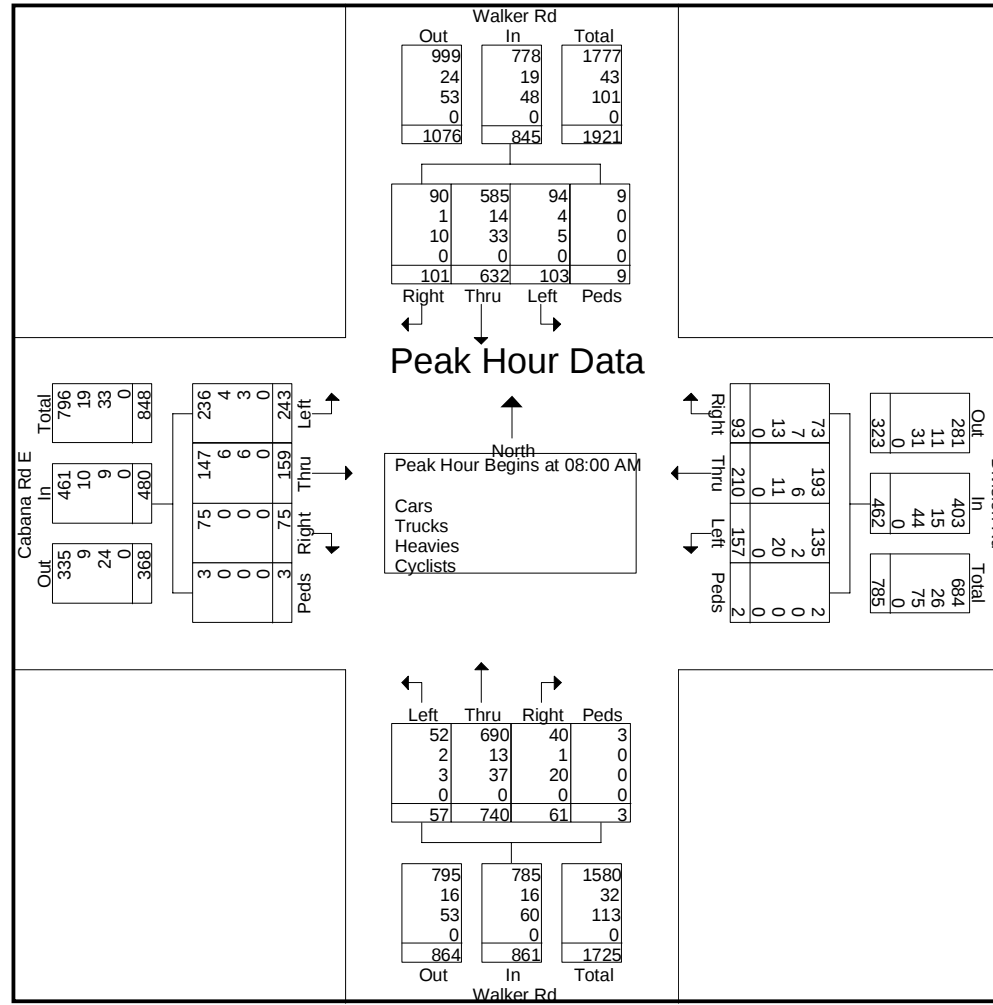
Your Traffic Count Specialist

File Name : Walker Road at Division Road

Site Code : Loc-9

Start Date : 2024-12-10

