# 1101, 1105, 1163 Kingston Road

## Environmental Noise Assessment Pickering, ON

### Tribute (Brookdale) Limited

1815 Ironstone Manor, Unit 1, Pickering ON

Prepared by:

**SLR Consulting (Canada) Ltd.**

100 Stone Road West, Suite 201, Guelph, ON  N1G 5L3

SLR Project No.: 241.013026.00001

December 19, 2024

Revision: A

## Revision Record

| Revision | Date | Prepared By | Checked By | Authorized By |
|---|---|---|---|---|
| A | December 19, 2024 | Jason Dorssers | Aaron Haniff | Aaron Haniff |

# Statement of Limitations

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Tribute (Brookdale) Limited, hereafter referred to as the "Client". It is intended for the sole and exclusive use of the Client. The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared in a manner generally accepted by professional consulting principles and practices for the same locality and under similar conditions. No other representations or warranties, expressed or implied, are made.

Opinions and recommendations contained in this report are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames and project parameters as outlined in the Scope or Work and agreement between SLR and the Client. The data reported, findings, observations and conclusions expressed are limited by the Scope of Work. SLR is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. SLR does not warranty the accuracy of information provided by third party sources.

# Table of Contents

# Tables in Text

# Appended Figures



# Appendices

# 1.0 Introduction

SLR Consulting (Canada) Ltd. was retained by Tribute (Brookdale) Limited, to conduct an Environmental Noise Assessment for the proposed development ("the Site") located at 1105 Kingston Road, located in Pickering, Ontario. This report is in support of the Official Plan Amendment/Zoning By-Law Amendment (OPA/ZBA) application for the development.

## 1.1 Focus of Report

The intent of this report is to meet the requirement of the City of Pickering and the Region of Durham. In keeping with standard acoustical practices, this report examines the potential for:

- Impacts of the environment on the proposed development;
- Impacts of the proposed development on the environment; and
- Impacts of the proposed development on itself.

The setback to the CN/Metrolinx Kingston Subdivision is greater than 140 meters and is outside of the recommended 75-meter setback, therefore, an environmental vibration assessment has not been conducted.

## 1.2 Nature of the Subject Lands

The development site is located at 1105 Kingston Road in Pickering, Ontario. The proposed development is located between Kingston Road and Highway 401[1], just east of Dixie Road. A context plan is provided in **Figure 1**. The site plan and architectural drawings of the Site are provided in **Appendix A**. Excerpts from the site plan are provided in **Figure 2**.

The site is currently occupied by parking lots and low-rise commercial buildings. The proposed master plan development consists of Blocks A, B, C, D, and E, including multiple towers ranging from 17 to 35 storeys in height, with multiple shared three/six-storey podiums.

## 1.3 Nature of the Surroundings

Immediately surrounding the site there are lightly forested fields to the east; Highway 401 to the southeast through south; low-rise commercial buildings to the southwest and northeast; and low-rise residential developments to the west through north. Beyond the immediate surroundings, Frenchman's Bay lies to the south and there are low-rise residential and commercial buildings in all other directions. To the east, there is a high-rise development under construction on Walnut Lane, south of the grocery store.

An overall context plan can be found in **Figure 2**.

[1] For the sake of simplicity, when describing general directions in the report text, Kingston Road is assumed to run west to east.

# Part 1: Impacts of the Environment on the Development

In assessing the potential impacts of the environment on the proposed development, the focus of this report is to assess the potential for:

- Transportation noise impacts from the surrounding roadways and railways; and
- "Stationary" noise impacts from the surrounding commercial lands.

# 2.0 Transportation Noise Impacts

## 2.1 Transportation Noise Sources

Roadway and rail noise sources of interest with the potential to produce noise at the proposed development are:

- Kingston Road;
- Liverpool Road;
- Highway 401; and
- The Metrolinx/Canadian National Railway ("CN") Kingston Subdivision.

Sound exposure levels at the development have been predicted, and this information has been used to identify façade, ventilation, and warning clause requirements.

## 2.2 Surface Transportation Noise Criteria

### Noise Sensitive Developments

Ministry of the Environment, Conservation and Parks (MECP) Publication NPC-300 provides sound level criteria for noise sensitive developments. The applicable portions of NPC-300 are Part C – Land Use Planning and the associated definitions outlined in Part A – Background. **Tables 1 to 4** below summarize the applicable surface transportation (road and rail) criteria limits.

### Location Specific Criteria

**Table 1** summarizes criteria in terms of energy equivalent sound exposure ($L_{eq}$) levels for specific noise-sensitive locations. Both outdoor and indoor locations are identified, with the focus of outdoor areas being amenity spaces. Indoor criteria vary with sensitivity of the space. As a result, sleep areas have more stringent criteria than Living / Dining room space.

**Table 1: NPC-300 Sound Level Criteria for Road and Rail Noise**

| Type of Space | Time Period | Energy Equivalent Sound Exposure Level $L_{eq}$ [5] (dBA) | | Assessment Location |
|---|---|---|---|---|
| | | Road | Rail [1] | |
| Outdoor Amenity Area | Daytime (0700-2300h) | 55 | 55 | Outdoors [2] |
| Living/Dining Room [3] | Daytime (0700-2300h) | 45 | 40 | Indoors [4] |
| | Night-time (2300-0700h) | 45 | 40 | Indoors [4] |
| Sleeping Quarters | Daytime (0700-2300h) | 45 | 40 | Indoors [4] |
| | Night-time (2300-0700h) | 40 | 35 | Indoors [4] |

**Notes:** [1] Whistle noise is excluded for OLA noise assessments and included for Living/Dining Room and Sleeping Quarter assessments, where applicable.

[2] Road and Rail noise impacts are to be combined for assessment of OLA impacts.

[3] Residence area Dens, Hospitals, Nursing Homes, Schools, Daycares are also included. During the nighttime period, Schools and Daycares are excluded.

[4] An assessment of indoor noise levels is required only if the criteria in Table 3 are exceeded.

[5] $L_{eq}$ – the energy equivalent sound exposure level, integrated over the time period shown.

## Outdoor Living Areas

**Table 2** summarizes the noise mitigation requirements for communal outdoor amenity areas ("Outdoor Living Areas" or "OLAs").

For the assessment of outdoor sound levels, total surface transportation noise is determined by combining road and rail traffic sound levels. Whistle noise from trains is not included in the determination of outdoor sound levels.

**Table 2: NPC-300 OLA Sound Level Criteria for Road and Rail Noise**

| Time Period | OLA Energy Equivalent Sound Level $L_{eq}$ (dBA) | Mitigation Requirements/Warning Clause Recommendations |
|---|---|---|
| Daytime (0700-2300h) | ≤ 55 | • None |
| | 56 to 60 inc. | • Noise barrier OR Type A Warning Clause |
| | > 60 | • Noise barrier to reduce noise to 55 dBA OR<br>• Noise barrier to reduce noise to 60 dBA and Type B Warning Clause |

## Ventilation and Warning Clauses

**Table 3** summarizes recommendations for ventilation where windows would potentially have to remain closed as a means of noise control. Despite implementation of ventilation measures where recommended, if sound exposure levels exceed the guideline limits in **Table 1**, warning clauses advising future occupants of the potential excesses are also recommended. Warning clauses also apply to OLAs.

**Table 3: NPC-300 Ventilation and Warning Clause Recommendations**

| Assessment Location | Time Period | Energy Equivalent Sound Exposure Level - $L_{eq}$ (dBA) | | Ventilation and Warning Clause Recommendations [2] |
|---|---|---|---|---|
| | | Road | Rail [1] | |
| Outdoor Living Area | Daytime (0700-2300h) | 56 to 60 incl. | | Type A Warning Clause |
| Plane of Window | Daytime (0700-2300h) | ≤ 55 | | None |
| | | 56 to 65 incl. | | Forced Air Heating with provision to add air conditioning + Type C Warning Clause |
| | | > 65 | | Central Air Conditioning + Type D Warning Clause |
| | Night-time (2300-0700h) | 51 to 60 incl. | | Forced Air Heating with provision to add air conditioning + Type C Warning Clause |
| | | > 60 | | Central Air Conditioning + Type D Warning Clause |

**Notes:** [1] Whistle noise is excluded from assessment.
[2] Road and Rail noise is combined for determining Ventilation and Warning Clause requirements.

## Building Component Requirements

**Table 4** provides sound level thresholds which, if exceeded, trigger a requirement for the building shell components (i.e., wall, windows) to be designed accordingly to meet the applicable indoor sound criteria.

**Table 4: NPC-300 Building Component Assessment Requirements**

| Assessment Location | Time Period | Energy Equivalent Sound Exposure Level - $L_{eq}$ (dBA) | | Component Requirements |
|---|---|---|---|---|
| | | Road | Rail [1] | |
| Plane of Window | Daytime (0700-2300h) | > 65 | > 60 | Designed/ Selected to Meet Indoor Requirements [2] |
| | Night-time (2300-0700h) | > 60 | > 55 | |

**Notes:** [1] Whistle noise is included in assessment
[2] Building component requirements are assessed separately for Road and Rail, and then combined for a resultant sound isolation parameter.

### 2.2.1 Region of Durham and City of Pickering

The applicable Ministry of the Environment noise guideline for assessing new residential development applications is Publication NPC-300, which is also referenced in the City of Pickering's Terms of Reference for Noise Studies. Noise levels from industry meeting NPC-300 requirements will meet the requirements of the City/Region.

## 2.3 Traffic Data and Future Projections

### 2.3.1 Roadway Traffic Data

Ultimate traffic volumes for Kingston and Liverpool Road were obtained directly from the Region of Durham. Highway 401 volumes were obtained from the MTO's iCorridor website for the year 2019. Volumes were projected to a 2035 year based on a 1.5% growth per annum, which is typical for highways. Total Commercial vehicle percentages were also included within the provided dataset from the Region/MTO. A day/night traffic volume split of 90% daytime/ 10% night-time was used for Kingston Road and Liverpool Road, which is typical for urban arterial roadways. A day/night traffic volume split of 80% daytime/ 20% night-time was used for Highway 401, which were calculated based on hourly traffic counts from the MTO.

Copies of applicable traffic data and calculations can be found in **Appendix B**. The following **Table 5** summarizes the road traffic volumes used in the analysis.

**Table 5: Summary of Road Traffic Data Used in the Transportation Analysis**

| Roadway Link | Traffic Volumes [1] AADT | % Day/Night Volume Split [1] | | Commercial Vehicle Breakdown [2] | | Vehicle Speed (km/hr) |
|---|---|---|---|---|---|---|
| | | Daytime | Night-time | % Medium Trucks | % Heavy Trucks | |
| Kingston Road | 35,000 | 90 | 10 | 2.4 | 5.6 | 60 |
| Liverpool Road | 32,000 | 90 | 10 | 2.1 | 4.9 | 60 |
| Highway 401 | 313,820 | 80 | 20 | 1.5 | 10.5 | 100 |

**Notes:** [1] A typical Day/Night split of 90% day and 10% night was assumed, consistent with MECP/ MTO practices, and typical for urban arterial roadways (Kingston/Liverpool). A Day/Night split of 80%/20% was assumed based on MTO hourly traffic counts.

[2] Total Commercial vehicle percentages obtained from the Region (Kingston/Liverpool) / MTO (Highway 401).

### 2.3.2 Railway Traffic Data

Railway traffic data for Metrolinx commuter trains were provided by Metrolinx for future conditions. CN rail traffic data (Freight/Way-Freight, Passenger) was obtained from previous studies conducted by SLR in the area. The 2035 CN traffic numbers were estimated based off a 2.5% annual growth rate. Excerpts of the rail traffic data from this assessment can be found in **Appendix B**. The following **Table 6** summarizes the railway traffic volumes used in the analysis.

**Table 6: Summary of Railway Traffic Data Used in the Transportation Analysis**

| Train Type | Forecast 2035 # of Trains | | No. of Locomotives/Train | No. of Cars/Train | Vehicle Speed (km/h) |
|---|---|---|---|---|---|
| | Daytime (7 AM-11 PM) | Night-time (11 PM-7 AM) | | | |
| GO Commuter | 277 | 47 | 1 | 12 | 72 |
| Freight | 17 | 7 | 2 | 140 | 64 |
| Way-Freight | 2 | 5 | 2 | 25 | 64 |
| VIA Passenger | 48 | 0 | 2 | 10 | 64 |

**Notes:** [1] Train volumes were grown based on a 2.5%/annum growth rate provided by CN. See **Appendix B.**

### 2.3.3 Transportation Impact Modelling

Future (2035) road and railway sound levels at the proposed development were predicted using Cadna/A, a commercially available noise propagation modelling software.

Roadways were modelled as line sources of sound, with sound emission rates calculated using ORNAMENT algorithms, the road traffic noise model of the MECP. Future rail sound levels at the proposed development were predicted using the FTA/FRA modelling algorithms included in Cadna/A, a commercially available noise propagation modelling software. FRA reference sound levels were used for diesel-electric locomotives, and FTA reference sound levels were used for rail cars. These predictions were validated and are equivalent to those made using the MECP's STAMSON v5.04 noise models.

Sound levels were predicted along the façades of the proposed development using the "building evaluation" feature of Cadna/A. This feature allows for noise levels to be predicted across the entire façade of a structure.

Ground absorption was included in the assessment. As a conservative assumption, the entire model was assumed to be reflective.

### 2.3.4 Façade Sound Levels

Predicted worst-case façade sound levels are presented in **Table 7**. The transportation façade sound levels of the development, showing the ranges of predicted daytime and night-time sound levels are shown in **Figure 3a/b** for combined roadway and railway impacts at each Buildings.

STAMSON calculations at the most exposed location to Kingston Road (Building A) are also provided in **Appendix B**. The STAMSON and Cadna/A predictions are within 1 dB and are acoustically equivalent.

**Table 7: Summary of Transportation Façade Sound Levels**

| Component | Façade [1] | Roadway Sound Levels [1] | | Railway Sound Levels [1] | | Combined Sound Levels [1] | |
|---|---|---|---|---|---|---|---|
| | | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) |
| A - 6 storey | North | 71 | 64 | 50 | 47 | 71 | 64 |
| | East | 68 | 63 | 54 | 51 | 68 | 63 |
| | South | 67 | 64 | 58 | 55 | 67 | 64 |
| | West | 69 | 64 | 57 | 53 | 69 | 64 |
| A1 - 17 storey | North | 67 | 61 | 54 | 51 | 67 | 62 |
| | East | 66 | 61 | 54 | 51 | 66 | 62 |
| | South | 68 | 65 | 60 | 57 | 69 | 65 |
| | West | 67 | 64 | 59 | 56 | 68 | 64 |
| A2 - 19 storey | North | 66 | 61 | 54 | 51 | 67 | 62 |
| | East | 64 | 60 | 53 | 50 | 65 | 60 |
| | South | 69 | 65 | 61 | 57 | 69 | 66 |
| | West | 68 | 65 | 60 | 56 | 69 | 66 |
| B - 6 storey | North | 66 | 62 | 51 | 47 | 66 | 62 |
| | East | 77 | 73 | 64 | 61 | 77 | 74 |
| | South | 81 | 78 | 68 | 65 | 81 | 78 |
| | West | 78 | 75 | 66 | 62 | 78 | 75 |
| B - 35 storey | North | 65 | 61 | 50 | 47 | 65 | 61 |
| | East | 72 | 69 | 62 | 58 | 73 | 70 |
| | South | 71 | 68 | 61 | 57 | 72 | 68 |
| | West | 65 | 62 | 55 | 52 | 66 | 62 |
| B - 33 storey | North | 63 | 60 | 51 | 48 | 63 | 60 |
| | East | 76 | 73 | 64 | 61 | 77 | 73 |
| | South | 79 | 76 | 67 | 64 | 80 | 76 |
| | West | 76 | 73 | 64 | 61 | 76 | 73 |
| B - 35 storey | North | 63 | 60 | 52 | 48 | 63 | 60 |
| | East | 77 | 74 | 65 | 62 | 77 | 74 |
| | South | 79 | 76 | 68 | 64 | 80 | 77 |
| | West | 77 | 74 | 65 | 62 | 77 | 74 |
| C - 6 storey | North | 73 | 70 | 64 | 60 | 74 | 71 |
| | East | 73 | 70 | 64 | 60 | 74 | 71 |
| | South | 73 | 70 | 64 | 60 | 74 | 71 |
| | West | 73 | 70 | 64 | 60 | 74 | 71 |
| C - 23 storey | North | 67 | 63 | 55 | 52 | 68 | 63 |
| | East | 67 | 64 | 57 | 53 | 68 | 65 |
| | South | 73 | 70 | 64 | 60 | 74 | 70 |
| | West | 72 | 69 | 62 | 59 | 73 | 69 |

Continued…

| Component | Façade [1] | Roadway Sound Levels [1] | | Railway Sound Levels [1] | | Combined Sound Levels [1] | |
|---|---|---|---|---|---|---|---|
| | | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) |
| C - 21 Storey | North | 66 | 61 | 54 | 51 | 66 | 62 |
| | East | 64 | 60 | 52 | 48 | 64 | 60 |
| | South | 71 | 68 | 62 | 58 | 72 | 69 |
| | West | 71 | 68 | 61 | 58 | 71 | 68 |
| D - 3 Storey | North | 64 | 60 | 55 | 51 | 64 | 61 |
| | East | 65 | 62 | 56 | 52 | 66 | 63 |
| | South | 66 | 63 | 57 | 54 | 67 | 64 |
| | West | 64 | 61 | 57 | 54 | 65 | 61 |
| D - 34 Storey | North | 63 | 59 | 50 | 46 | 63 | 59 |
| | East | 67 | 64 | 57 | 54 | 67 | 64 |
| | South | 69 | 65 | 59 | 56 | 69 | 66 |
| | West | 68 | 64 | 58 | 55 | 68 | 65 |
| D - 35 Storey | North | 63 | 59 | 50 | 47 | 63 | 59 |
| | East | 69 | 65 | 58 | 55 | 69 | 66 |
| | South | 70 | 67 | 60 | 56 | 70 | 67 |
| | West | 67 | 64 | 57 | 54 | 68 | 64 |
| E - 6 Storey | North | 62 | 59 | 53 | 50 | 62 | 59 |
| | East | 78 | 75 | 66 | 62 | 79 | 75 |
| | South | 81 | 78 | 68 | 65 | 81 | 78 |
| | West | 78 | 75 | 66 | 62 | 78 | 75 |
| E - 33 Storey | North | 72 | 69 | 61 | 58 | 73 | 70 |
| | East | 77 | 74 | 65 | 62 | 78 | 75 |
| | South | 80 | 77 | 68 | 65 | 81 | 78 |
| | West | 77 | 74 | 66 | 62 | 78 | 75 |
| E - 35 Storey | North | 62 | 58 | 53 | 50 | 62 | 59 |
| | East | 69 | 66 | 59 | 56 | 70 | 66 |
| | South | 74 | 71 | 64 | 60 | 75 | 72 |
| | West | 74 | 71 | 64 | 61 | 75 | 72 |
| E - 35 Storey | North | 61 | 58 | 53 | 49 | 62 | 58 |
| | East | 77 | 74 | 65 | 61 | 77 | 74 |
| | South | 80 | 77 | 68 | 64 | 80 | 77 |
| | West | 76 | 73 | 64 | 61 | 76 | 73 |
| E - 35 Storey | North | 59 | 55 | 52 | 49 | 60 | 56 |
| | East | 77 | 74 | 65 | 61 | 77 | 74 |
| | South | 80 | 77 | 68 | 64 | 80 | 77 |
| | West | 78 | 75 | 66 | 63 | 78 | 75 |

Continued…

| Component | Façade [1] | Roadway Sound Levels [1] | | Railway Sound Levels [1] | | Combined Sound Levels [1] | |
|---|---|---|---|---|---|---|---|
| | | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) | $L_{eq}$ Daytime (dBA) | $L_{eq}$ Night-time (dBA) |
| E – 35 Storey | North | 70 | 66 | 58 | 55 | 70 | 67 |
| | East | 77 | 74 | 66 | 62 | 78 | 75 |
| | South | 79 | 76 | 68 | 64 | 80 | 77 |
| | West | 76 | 73 | 65 | 61 | 77 | 73 |

**Notes:** [1] The sound levels presented are for the worst-case exposed façade, in which totals may not correspond to the same location.
[2] East and West façades are perpendicular to Kingston Road/Highway 401; North and South façades are parallel.

## 2.4 Outdoor Amenity Spaces

There are currently 24 common amenity areas proposed for the development, as shown in **Figure 4a**. Predicted overall sound levels (excluding whistle/horn noise) are provided in the following table, and are also shown in **Figure 4b**, including required mitigation measures.

**Table 8: Predicted Outdoor Living Area Sound Levels**

| Amenity Area | Unmitigated Sound Level (dBA) | Meets Guideline? | Guideline Limit [1] (dBA) | Noise Mitigation Measure [2] | Mitigated Sound Level (dBA) [3] |
|---|---|---|---|---|---|
| Ground Level - 1 | 82 | No | 60 | Localized + Edge of Amenity | **70** |
| Ground Level - 2 | 60 | Yes | 60 | None | 60 |
| Ground Level - 3 | 69 | No | 60 | Localized + Edge of Amenity | 61 |
| Ground Level - 4 | 81 | No | 60 | Localized + Edge of Amenity | **70** |
| A - 2nd Floor - 1 | 64 | No | 60 | Parapet + Localized | 60 |
| A - 2nd Floor - 2 | 53 | Yes | 60 | Parapet + Localized | 53 |
| A - 2nd Floor - 3 | 63 | No | 60 | Parapet + Localized | 60 |
| B - 7th Floor - 1 | 74 | No | 60 | Parapet + Localized | **61** |
| B - 7th Floor - 2 | 63 | No | 60 | Parapet + Localized | 60 |
| B - 7th Floor - 3 | 70 | No | 60 | Parapet + Localized | 59 |
| C - 7th Floor | 67 | No | 60 | Parapet + Localized | 58 |
| D - 2nd Floor | 60 | Yes | 60 | Parapet + Localized | 60 |
| D - 4th Floor - 1 | 65 | No | 60 | Parapet + Localized | 60 |
| D - 4th Floor - 2 | 67 | No | 60 | Parapet + Localized | 60 |
| E - 7th Floor - 1 | 72 | No | 60 | Parapet + Localized | **61** |
| E - 7th Floor - 2 | 69 | No | 60 | Parapet + Localized | 60 |
| E - 7th Floor - 3 | 71 | No | 60 | Parapet + Localized | **61** |

| Amenity Area | Unmitigated Sound Level (dBA) | Meets Guideline? | Guideline Limit [1] (dBA) | Noise Mitigation Measure [2] | Mitigated Sound Level (dBA) [3] |
|---|---|---|---|---|---|
| E - 7th Floor - 4 | 65 | No | 60 | Parapet + Localized | 60 |
| E - 7th Floor - 5 | 70 | No | 60 | Parapet + Localized | 60 |
| E - 7th Floor - 6 | 64 | No | 60 | Parapet + Localized | 58 |
| E - 7th Floor - 7 | 68 | No | 60 | Parapet + Localized | 59 |
| E - 7th Floor - 8 | 62 | No | 60 | Parapet + Localized | 60 |
| E - 7th Floor - 9 | 64 | No | 60 | Parapet + Localized | 60 |
| E - 7th Floor - 10 | 73 | No | 60 | Parapet + Localized | **62** |

Notes:
[1] Sound levels up to 60 dBA are allowed with the use of a Type A or Type B Warning Clause
[2] See Figure 5a-5c for barrier locations and specified heights
[3] Exceedance is 60 dBA has been noted and mitigation measures are to be investigated further as the design progresses.