Page No : 4



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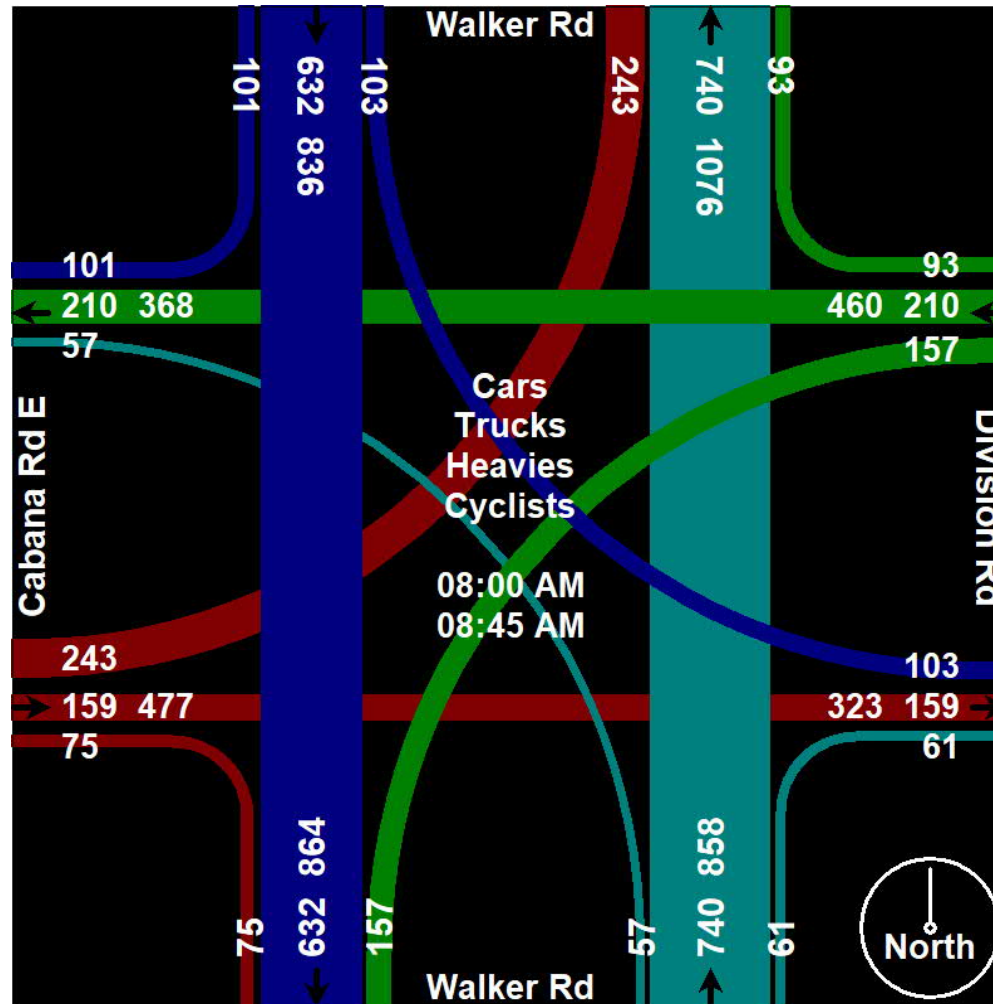
Your Traffic Count Specialist