Noise walls must be continuous with no gaps or cracks, and a must have a minimum surface density (mass per unit area) of 20 kg/m$^2$ (4 lbs per sq. ft.). A number of different products can be used which meet these specifications, including wood, metal, glass or plexiglass structures.

A Type B noise warning clause is required for all residential units. See **Appendix C**. Locations and mitigation measures for receptors with sound levels in excess of 60 dBA will be investigated further as the design progresses.

## 2.5 Façade Recommendations

### 2.5.1 Glazing Requirements

An assessment of indoor noise levels is required providing the façade sound levels due to road traffic exceed 65 dBA during the daytime or 60 dBA during the night-time periods. A detailed assessment of glazing requirements is required to ensure the indoor noise criteria listed in **Table 4** are met.

Indoor sound levels and required Sound Transmission Class (STC) ratings for façade components were estimated using the procedures outlined in the National Research Council Building Practice Note BPN-56. This document provides corrections to estimate the STC ratings required based on either roadway and railway noise levels. BPN-56 calculations are provided in **Appendix D.**

- Detailed floor plates were not provided at the time of this assessment. For the analysis, room dimensions for bedrooms and living/dining rooms have been assumed:
- Window wall construction with vision glazing and glass spandrel panel elements;
- For kitchen/dining/living rooms 70% of the exterior wall area is vision glass / patio doors;
- For bedrooms 50% of the exterior wall area is vision glass;
- Non-glazing portions of the wall have an assumed STC rating of 50;

- Living rooms were assumed to be 3 m x 6 m in size and typically have an intermediate level of acoustic absorption; and
- Bedrooms were assumed to be 3 m x 3 m in size typically have an intermediate level of acoustic absorption.

The following table provides the required STC ratings:

**Table 9: Facade Sound Transmission Class Requirements**

| Building | Facade | Minimum Required Sound Transmission Class Rating (STC) [1] | | |
|---|---|---|---|---|
| | | Non-Vision Glazing Veneer | Living/Dining Room Windows and Patio Doors | Bedroom Windows |
| A - 6 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | OBC |
| | South | 50 | OBC | OBC |
| | West | 50 | OBC | OBC |
| A1 - 17 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | OBC |
| | South | 50 | OBC | 30 |
| | West | 50 | OBC | OBC |
| A2 - 19 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | OBC |
| | South | 50 | OBC | 31 |
| | West | 50 | OBC | 30 |
| B - 6 storey | North | 50 | OBC | OBC |
| | East | 50 | 35 | 37 |
| | South | 50 | 40 | 43 |
| | West | 50 | 37 | 40 |
| B - 35 storey - 1 | North | 50 | OBC | OBC |
| | East | 50 | 32 | 34 |
| | South | 50 | 31 | 33 |
| | West | 50 | OBC | OBC |
| B - 33 storey | North | 50 | OBC | OBC |
| | East | 50 | 35 | 37 |
| | South | 50 | 38 | 41 |
| | West | 50 | 35 | 37 |

Continued…

| Building | Facade | Minimum Required Sound Transmission Class Rating (STC) [1] | | |
|---|---|---|---|---|
| | | Non-Vision Glazing Veneer | Living/Dining Room Windows and Patio Doors | Bedroom Windows |
| B - 35 storey - 2 | North | 50 | OBC | OBC |
| | East | 50 | 36 | 38 |
| | South | 50 | 38 | 41 |
| | West | 50 | 36 | 38 |
| C - 6 storey | North | 50 | 33 | 35 |
| | East | 50 | 33 | 35 |
| | South | 50 | 33 | 35 |
| | West | 50 | 33 | 35 |
| C - 23 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | OBC |
| | South | 50 | 33 | 35 |
| | West | 50 | 32 | 34 |
| C - 21 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | OBC |
| | South | 50 | 31 | 33 |
| | West | 50 | 31 | 33 |
| D - 3 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | OBC |
| | South | 50 | OBC | OBC |
| | West | 50 | OBC | OBC |
| D - 34 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | OBC |
| | South | 50 | OBC | 31 |
| | West | 50 | OBC | OBC |
| D - 35 storey | North | 50 | OBC | OBC |
| | East | 50 | OBC | 30 |
| | South | 50 | OBC | 31 |
| | West | 50 | OBC | OBC |
| E - 6 storey | North | 50 | OBC | OBC |
| | East | 50 | 37 | 40 |
| | South | 50 | 40 | 43 |
| | West | 50 | 37 | 40 |

| Building | Facade | Minimum Required Sound Transmission Class Rating (STC) [1] | | |
|---|---|---|---|---|
| | | Non-Vision Glazing Veneer | Living/Dining Room Windows and Patio Doors | Bedroom Windows |
| E - 33 storey | North | 50 | 32 | 34 |
| | East | 50 | 36 | 38 |
| | South | 50 | 39 | 42 |
| | West | 50 | 37 | 39 |
| E - 35 storey - 1 | North | 50 | OBC | OBC |
| | East | 50 | OBC | 31 |
| | South | 50 | 34 | 36 |
| | West | 50 | 34 | 36 |
| E - 35 storey - 2 | North | 50 | OBC | OBC |
| | East | 50 | 36 | 38 |
| | South | 50 | 39 | 42 |
| | West | 50 | 35 | 37 |
| E - 35 storey - 3 | North | 50 | OBC | OBC |
| | East | 50 | 36 | 38 |
| | South | 50 | 39 | 42 |
| | West | 50 | 37 | 40 |
| E - 35 storey - 4 | North | 50 | OBC | 31 |
| | East | 50 | 37 | 39 |
| | South | 50 | 38 | 41 |
| | West | 50 | 35 | 37 |
| **Notes:** [1] STC requirements for corner units with two exposed facades may be up to 3 points higher. Requirements should be confirmed by an acoustical consultant as the design progresses. | | | | |

With the inclusion of the above, indoor sound levels will meet the applicable limits.

### 2.5.2 Ventilation Requirements

Due to combined roadway and railway impacts exceeding 65 dBA during the daytime and 60 dBA during the night-time, forced air heating and a provision for air conditioning with a "**Type D"** warning clause are required for all residential units except the following:

- East facing façades in Tower A2;
- North facing façades in 33-storey tower of Building B;
- East facing façades in 34-storey tower of Building D;
- North facing façades of Building E podium.
- North facing façades in 35 storey towers 1, 2, and 3 of Building E.

### 2.5.3 Warning Clause Requirements

MECP Publication NPC-300 **Type D** noise warning clauses are required for all units except those listed above. A **Type C** warning clause is required for the units mentioned above. In addition, CN requires a warning clause for developments within 300 m of their rail lines. Given the mitigation requirements for the outdoor amenity spaces, a **Type B** warning clause is also required for all residential units.

Warning Clauses are summarized in **Appendix C.** Warning Clauses should be included in agreements registered on Title for the residential units and included in all agreements of purchase and sale or lease, and all rental agreements.

# 3.0 Stationary Source Noise Impacts

A review has been conducted for the potential impacts on the development from stationary commercial noise sources.

## 3.1 D-Series of Guidelines

The D-series of guidelines were developed by the MECP in 1995 to assess recommended separation distances and other control measures for land use planning proposals in an effort to prevent or minimize 'adverse effects' from the encroachment of incompatible land uses where a facility either exists or is proposed. D-series guidelines address sources including sewage treatment (Guideline D-2), gas and oil pipelines (Guideline D3), landfills (Guideline D-4), water services (Guideline D-5) and industries (Guideline D-6).

For this project, the applicable guideline is Guideline D-6 - *Compatibility between Industrial Facilities and Sensitive Land Uses*. The guideline specifically addresses issues of air quality, odour, dust, noise, and litter.

To minimize the potential to cause an adverse effect, areas of influence and recommended minimum setback distances are included within the guidelines. The areas of influence and recommended separation distances from the guidelines are provided in the table below.

**Table 10: Guideline D-6 - Potential Influence Areas and Recommended Minimum Setback Distances for Industrial Land Uses**

| Industry Classification | Area of Influence | Recommended Minimum Setback Distance |
|---|---|---|
| Class I – Light Industrial | 70 m | 20 m |
| Class II – Medium Industrial | 300 m | 70 m |
| Class III – Heavy Industrial | 1000 m | 300 m |

Industrial categorization criteria are supplied in Guideline D-6-2, and are shown in the following table:

**Table 11: Guideline D-6 - Industrial Categorization Criteria**

| Category | Outputs | Scale | Process | Operations / Intensity | Possible Examples |
|---|---|---|---|---|---|
| Class I Light Industry | • Noise: Sound not audible off-property<br>• Dust: Infrequent and not intense<br>• Odour: Infrequent and not intense<br>• Vibration: No ground-borne vibration on plant property | • No outside storage<br>• 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<br>• Low probability of fugitive emissions | • Daytime operations only<br>• Infrequent movement of products and/ or heavy trucks | • Electronics manufacturing and repair<br>• Furniture repair and refinishing<br>• Beverage bottling<br>• Auto parts supply<br>• Packaging and crafting services<br>• Distribution of dairy products<br>• Laundry and linen supply |
| Class II Medium Industry | • Noise: Sound occasionally heard off-property<br>• Dust: Frequent and occasionally intense<br>• Odour: Frequent and occasionally intense<br>• Vibration: Possible ground-borne vibration, but cannot be perceived off-property | • Outside storage permitted<br>• Medium level of production allowed | • Open process<br>• Periodic outputs of minor annoyance<br>• Low probability of fugitive emissions | • Shift operations permitted<br>• Frequent movements of products and/ or heavy trucks with the majority of movements during daytime hours | • Magazine printing<br>• Paint spray booths<br>• Metal command<br>• Electrical production<br>• Manufacturing of dairy products<br>• Dry cleaning services<br>• Feed packing plants |
| Class III Heavy Industry | • Noise: Sound frequently audible off property<br>• Dust: Persistent and/ or intense<br>• Odour: Persistent and/ or intense<br>• Vibration: Ground-borne vibration can frequently be perceived off-property | • Outside storage of raw and finished products<br>• Large production levels | • Open process<br>• Frequent outputs of major annoyances<br>• High probability of fugitive emissions | • Continuous movement of products and employees<br>• Daily shift operations permitted | • Paint and varnish manufacturing<br>• Organic chemical manufacturing<br>• Breweries<br>• Solvent recovery plants<br>• Soaps and detergent manufacturing<br>• Metal refining and manufacturing |

### 3.1.1 Requirements for Assessments

Guideline D-6 requires that studies be conducted to assess impacts where sensitive land uses are proposed within the potential area of influence of an industrial facility. This report is intended to fulfill this requirement.

The D-series guidelines reference previous versions of the air quality regulation (Regulation 346) and noise guidelines (Publications NPC-205 and LU-131). However, the



D-Series of guidelines are still in force, still represent current MECP policy and are specifically referenced in numerous other current MECP policies. In applying the D-series guidelines, the current policies, regulations, standards and guidelines have been used (e.g., Regulation 419, Publication NPC-300).

### 3.1.2 Requirements for Minimum Separation Distances

Guideline D-6 also *recommends* that no sensitive land use be placed within the Recommended Minimum Separation Distance. However, it should be noted that this is a recommendation only. Section 4.10 of the Guideline allows for development within the separation distance, in cases of redevelopment, infilling, and transitions to mixed use, provided that the appropriate studies are conducted and that the relevant air quality and noise guidelines are met.

### 3.1.3 Guideline D-6 Assessment

**Figure 6** shows the Guideline D-6 separation distances measured from the development property line.

There are no Class III Heavy Industries within 1 km of the development and there are no Class II Medium Industries within 300 m of the Development. There are no industrially zoned properties within 300 m of the Development.

As can bee seen in **Figure 6**, there are a number of light commercial land uses to the immediate north of the development of interest:

- CARSTAR Pickering (1167 Kingston Road); and
- Mr. Lube + Tires (1195 Kingston Road).

Mr. Lube + Tires is open from 8AM to 8PM and has not been assessed for night-time stationary noise impacts. CARSTAR Pickering is open between 8AM and 5PM and has not been assessed for evening or night-time stationary noise impacts. Stationary source modelling inputs and operating conditions are detailed in **Appendix E**.

The Pickering EMS HVAC units are expected to have insignificant impacts on the proposed development due to the presence of high ambient roadway sound levels generated by Kingston Road. Testing of sirens is considered an infrequent scenario and has not been assessed. Sirens associated with emergency calls are exempt under NPC-300 and the City of Pickering Noise By-Law 6834/08 (Schedule 3).

The remaining commercial properties are considered insignificant for stationary noise. Predicted ambient roadway background sound levels from Highway 401 are expected to be dominant for all west, east and south facing façades.

None of these are industrial land uses, and the requirements of Guideline D-6 do not technically apply. Under Guideline D-6, a detailed assessment of industrial noise impacts is not required. Nonetheless, a stationary noise impact assessment of the commercial operations has been conducted, as outlined below.

## 3.2 Stationary Noise Criteria

### 3.2.1 MECP NPC-300 Guidelines for Stationary Noise Sources

The applicable MECP noise guidelines for new sensitive land uses adjacent to existing industrial/ commercial uses are provided in MECP Publication NPC-300. NPC-300 revokes and replaces the previous noise assessment guideline, Publication LU-131 and Publication NPC-

205, which was previously used for assessing noise impacts as part of Certificates of Approval / Environmental Compliance Approvals granted by the MECP for industries.

The new guideline sets out noise limits for two main types of noise sources:

- Non-impulsive, “continuous” noise sources such as ventilation fans, mechanical equipment, and vehicles while moving within the property boundary of an industry. Continuous noise is measured using 1-hour average sound exposures ($L_{eq}$ (1-hr) values), in dBA; and
- Impulsive noise, which is a “banging” type noise characterized by rapid rise time and decay. Impulsive noise is measured using a logarithmic mean (average) level ($L_{LM}$) of the impulses in a one-hour period, in dBAI.

Furthermore, the guideline requires an assessment at, and provides separate guideline limits for:

- Outdoor points of reception (e.g., back yards, communal outdoor amenity areas); and
- Façade points of reception such as the plane of windows on the outdoor façade which connect onto noise sensitive spaces, such as living rooms, dens, eat-in kitchens, dining rooms and bedrooms.

The applicable noise limits at a point of reception are the higher of:

- The existing ambient sound level due to road traffic, or
- The exclusion limits set out in the guideline.

The following table sets out the exclusion limits from the guideline for continuous noise sources.

**Table 12: NPC-300 Exclusion Limits for Non-Impulsive Sounds (Leq (1-hr), dBA)**

| Receiver Category | Time Period | Class 1 Area Exclusionary Sound Level Limits ($L_{eq}$ (1-hr), (dBA) [1] |
|---|---|---|
| Outdoor | 0700-1900h | 50 |
| | 1900-2300h | 50 |
| | 2300-0700h | - |
| Plane of Window [2] | 0700-1900h | 50 |
| | 1900-2300h | 50 |
| | 2300-0700h | 45 |

**Notes:** [1] Tables values or minimum hourly $L_{eq}$ of background noise, whichever is higher.
[2] Applicable for “Noise Sensitive Spaces”, as defined in NPC-300.

**Table 13: NPC-300 Exclusion Limits for Impulsive Sounds (LLM dBAI)**

| Time of Day | No. of Impulses in a 1-hour Period | Class 1 Area | |
|---|---|---|---|
| | | Plane of Windows of Noise Sensitive Spaces | Outdoor Points of Reception |
| 7 am to 11 pm | 9 or more | 50 | 50 |
| | 7 to 8 | 55 | 55 |
| | 5 to 6 | 60 | 60 |
| | 4 | 65 | 65 |
| | 3 | 70 | 70 |
| | 2 | 75 | 75 |
| | 1 | 80 | 80 |
| 11 pm to 7 am | 9 or more | 45 | n/a |
| | 7 to 8 | 50 | n/a |
| | 5 to 6 | 55 | n/a |
| | 4 | 60 | n/a |
| | 3 | 65 | n/a |
| | 2 | 70 | n/a |
| | 1 | 75 | n/a |

**Notes:** N/A - Not Applicable. Outdoor points of reception are not considered to be noise sensitive during the overnight period.

### 3.2.2 Application of the NPC-300 Guidelines

The stationary noise guidelines apply only to residential land uses and to noise-sensitive commercial and institutional uses, as defined in NPC-300 (e.g., schools, daycares, hotels). For the Project, the stationary noise guidelines only apply to the residential portions of the development, including Residential Development Buildings A1-D, facades of individual residences.

All of the above have been considered as noise-sensitive points of reception in the analysis.

## 3.3 Site Visit and Noise Observations

SLR staff completed a site visit on August 1, 2023, to survey the surrounding area for potential stationary noise sources. An aerial review was also conducted of the development lands and surrounding area. No major industrial facilities were identified within 500m of the development.

During the site visit, the auto body shops north of Building D were identified as potential sources for “stationary” noise. Therefore, an assessment of surrounding stationary noise impacts was completed due to the proximity to the two commercial buildings.

There are no impulsive-type noise sources in the area. Impulsive noise has not been considered further.

### 3.3.1 Sources of Interest

Based on the information obtained during the site visit, the significant sources of noise in the area of the development have been identified. Noise emission rates for the equipment were determined based on information from SLR's in-house database. Modelled noise sources include:

- Impact Wrenches;
- Compressed Air;
- General Exhaust Fans; and
- Paint Booth Exhaust Fans.

**Figure 7** shows the location of all modelled sources. Noise emission data used in the assessment can be found in **Appendix E**. Noise emission levels were based on data for similar types and sizes of equipment from SLR's in-house emission level database.

All other stationary noise sources have been deemed insignificant within the 70m radius presented in **Figure 6**.

## 3.4 Ambient Roadway – Background Sound Level

During the site visit on August 1st, 2023, it was observed that the acoustic environment surrounding the Project site is dominated by the roadway noise from Kingston Road, and Highway 401. As NPC-300 allows for the higher of the existing ambient sound level or the exclusion limits, an assessment of roadway noise ambient levels was completed.

Road traffic data was obtained from the City of Pickering's open data website. 2019 average annual daily traffic (AADT) volumes were provided online. The percentage of vehicle splits were used from the ultimate data obtained from the Region of Durham, see Section 2.3.1 above. Excerpts of the traffic data and traffic volume calculations are provided in **Appendix B**. The road traffic data used in the modelling is summarized in **Table 14**.

**Table 14: Summary of Ambient Road Traffic Data Used**

| Roadway Link | Existing Traffic Volume (AADT) | Minimum Hourly Percentages [1] | | | Commercial Traffic Breakdown | | Vehicle Speed (km/h) |
|---|---|---|---|---|---|---|---|
| | | Daytime 7AM-7PM | Evening 7PM-11PM | Night 11PM-7AM | | | |
| Kingston Road | 30,405 | 3.5 | 2.5 | 0.2 | 2.4 | 5.6 | 60 |
| **Notes:** [1] Minimum percentages are from standard ITE distribution. | | | | | | | |

Existing road traffic was modelled using Cadna/A (a commercially available noise propagation modelling software). Line sources of sound were used, with sound emission rates calculated using the ORNAMENT algorithms, the road traffic noise model of the MECP. These predictions were validated and are equivalent to those made using the MECP ORNAMENT or STAMSON v5.04 road traffic noise models.

Resulting ambient (background) sound levels from the surrounding roadway are shown in **Table 15** as the applicable guideline limit. **Figure 8a** and **Figure 8b** provides the ambient roadway sound levels for the proposed development Building D only (most affected by the stationary noise sources).

## 3.5 Noise Modelling and Results

Worst-case scenario noise levels from the surrounding commercial/ industrial operations were modelled using Cadna/A, a computerized version of the internationally recognized ISO 9613-2 noise propagation algorithms. This is the preferred noise modelling methodology of the MECP. The ISO 9613 equations account for:

- Source to receiver geometry;
- Distance attenuation;
- Atmospheric absorption;
- Reflections off of the ground and ground absorption;
- Reflections off of vertical walls; and
- Screening effects of buildings, terrain, and purpose-built noise barriers (noise walls, berms, etc.).

The following additional parameters were used in the modelling, which are consistent with providing a conservative (worst-case assessment of noise levels):

- Temperature: 10°C;
- Relative Humidity: 70%;
- Ground Absorption G: 0 for paved areas, 1 for grassy areas;
- Reflection: An order of reflection of 1 was used (accounts for noise reflecting from walls); and
- Wall absorption coefficients: Set to 0.20 (20% of energy is absorbed, 80% reflected).

Predicted daytime and night-time façade sound levels are shown in **Figure 9a** and **Figure 9b** for the proposed development. Overall predicted sound levels from surrounding commercial properties are provided in the following table. The applicable Class 1 guideline limit is the greater of the ambient (background) sound levels or the exclusionary limits.

**Table 15: Overall Commercial Sound Levels - Normal Operations, Non-Impulsive Noise**

| Building | Component | Maximum Predicted Sound Levels [1] | | Applicable Class 1 Guideline Limit | | Meets Guideline? |
|---|---|---|---|---|---|---|
| | | Day | Evening | Day | Evening | |
| Building – Podium | North | 54 | 53 | 58 | 56 | Yes |
| | East | 43 | 36 | 51 | 50 | Yes |
| | South | 27 | 20 | 50 | 50 | Yes |
| | West | 30 | 28 | 52 | 51 | Yes |
| Building D – 34 Storey | North | 54 | 52 | 58 | 57 | Yes |
| | East | 49 | 43 | 54 | 52 | Yes |
| | South | 31 | 25 | 50 | 50 | Yes |
| | West | 34 | 33 | 55 | 53 | Yes |
| Continued… | | | | | | |

| Building | Component | Maximum Predicted Sound Levels [1] | | Applicable Class 1 Guideline Limit | | Meets Guideline? |
|---|---|---|---|---|---|---|
| | | Day | Evening | Day | Evening | |
| Building D – 35 Storey | North | 52 | 49 | 57 | 56 | Yes |
| | East | 41 | 36 | 52 | 51 | Yes |
| | South | 28 | 26 | 50 | 50 | Yes |
| | West | 51 | 48 | 56 | 54 | Yes |
| **Notes:** [1] The sound levels presented are for the worst-case exposed façade. Sound levels are $L_{eq}$ (1-hr) values, in dBA. | | | | | | |

Façade sounds levels due to surrounding stationary noise sources are predicted to meet the applicable NPC-300 guideline limits at all façades. Therefore, additional noise mitigation measures are not required.

### 3.6 Warning Clause Requirements

A '**Type E"** noise warning clause is recommended. See **Appendix C** for warning clause details.

# PART 2: IMPACTS OF THE DEVELOPMENT ON THE SURROUNDING AREA

## 4.0 Impacts on Surrounding Properties

In terms of the noise environment of the area, it is expected that the project will have a negligible effect on the neighbouring properties.

The traffic related to the proposed development will be small relative to the existing traffic volumes within the area and is not of concern with respect to noise impact.

Other possible development noise sources with potentially adverse impacts on the surrounding neighbourhood are the mechanical roof-top equipment (chillers, make up air units and generator). This equipment is required to meet MECP Publication NPC-300 requirements at the worst-case off-site noise sensitive receptors. Given the requirement for the systems to meet the applicable noise guideline at closer on-site receptors, off-site impacts are not anticipated.

Regardless, potential impacts should be assessed as part of the final building design. The criteria can be met at all surrounding and on-site receptors by the appropriate selection of mechanical equipment, by locating equipment with sufficient setback from noise sensitive locations, and by incorporating control measures (e.g., silencers, barriers) into the design.

It is recommended the mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment.