File Name : Walker Road at Division Road

Site Code : Loc-9

Start Date : 2024-12-10

Page No : 5



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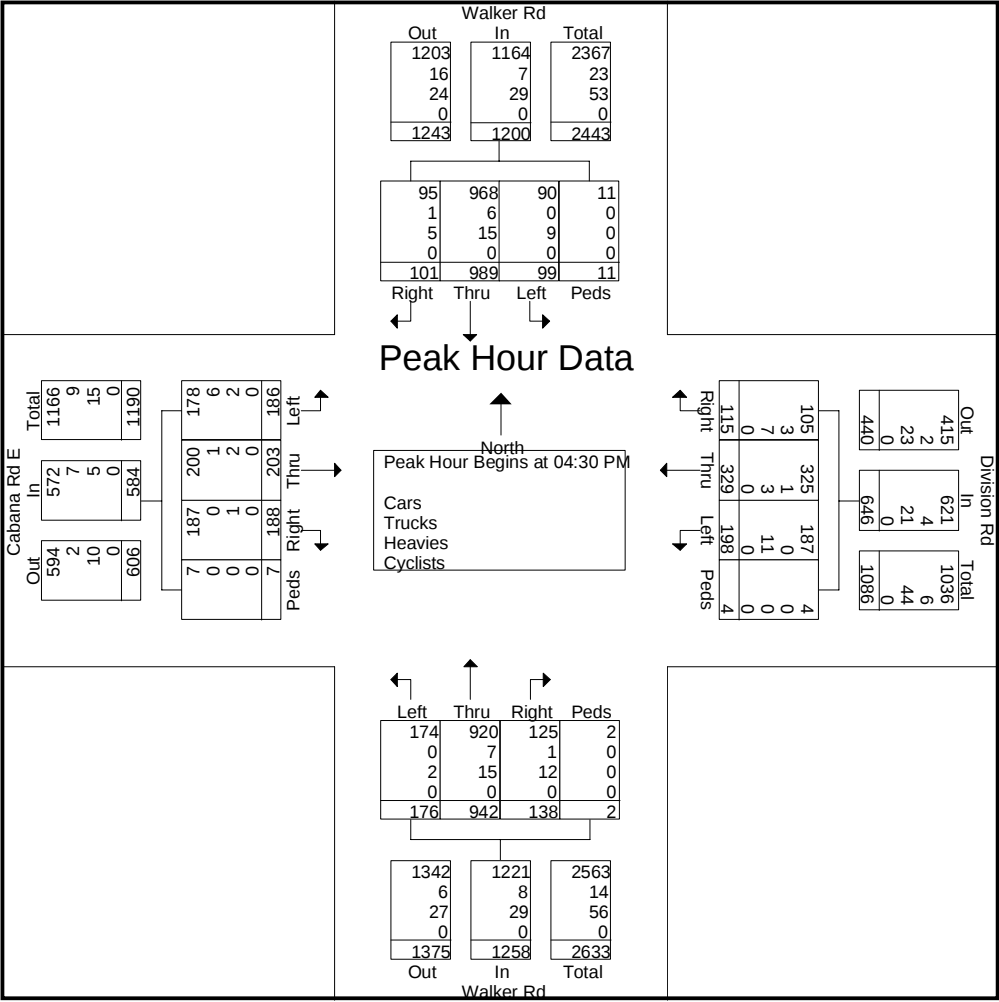
Your Traffic Count Specialist

File Name : Walker Road at Division Road

Site Code : Loc-9

Start Date : 2024-12-10

Page No : 7



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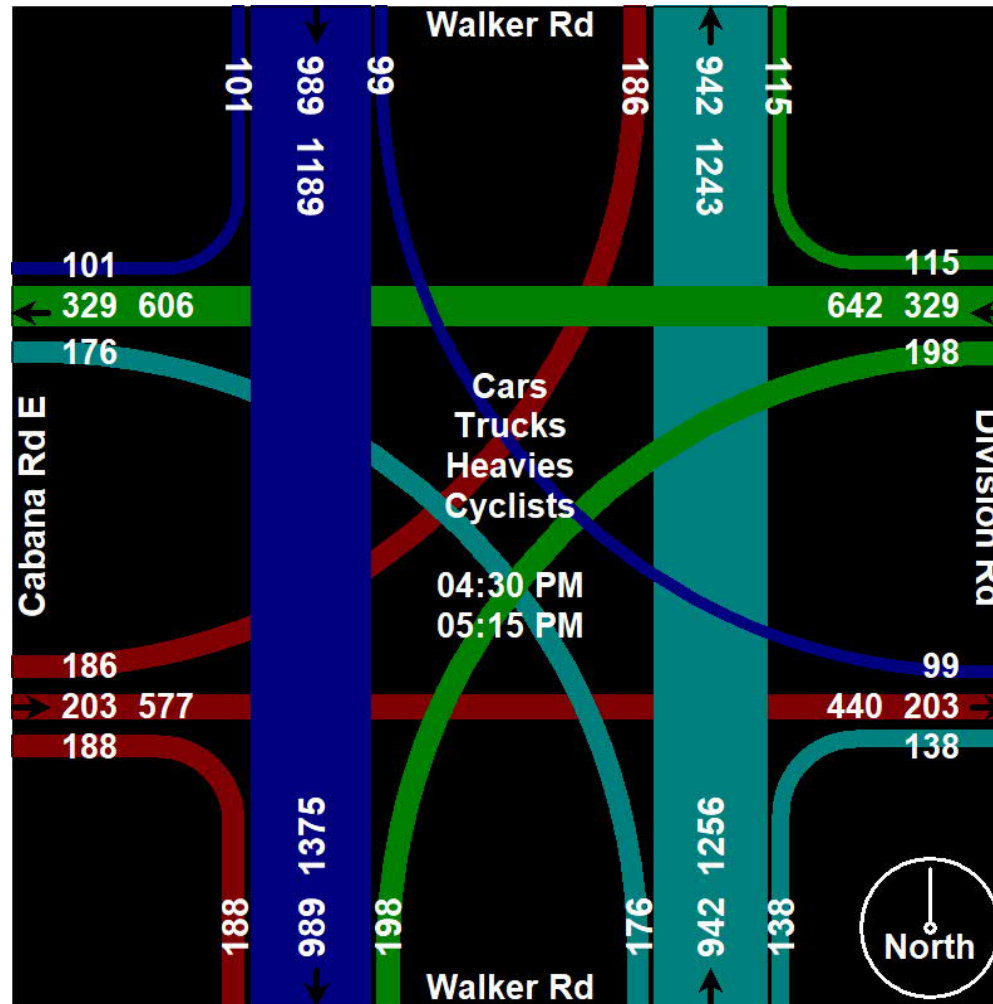
Your Traffic Count Specialist

File Name : Walker Road at Division Road

Site Code : Loc-9

Start Date : 2024-12-10

Page No : 8



Railway Company	Province	Jurisdiction	Mile	Subdivision	Spur Mile Point	Spur Name	Location	Latitude	Longitude	Road Authority	Trains Daily	Train Max Speed (mph)	Tracks
Canadian National Railway	ON	F	224.5	Caso	0.79	Pelton Industrial	Angle Rd - 7Th Conc	42.2582	-82.9624	Windsor (ON)	3	10	1