# PART 3: IMPACTS OF THE DEVELOPMENT ON ITSELF

## 5.0 Noise Impacts from the Development Mechanical Systems on Itself

The building mechanical systems (e.g., cooling systems, emergency generator, parking garage vents) have not been designed in detail at this stage. Although no adverse impacts are expected, such equipment has the potential to result in noise impacts on the noise sensitive spaces within the development.

Therefore, the potential impacts should be assessed as part of the final building design. The criteria is expected to be met at all on-site receptors with the appropriate selection of mechanical equipment, by locating equipment to minimize noise impacts within the development.

It is recommended that the mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment.

## 6.0 Conclusions and Recommendations

The potential for noise impacts on and from the proposed development have been assessed. Impacts of the environment on the development, the development on the surrounding area and the development on itself have been considered. Based on the results of our studies, the following conclusions have been reached:

### 6.1 Transportation Noise

An assessment of transportation noise impacts from surrounding roadways and the CN/Metrolinx railway line has been completed. Based on the assessment:

- Window upgrades are required, as outlined in **Section 2.4.1**
- Forced air heating and a provision for central air-conditioning is required for some units, as outlined in **Section 2.4.2.**
- Mandatory air conditioning is required for all units except those listed in **Section 2.4.3.**
- **Type B, Type C** and **Type D** noise warning clauses are required, as well as a warning clause for CN/Metrolinx activity. Warning clauses are summarized in **Appendix C**.
- Preliminary noise mitigation measures are outlined in Section 2.4 and detailed in **Figures 5a-5c** Multiple barriers are required along with localized screens to reduce sound levels to 60 dBA. Any locations in excess of 60 dBA, further investigation will be required as the building design progresses.

### 6.2 Stationary Noise

An assessment of stationary noise has been completed, as outlined in Section 3. No additional mitigation is required to address surrounding stationary noise impacts.

## 6.3 Overall Assessment

- Impacts of the environment on the proposed development can be adequately controlled through the feasible mitigation measures, façade designs, warning clauses, and further refinement of outdoor living areas detailed in **Part 1** of this report.
- Impacts of the proposed development on the surrounding area are anticipated to be negligible and can be adequately controlled by following the design guidance outlined in **Part 2** of this report**.**
- Impacts of the proposed development on itself are anticipated to be negligible and can be adequately controlled by following the design guidance outlined in **Part 3** of this report**.**
- As the mechanical systems for the proposed development have not been designed at the time of this assessment, the acoustical requirements above should be confirmed by an Acoustical Consultant as part of the final building design.

# 7.0 References

Canadian National Railways (CN), 2008, *Principal Main Line Requirements*

International Organization for Standardization, *ISO 9613-2: Acoustics – Attenuation of Sound During Propagation Outdoors Part 2: General Method of Calculation, Geneva, Switzerland, 1996.*

National Research Council, (NRC, 1985). *Building Practice Note: Controlling Sound Transmission into Buildings, ISSN 0701-5216*

Ontario Ministry of the Environment, Conservation and Parks (MECP, 1989). *Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)*

Ontario Ministry of the Environment, Conservation and Parks (MECP, 1996). *STAMSON v5.03: Road, Rail and Rapid Transit Noise Prediction Model*

Ontario Ministry of the Environment, Conservation & Parks (MECP, 1995), Guideline D-6: *Compatibility Between Industrial Facilities and Sensitive Land Uses*

Ontario Ministry of the Environment, Conservation and Parks (MECP, 2013), *Publication NPC-300: Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning*

Railway Association of Canada/ Federation of Canadian Municipalities (RAC/ FCM), 2013, *Guidelines for New Development in Proximity to Railway Operations*

# 8.0 Closure

Should you have questions on the above report, please contact the undersigned.

Regards,

**SLR Consulting (Canada) Ltd.**


**Jason Dorssers, B.Eng., EIT**
Acoustics Consultant

**Aaron Haniff, P.Eng.**
Principal, Acoustics Engineer

# Figures

## 1101, 1105, 1163 Kingston Road

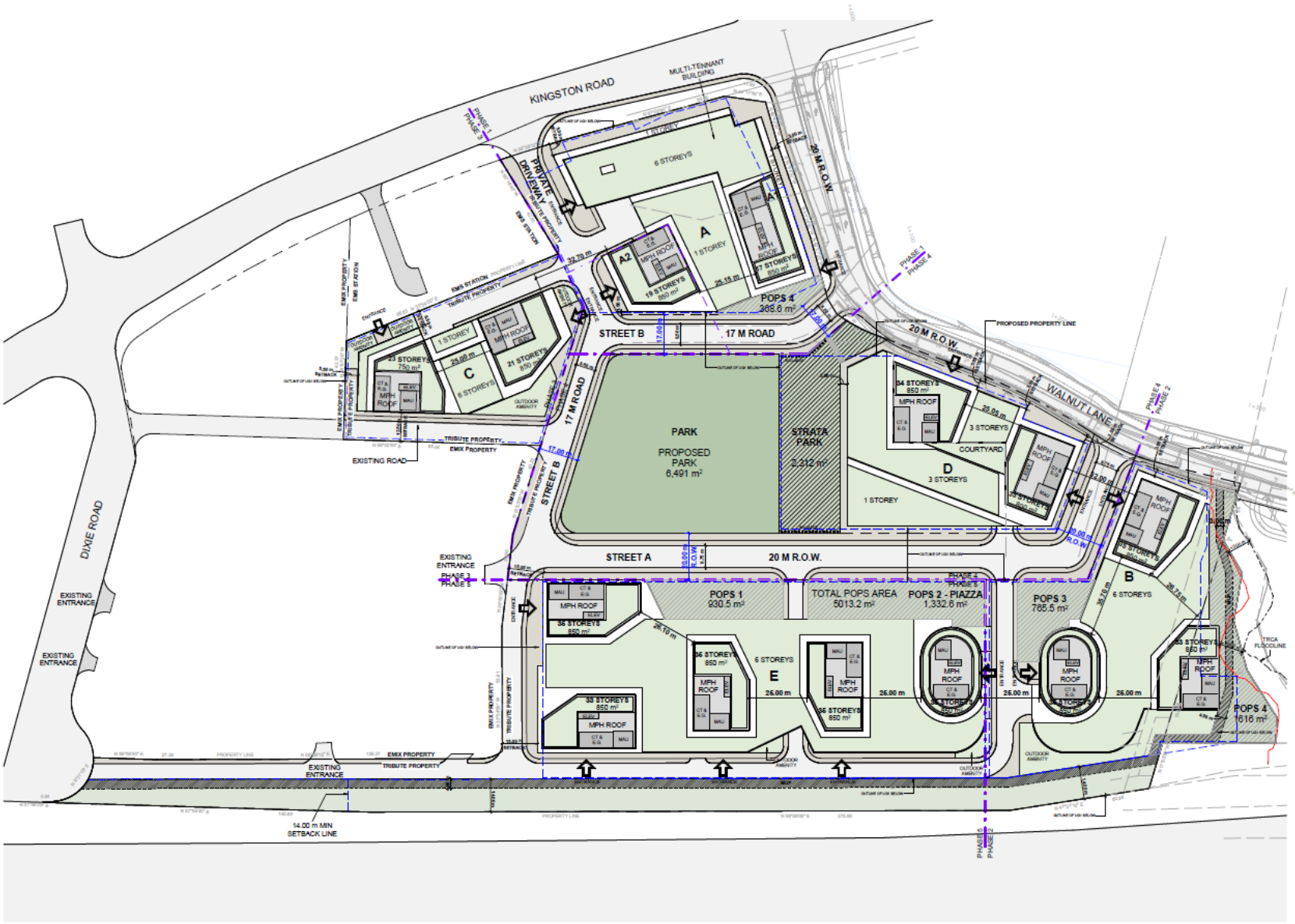
Environmental Noise Assessment Pickering, ON

**Tribute (Brookdale) Limited**

SLR Project No.: 241.013026.00001

December 19, 2024


| | | | | |
|---|---|---|---|---|
| **TRIBUTE (BROOKDALE) LIMITED** | True North | Scale: 1: 9,000 | METRES | SLR |
| 1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON | | Date: Dec. 2024 Rev A | Figure No. 1 | |
| CONTEXT PLAN | | Project No. 241.013026.00001 | | |




| | | | | |
|---|---|---|---|---|
| **TRIBUTE (BROOKDALE) LIMITED** | True North | Scale: n/a | METRES | SLR |
| 1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON | | Date: Dec. 2024 Rev 4.0 | Figure No. **2** | |
| EXCERPTS FROM SITE PLAN | | Project No. 241.013026.00001 | | |


**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

PREDICTED FAÇADE SOUND LEVELS – DAYTIME – ROAD + RAIL

True North

Scale: 1: 2,000 METRES

Date: Dec. 2024 Rev 4.0

Project No. 241.013026.00001

Figure No. **3a**

SLR


**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

PREDICTED FAÇADE SOUND LEVELS – NIGHT-TIME – ROAD + RAIL

| | | | |
|---|---|---|---|
| True North | Scale: 1: 2,000 | | METRES |
| | Date: Dec. 2024 | Rev 4.0 | Figure No. **3b** |
| | Project No. 241.013026.00001 | | |