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APPENDIX C

NEF Contours



**LPS AVIA
CONSULTING**

One Antares Drive,
Suite 250, Ottawa, ON,
Canada K2E 8C4

www.lpsaviation.ca

Client



**WINDSOR
INTERNATIONAL
AIRPORT**

Title

MASTER PLAN

**NOISE
EXPOSURE
FORECAST**

Notes

1. Conceptual Layout
2. All dimensions approximate
3. Noise Exposure Forecast provided by Windsor Airport Management

Figure No. 3-4

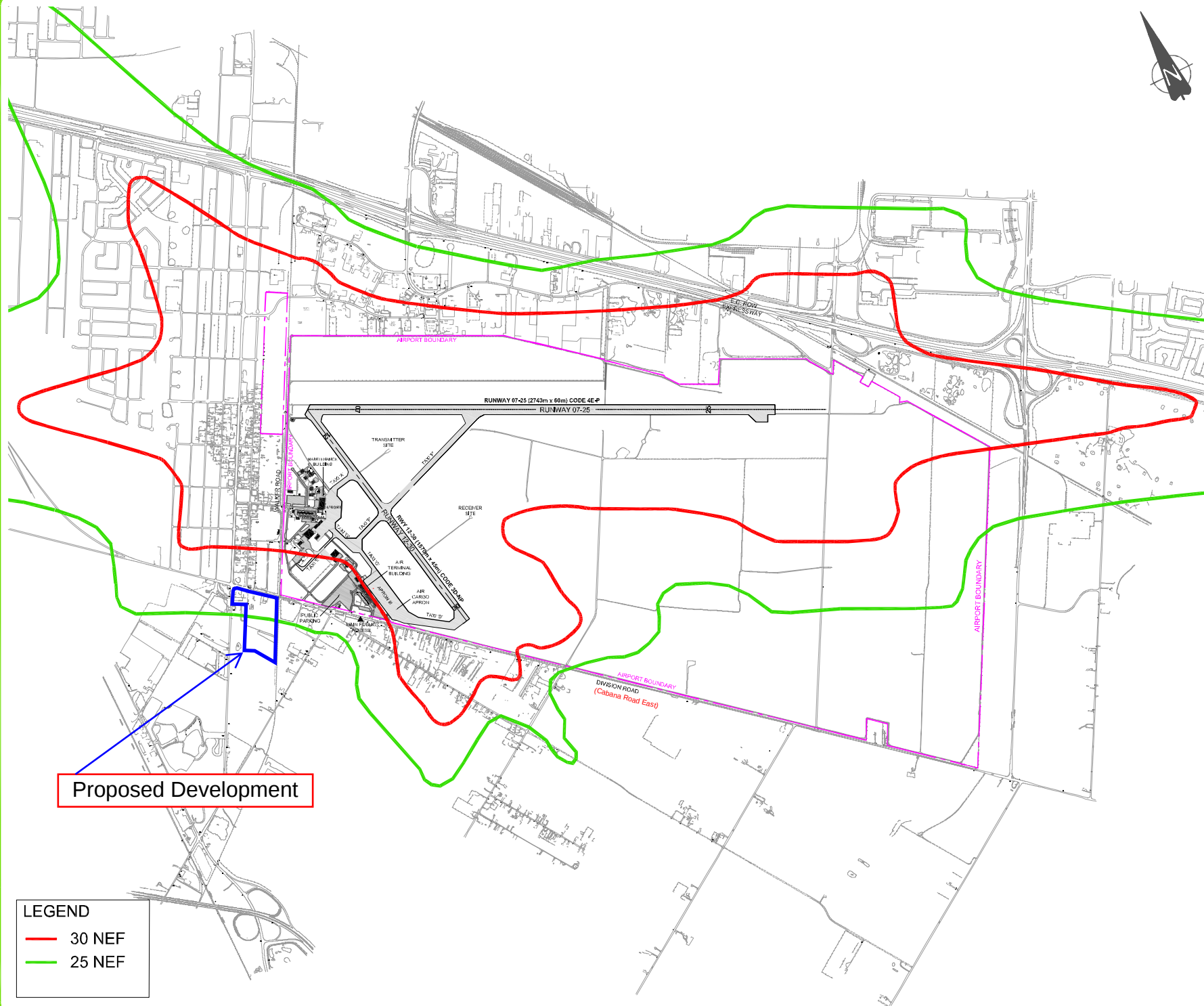
Drawn By EDH

Approved By EGL

Date JULY 2010

Scale NTS

Filename LSP YQG AIRPORT.dwg



Proposed Development

LEGEND

- 30 NEF
- 25 NEF

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APPENDIX D

Building Component Analysis

Table D-1: Building Component Analysis for Building 'A'