SLR


**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

PREDICTED OUTDOOR AMENITY AREA SOUND LEVELS – DAYTIME – ROAD + RAIL UNMITIGATED

True North

Scale: 1: 2,000 METRES

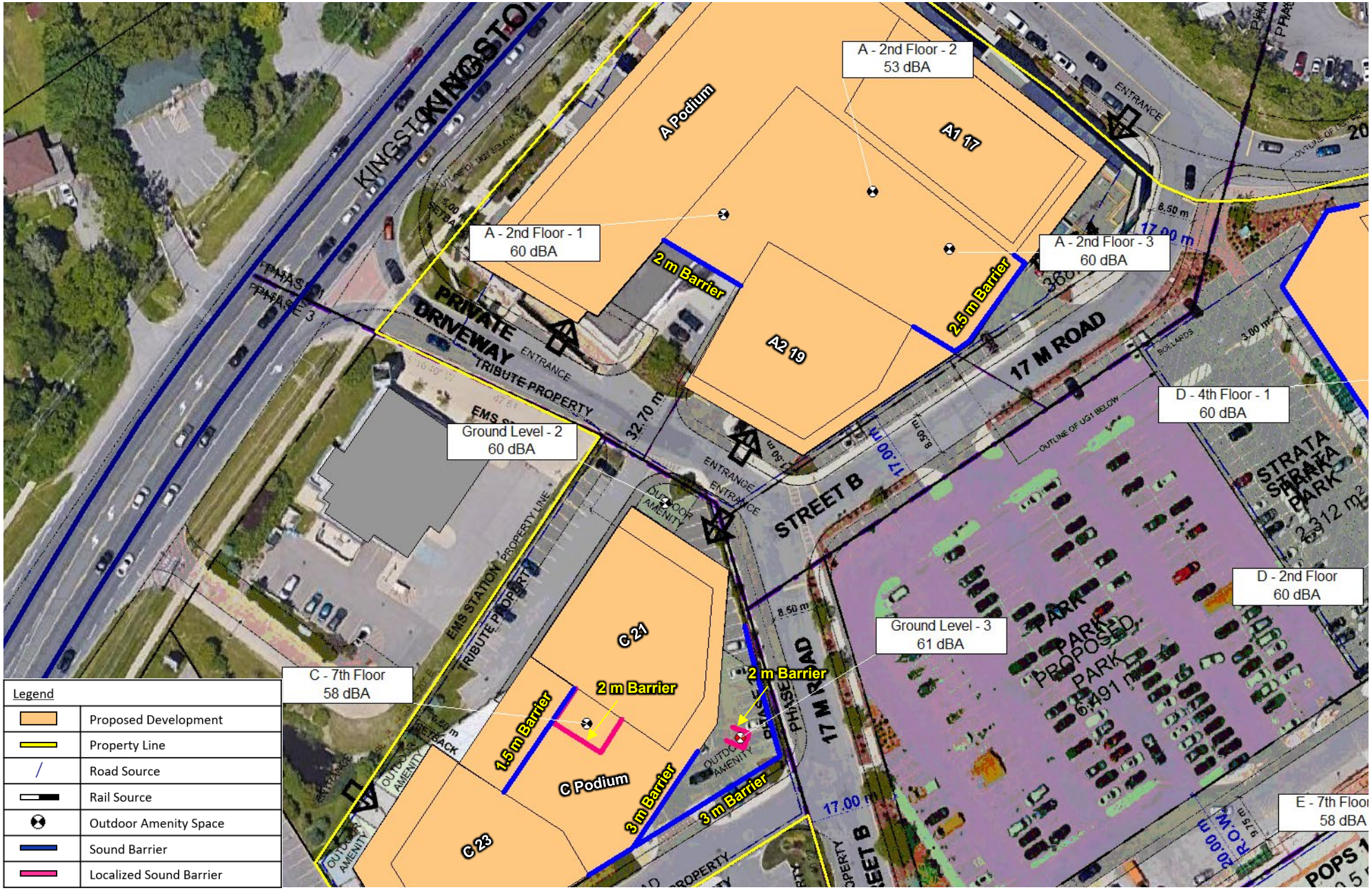
Date: Dec. 2024 Rev 4.0

Project No. 241.013026.00001

Figure No. **4a**

SLR


A - 2nd Floor - 2
53 dBA
A - 2nd Floor - 1
60 dBA
A - 2nd Floor - 3
60 dBA
B - 7th Floor - 3
59 dBA
D - 4th Floor - 1
60 dBA
D - 4th Floor - 2
60 dBA
B - 7th Floor - 2
60 dBA
Ground Level - 2
60 dBA
D - 2nd Floor
60 dBA
Ground Level - 3
61 dBA
B - 7th Floor - 1
61 dBA
C - 7th Floor
58 dBA
E - 7th Floor - 9
60 dBA
E - 7th Floor - 8
60 dBA
Ground Level - 1
70 dBA
E - 7th Floor - 6
58 dBA
E - 7th Floor - 4
60 dBA
E - 7th Floor - 7
59 dBA
E - 7th Floor - 10
62 dBA
E - 7th Floor - 2
60 dBA
Ground Level - 4
70 dBA
E - 7th Floor - 5
60 dBA
E - 7th Floor - 1
61 dBA
E - 7th Floor - 3
60 dBA
WALNUT LANE
KINGSTON ROAD
17 M ROAD
STREET B
20 M R.O.W.




**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

SOUND BARRIER DETAIL - BUILDING A AND C

True North

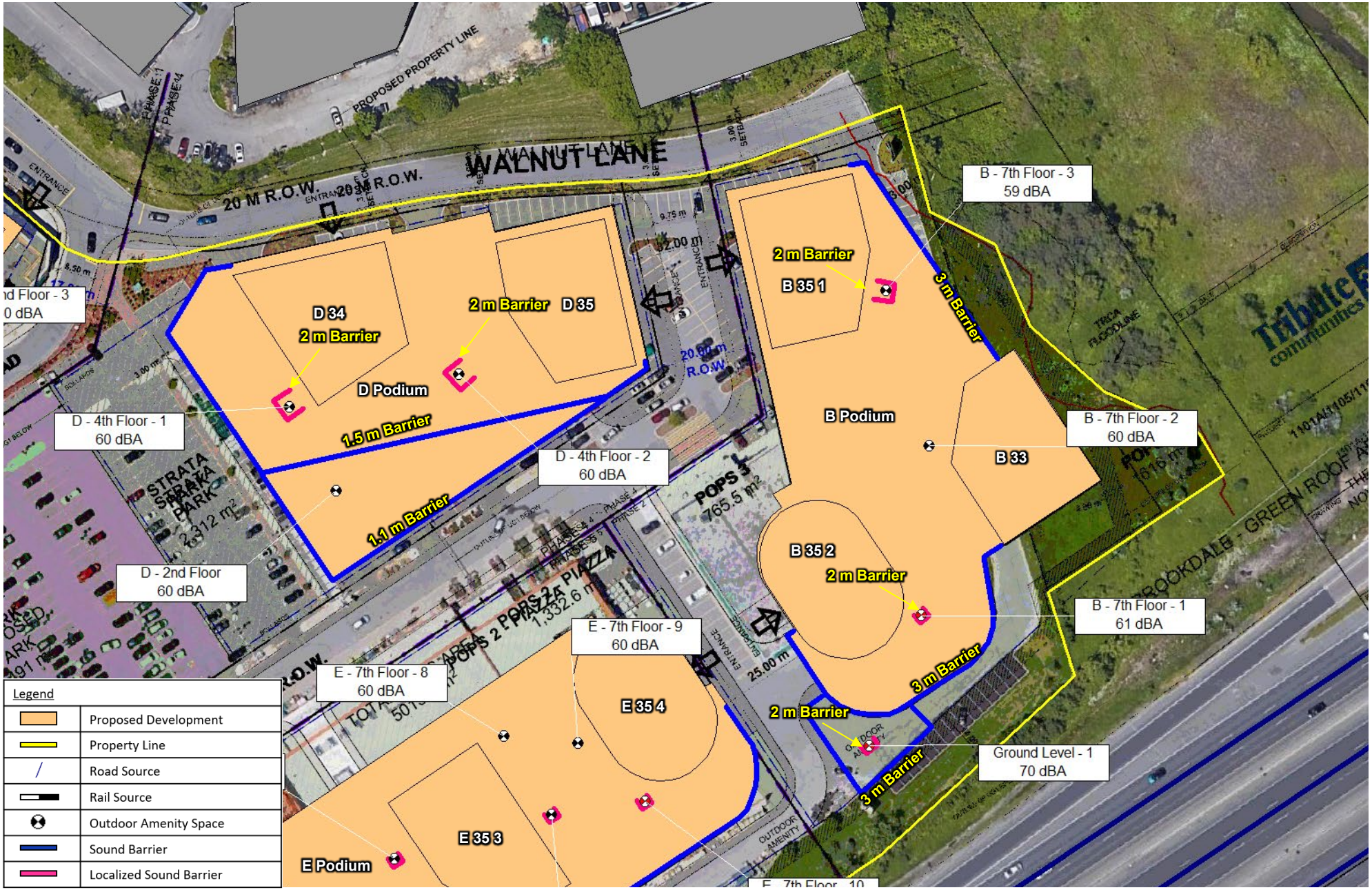
Scale: 1: 1,000 METRES

Date: Dec. 2024 Rev 4.0

Project No. 241.013026.00001

Figure No. **5a**

SLR




**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

SOUND BARRIER DETAIL - BUILDING B AND D

True North

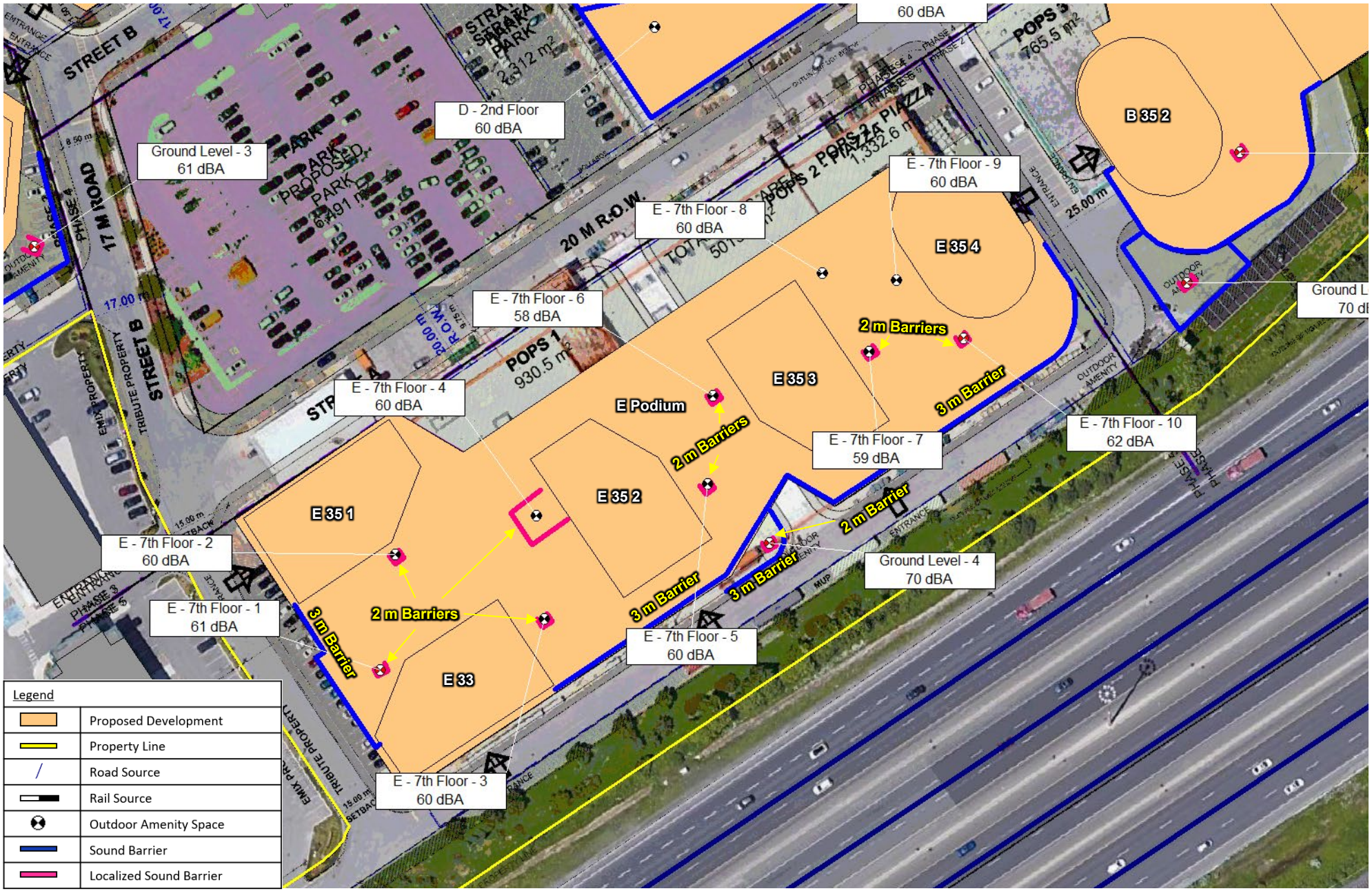
Scale: 1: 1,200 METRES

Date: Dec. 2024 Rev 4.0

Project No. 241.013026.00001

Figure No. **5b**

SLR




**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

SOUND BARRIER DETAIL - BUILDING E

True North

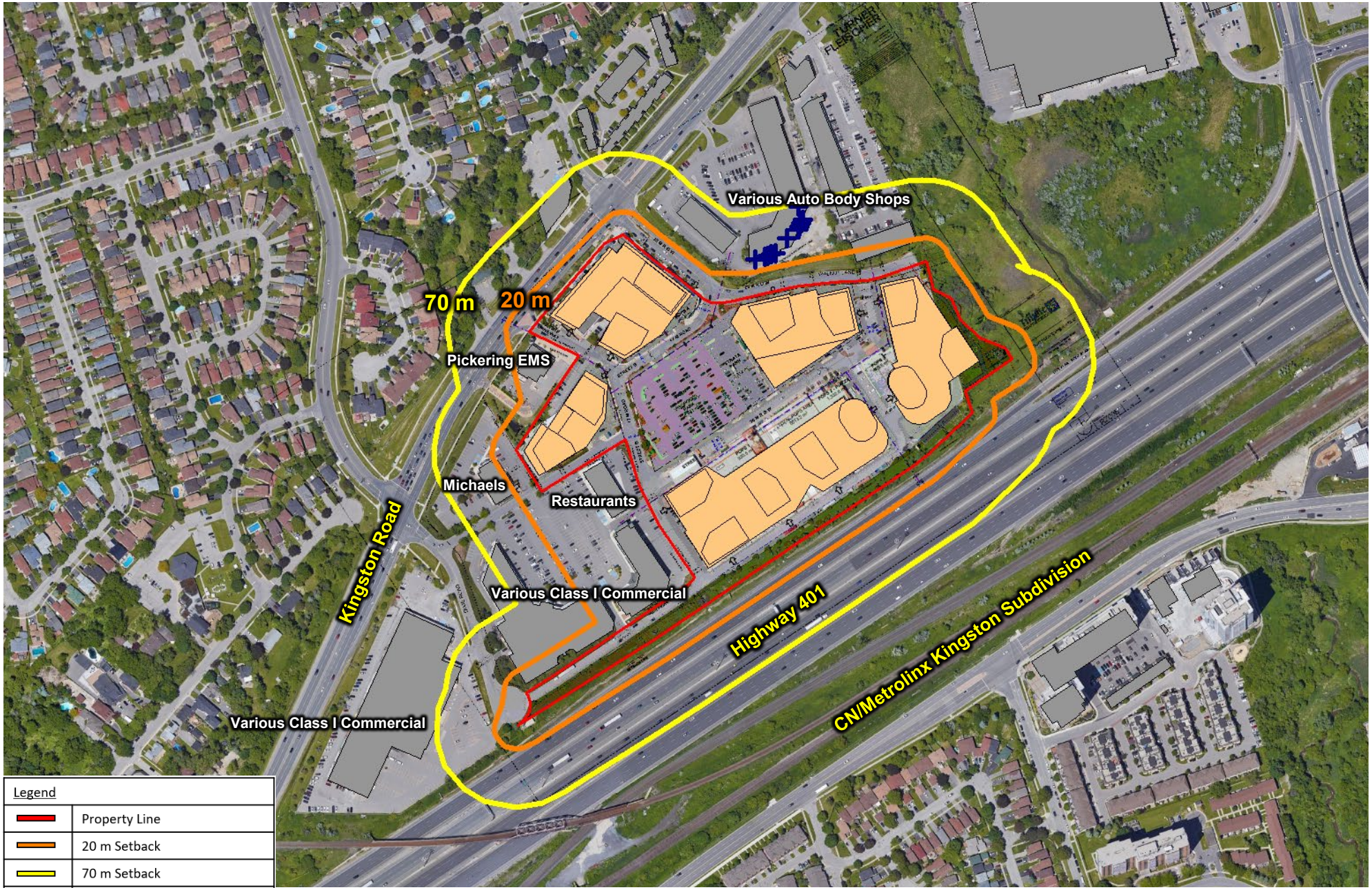
Scale: 1: 1,200 METRES

Date: Dec. 2024 Rev 4.0

Project No. 241.013026.00001

Figure No. **5c**

SLR



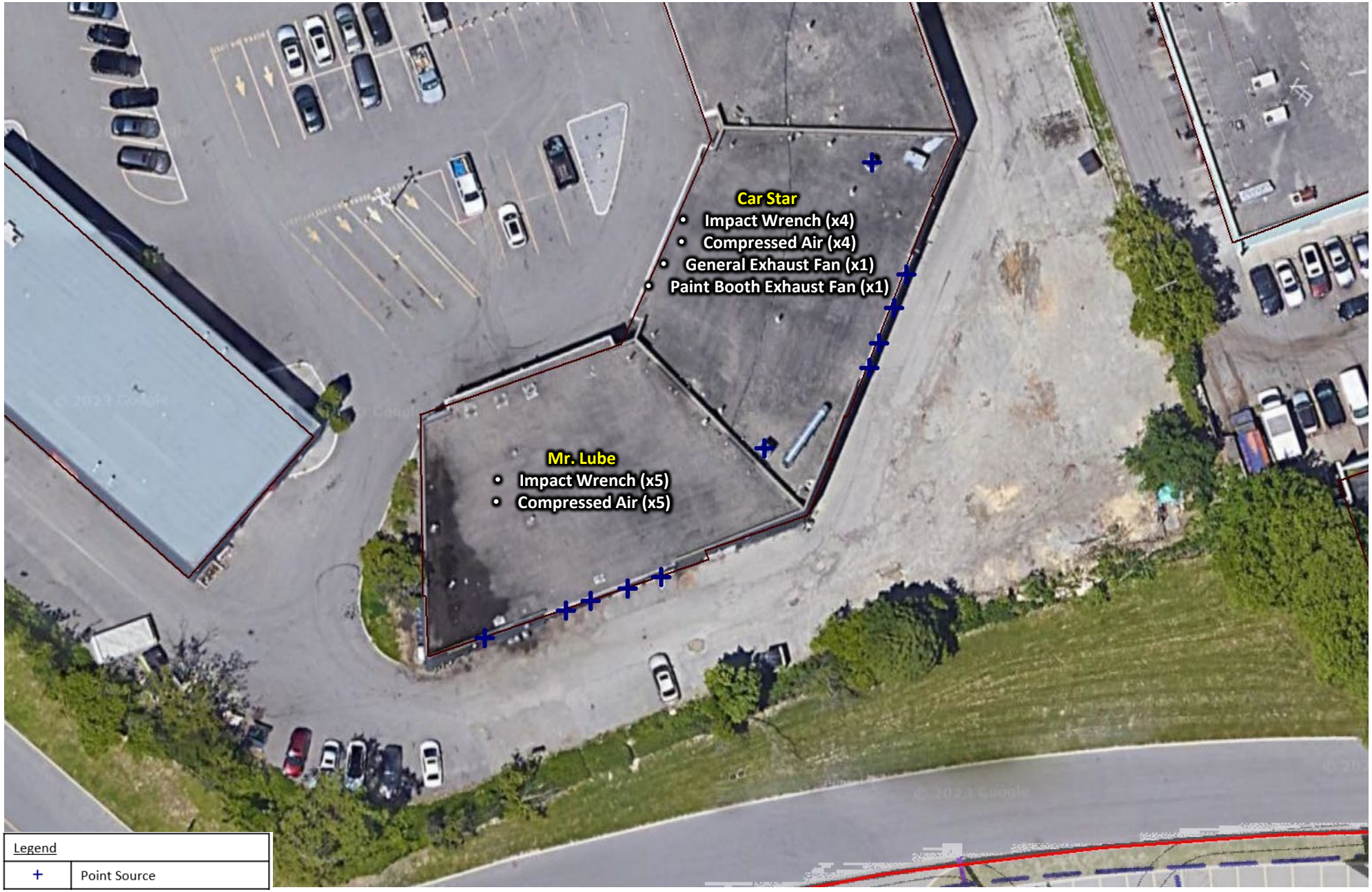

**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

MECP GUIDELINE D-6 SEPARATION DISTANCES FROM DEVELOPMENT – TO 70 M

| | | | |
|---|---|---|---|
| True North | Scale: 1: 4,500 | | METRES |
| | Date: Dec. 2024 | Rev 4.0 | Figure No. 6 |
| | Project No. 241.013026.00001 | | |