BPN-56

Receptor	Source	Time of Day	Location	Sound Levels												Façade and Room Inputs										Height of Receptor (m)	Horizontal Distance to Source (m)	Source Inputs				Component 1 - Veneer					Component 2 - Glazing					Required Glazing (STC)
				Façade Level	Free Field Correction	Indoor Requirement	Required Reduction	Exposed Façade Height	Exposed Façade Length	Room Depth	Floor Area	Façade Area	Glazing as % of Façade Area	Glazing as % of Floor Area	Veneer as % of Floor Area	Room Absorption	Incident Sound Angle (deg)	Angle Correction	Source Spectrum	Assumed Veneer (STC)	Building Component	Spectrum Correction	Room Correction	% Total Transmitted Energy (%)	Energy Correction			Building Component	Spectrum Correction	Room Correction	% Total Transmitted Energy (%)	Energy Correction										
				(dBA)	(dBA)	(dBA)	(dBA)	(m)	(m)	(m)	(m²)	(m²)	(%)	(%)	(%)																											
Building A	Roadway	Daytime	Living/Dining	67	3	45	25	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	18	36.9	1	D	45	D	7	-4	5%	42	C	4	-1	95%	0	30	Living / Dining Areas								
	Locomotive	Daytime	Living/Dining	45	3	40	8	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	195	4.0	0	F	45	D	10	-4	5%	39	C	6	-1	95%	0	14									
	Wheel	Daytime	Living/Dining	41	3	40	4	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	195	4.0	0	B	45	D	2	-4	5%	47	C	1	-1	95%	0	5									
	Aircraft	Daytime	Living/Dining	58	3	36	25	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	0	90.0	3	B	45	D	2	-4	5%	47	C	1	-1	95%	0	29									
																																32										
	Roadway	Night-time	Living/Dining	60	3	45	18	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	18	36.9	1	D	45	D	7	-4	5%	42	C	4	-1	95%	0	23									
	Locomotive	Night-time	Living/Dining	45	3	40	8	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	195	4.0	0	F	45	D	10	-4	5%	39	C	6	-1	95%	0	14									
	Wheel	Night-time	Living/Dining	41	3	40	4	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	195	4.0	0	B	45	D	2	-4	5%	47	C	1	-1	95%	0	5									
	Aircraft	Night-time	Living/Dining	58	3	36	25	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	13.5	0	90.0	3	B	45	D	2	-4	5%	47	C	1	-1	95%	0	29									
																																30	32									
	Roadway	Daytime	Sleeping Quarters	67	3	45	25	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	18	36.9	1	D	45	D	7	-2	5%	40	C	4	-2	95%	0	28	32								
	Locomotive	Daytime	Sleeping Quarters	45	3	40	8	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	195	4.0	0	F	45	D	10	-2	5%	37	C	6	-2	95%	0	12									
	Wheel	Daytime	Sleeping Quarters	41	3	40	4	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	195	4.0	0	B	45	D	2	-2	5%	45	C	1	-2	95%	0	3									
	Aircraft	Daytime	Sleeping Quarters	58	3	31	30	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	0	90.0	3	B	45	D	2	-2	5%	45	C	1	-2	95%	0	32									
																																34										
	Roadway	Night-time	Sleeping Quarters	60	3	40	23	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	18	36.9	1	D	45	D	7	-2	5%	40	C	4	-2	95%	0	26	Sleeping Quarters								
	Locomotive	Night-time	Sleeping Quarters	45	3	35	13	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	195	4.0	0	F	45	D	10	-2	5%	37	C	6	-2	95%	0	17									
	Wheel	Night-time	Sleeping Quarters	41	3	35	9	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	195	4.0	0	B	45	D	2	-2	5%	45	C	1	-2	95%	0	8									
	Aircraft	Night-time	Sleeping Quarters	58	3	31	30	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	13.5	0	90.0	3	B	45	D	2	-2	5%	45	C	1	-2	95%	0	32									
																																33	34									

BPN-56	Receptor	Source	Time of Day	Location	Sound Levels				Façade and Room Inputs								Height of Receptor	Horizontal Distance to Source	Source Inputs				Component 1 - Veneer						Component 2 - Glazing					
					Façade Level	Free Field Correction	Indoor Requirement	Required Reduction	Exposed Façade Height	Exposed Façade Length	Room Depth	Floor Area	Façade Area	Glazing as % of Façade Area	Glazing as % of Floor Area	Veneer as % of Floor Area			Room Absorption	Incident Sound Angle	Angle Correction	Source Spectrum	Assumed Veneer	Building Component	Spectrum Correction	Room Correction	% Total Transmitted Energy	Energy Correction	Building Component	Spectrum Correction	Room Correction	% Total Transmitted Energy	Energy Correction	Required Glazing
					(dBA)	(dBA)	(dBA)	(dBA)	(m)	(m)	(m)	(m²)	(m²)	(%)	(%)	(%)				(deg)			(STC)										(STC)	
Building B	Roadway	Daytime	Living/Dining	65	3	45	23	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	18	23	0	D	45	D	7	-4	5%	42	C	4	-1	95%	0	27	Living / Dining Areas
	Locomotive	Daytime	Living/Dining	46	3	40	9	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	139	3	0	F	45	D	10	-4	5%	39	C	6	-1	95%	0	15	
	Wheel	Daytime	Living/Dining	42	3	40	5	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	139	3	0	B	45	D	2	-4	5%	47	C	1	-1	95%	0	6	
	Aircraft	Daytime	Living/Dining	58	3	36	25	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	0	90	3	B	45	D	2	-4	5%	47	C	1	-1	95%	0	29	
																																31		
	Roadway	Night-time	Living/Dining	59	3	45	17	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	18	23	0	D	45	D	7	-4	5%	42	C	4	-1	95%	0	21	Sleeping Quarters
	Locomotive	Night-time	Living/Dining	46	3	40	9	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	139	3	0	F	45	D	10	-4	5%	39	C	6	-1	95%	0	15	
	Wheel	Night-time	Living/Dining	42	3	40	5	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	139	3	0	B	45	D	2	-4	5%	47	C	1	-1	95%	0	6	
	Aircraft	Night-time	Living/Dining	58	3	36	25	3.00	6.00	3.00	18.00	18.00	70%	70%	30%	Intermediate	7.5	0	90	3	B	45	D	2	-4	5%	47	C	1	-1	95%	0	29	
																																	29	
	Roadway	Daytime	Sleeping Quarters	65	3	45	23	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	18	23	0	D	45	D	7	-2	5%	40	C	4	-2	95%	0	25	Sleeping Quarters
	Locomotive	Daytime	Sleeping Quarters	46	3	40	9	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	139	3	0	F	45	D	10	-2	5%	37	C	6	-2	95%	0	13	
	Wheel	Daytime	Sleeping Quarters	42	3	40	5	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	139	3	0	B	45	D	2	-2	5%	45	C	1	-2	95%	0	4	
	Aircraft	Daytime	Sleeping Quarters	58	3	31	30	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	0	90	3	B	45	D	2	-2	5%	45	C	1	-2	95%	0	32	
																																	33	
	Roadway	Night-time	Sleeping Quarters	59	3	40	22	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	18	23	0	D	45	D	7	-2	5%	40	C	4	-2	95%	0	24	Sleeping Quarters
	Locomotive	Night-time	Sleeping Quarters	46	3	35	14	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	139	3	0	F	45	D	10	-2	5%	37	C	6	-2	95%	0	18	
	Wheel	Night-time	Sleeping Quarters	42	3	35	10	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	139	3	0	B	45	D	2	-2	5%	45	C	1	-2	95%	0	9	
	Aircraft	Night-time	Sleeping Quarters	58	3	31	30	3.00	3.00	3.00	9.00	9.00	50%	50%	50%	Intermediate	7.5	0	90	3	B	45	D	2	-2	5%	45	C	1	-2	95%	0	32	
																																	33	

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APPENDIX E

Warning Clauses

Warning Clauses

Warning clauses should be included in agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations.

Type C: “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.”

Type D: “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.”

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APPENDIX F

STAMSON Modelling

Filename: divrd.te Time Period: 16 hours
Description:

Road data, segment # 1: Walker

Car traffic volume : 30399 veh/TimePeriod
Medium truck volume : 743 veh/TimePeriod
Heavy truck volume : 1956 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Walker

Angle1 Angle2 : -79.00 deg 83.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface) Receiver source distance : 35.50 m
Receiver height : 10.50 m
Topography : 1 (Flat/gentle slope; no barrier) Reference angle : 0.00

Results segment # 1: Walker

Source height = 1.56 m

ROAD (0.00 + 69.43 + 0.00) = 69.43 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq -----
----- -79 83
0.00 73.63 0.00 -3.74 -0.46 0.00 0.00 0.00 69.43 -----

Segment Leq : 69.43 dBA

Total Leq All Segments: 69.43 dBA

TOTAL Leq FROM ALL SOURCES: 69.43

Filename: divrail.te Time Period: 24 hours

Description:

Rail data, segment # 1: CN

```
-----  
Train ! Trains ! Speed !# loc !# Cars! Eng !Cont  
Type ! !(km/h) !/Train!/Train! type !weld -----+-----+---  
-----+-----+-----+-----  
1. ! 4.0/4.0 ! 16.0 ! 4.0 !140.0 !Diesel! Yes
```

Data for Segment # 1: CN

```
-----  
Angle1 Angle2 : -72.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 2 (Reflective ground surface) Receiver source distance : 145.00 m  
Receiver height : 7.50 m  
Topography : 1 (Flat/gentle slope; no barrier) No Whistle Reference angle :  
0.00
```

Results segment # 1: CN

```
-----  
  
LOCOMOTIVE (0.00 + 50.32 + 0.00) = 50.32 dBA  
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq -----  
----- -72 0 0.00 64.15 -  
9.85 -3.98 0.00 0.00 0.00 50.32 -----  
-----
```

```
WHEEL (0.00 + 35.78 + 0.00) = 35.78 dBA  
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq -----  
----- -72 0 0.00 49.61 -  
9.85 -3.98 0.00 0.00 0.00 35.78 -----  
-----
```

Segment Leq : 50.47 dBA

Total Leq All Segments: 50.47 dBA

TOTAL Leq FROM ALL SOURCES: 50.47

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APPENDIX G

D-6 Classification Criteria

Category	Outputs	Scale	Process	Operations/Intensly	Possible Examples
Class I	• Noise: Sound not audible off property • Dust and/or Odour: Infrequent and not intense • Vibration: No ground borne vibration on plant property	• No outside storage • Small scale plant or scale is irrelevant in relation to all other criteria for this Class	• Self-contained plant or building which produces/stores a packaged product. Low probability of fugitive emissions	• Daytime operations only • Infrequent movement of products and/or heavy trucks	• Electronics manufacturing and repair • Furniture repair and refinishing • Beverages bottling • Auto parts supply • Packaging and crafting services • Distribution of dairy products • Laundry and linen supply
Class II	• Noise: Sound occasionally audible off property • Dust and/or Odour: Frequent and occasionally intense • Vibration: Possible groundborne vibration, but cannot be perceived off property	• Outside storage permitted • Medium level of production allowed	• Open process • Periodic outputs of minor annoyance • Low probability of fugitive emissions	• Shift operations permitted • Frequent movement of products and/or heavy trucks with the majority of movements during daytime hours	• Magazine printing • Paint spray booths • Metal command • Electrical production manufacturing • Manufacturing of dairy products • Dry cleaning services • Feed packing plant
Class III	• Noise: sound frequently audible off property • Dust and/or Odour: Persistent and/or intense • Vibration: Ground-borne vibration can frequently be perceived off property	• Outside storage of raw and finished products • Large production levels	• Open process • Frequent outputs of major annoyances • High probability of fugitive emissions	• Continuous movement of products and employees • Daily shift operations permitted	• Manufacturing of paint and varnish • Organic chemicals manufacturing • Breweries • Solvent recovery plants • Soaps and detergent manufacturing • Manufacturing of resins and costing • Metal manufacturing

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APPENDIX H

Stationary Source Data

Stationary Noise Source	Sound Power Level (dBA)	Source
10-ton HVAC unit	86.2	Dillon Sound Library
5-ton HVAC unit	83.2	Dillon Sound Library
Car Wash Blowerws (exit)	106.7	Dillon Sound Library
Truck Passby	110.6	DEFRA
Truck Idling	99.3	Dillon Sound Library
Pneumatic Tools	102	Dillon Sound Library
Exhaust Blower	90.4	Dillon Sound Library
Truck Coupling	117	Dillon Sound Library
Paint Booth Exhaust	94	Dillon Sound Library