SLR



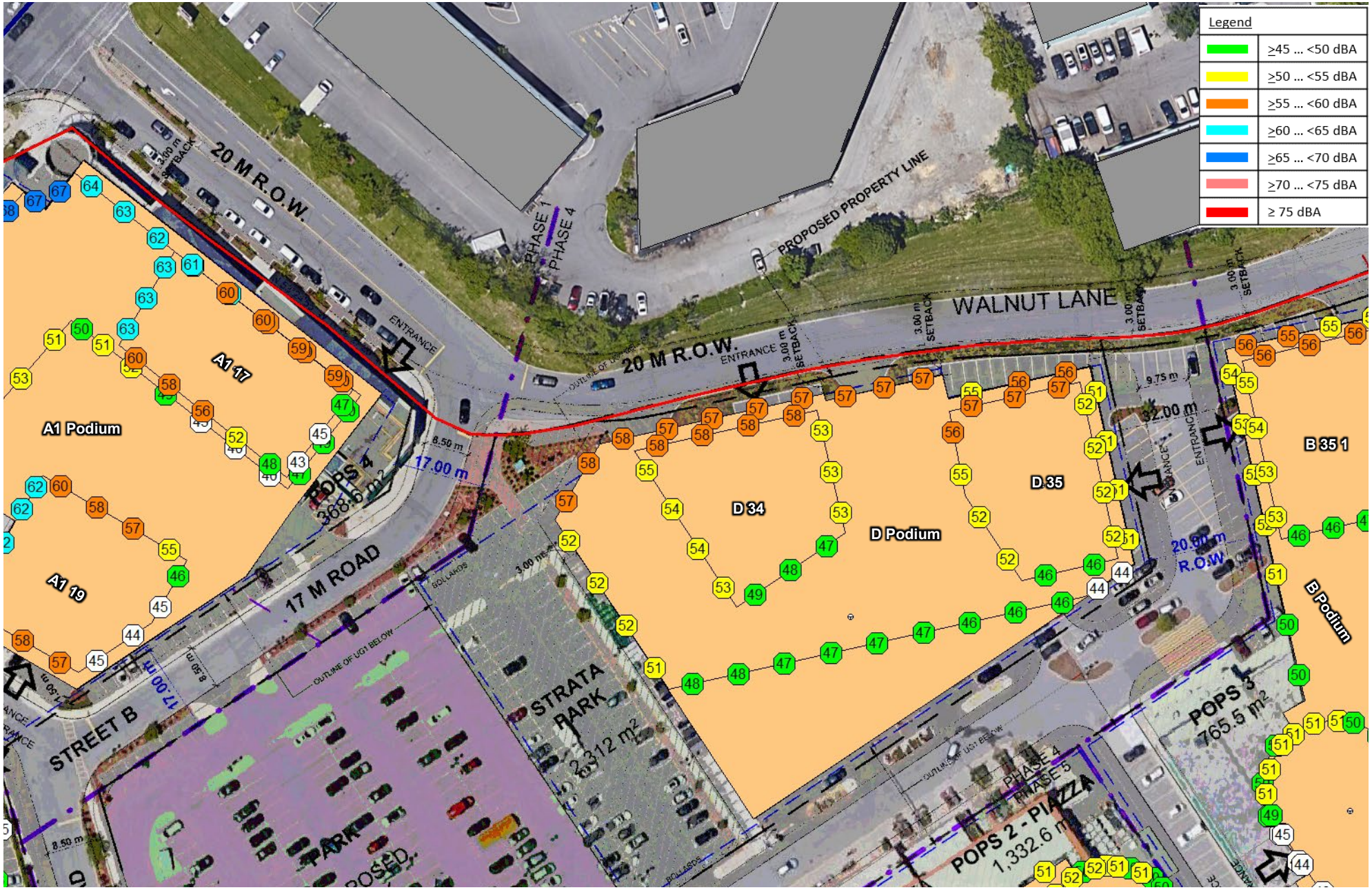

**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON

MODELLED NOISE SOURCE LOCATIONS

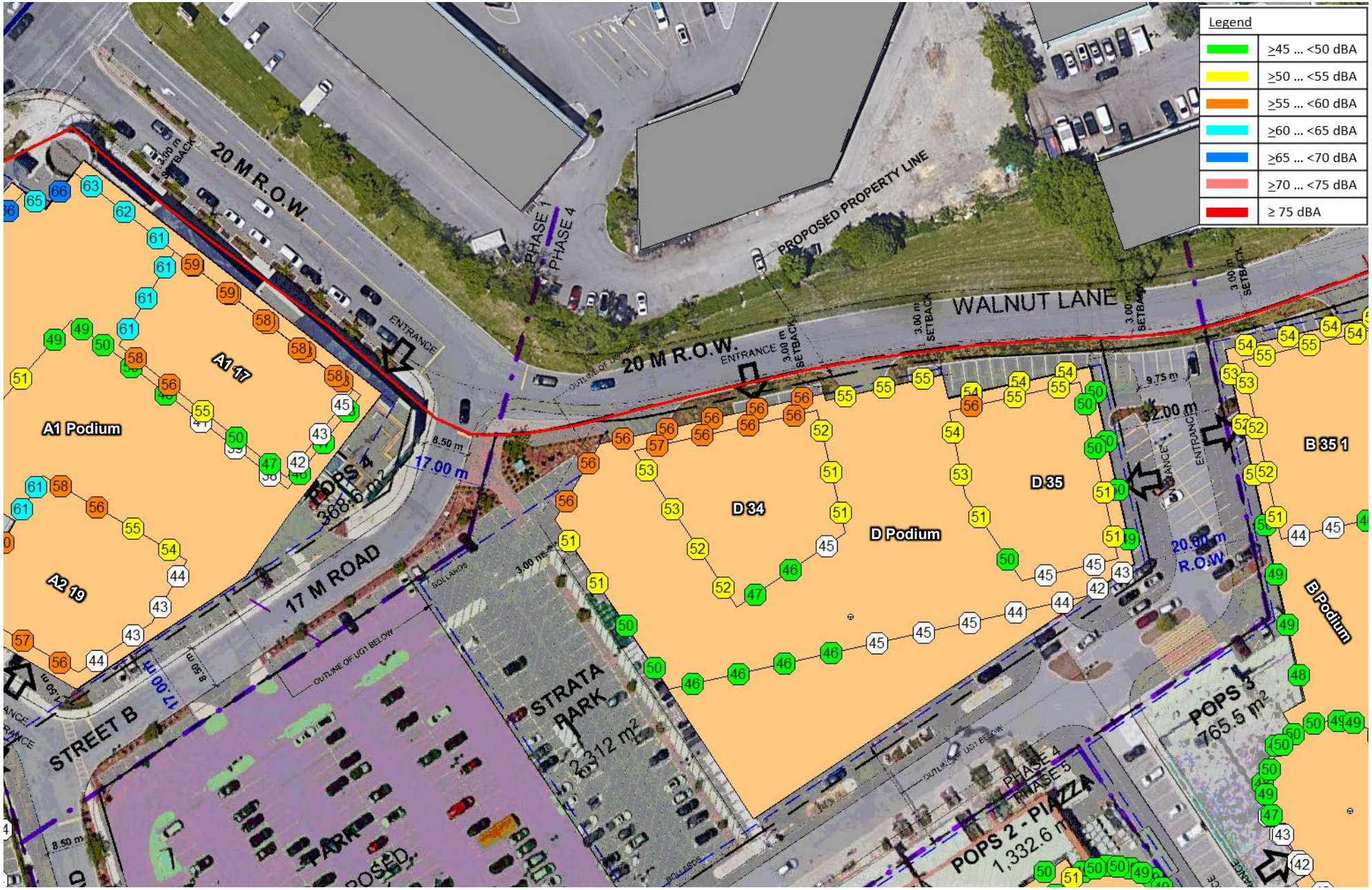
| | | | |
|---|---|---|---|
| True North | Scale: 1: 500 | | METRES |
| | Date: Dec. 2024 | Rev 4.0 | Figure No. 7 |
| | Project No. 241.013026.00001 | | |

SLR



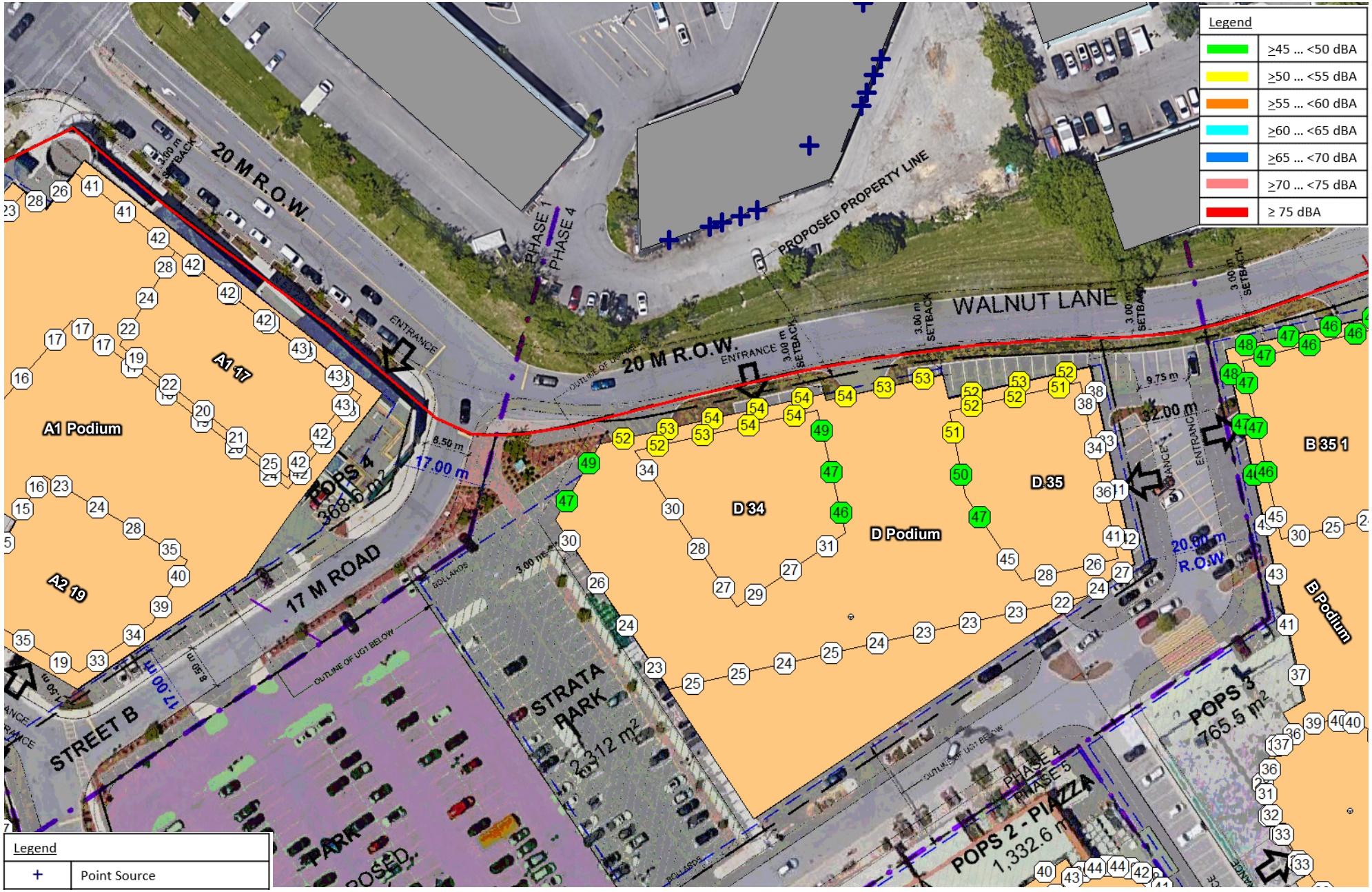

| | | | |
|---|---|---|---|
| **TRIBUTE (BROOKDALE) LIMITED** | True North | Scale: 1: 1,000 | METRES |
| 1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON | | Date: Dec. 2024 Rev 4.0 | Figure No. **8a** |
| PREDICTED FAÇADE SOUND LEVELS – AMBIENT BACKGROUND - DAYTIME | | Project No. 241.013026.00001 | |

SLR



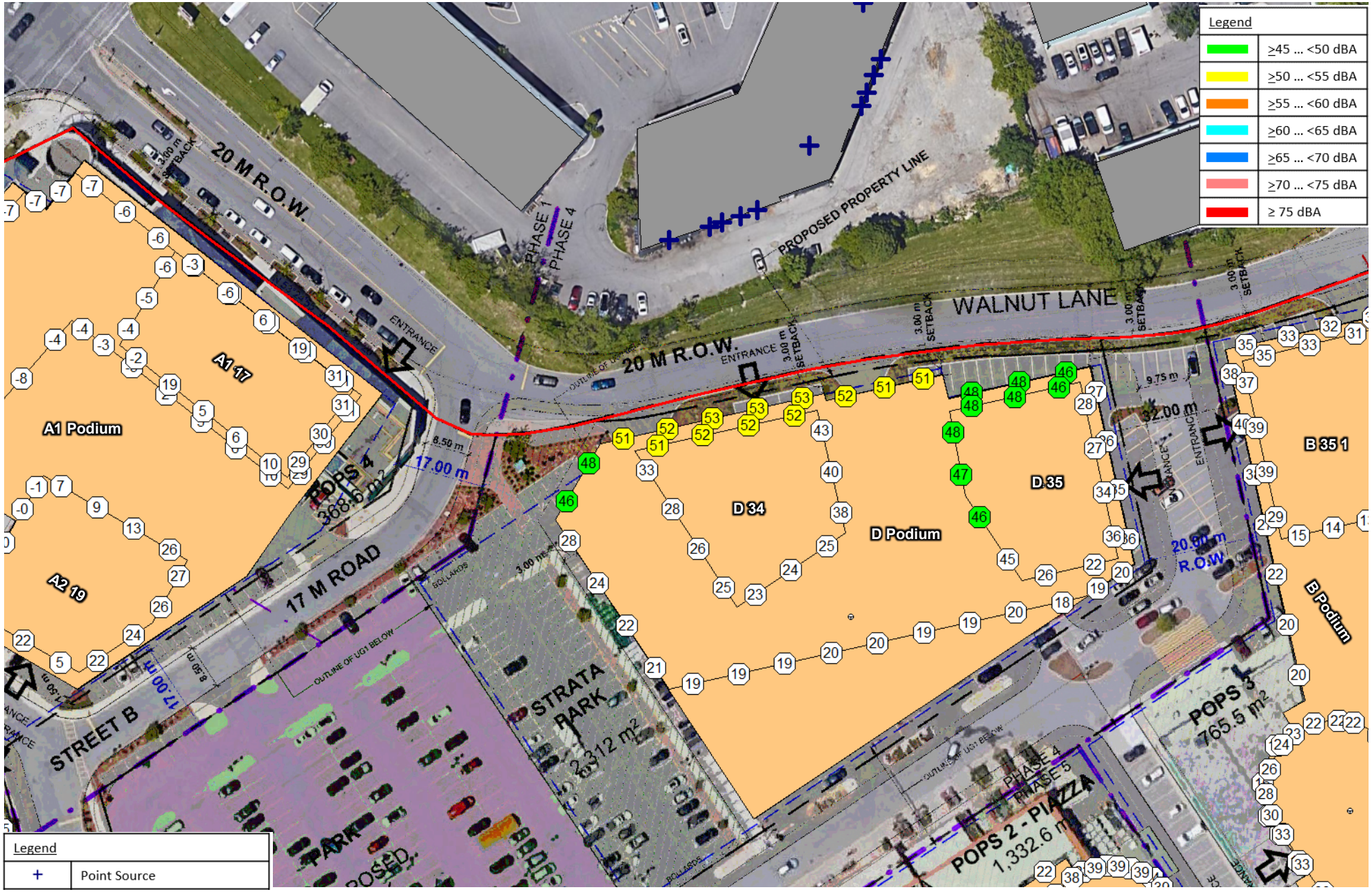

| | | | |
|---|---|---|---|
| **TRIBUTE (BROOKDALE) LIMITED** | True North | Scale: 1: 1,000 | METRES |
| 1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON | | Date: Dec. 2024 Rev 4.0 | Figure No. **8b** |
| PREDICTED FAÇADE SOUND LEVELS - AMBIENT BACKGROUND - EVENING | | Project No. 241.013026.00001 | |

SLR




| | | | |
|---|---|---|---|
| **TRIBUTE (BROOKDALE) LIMITED** | True North | Scale: 1: 1,000 | METRES |
| 1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON | | Date: Dec. 2024 Rev 4.0 | Figure No. **9a** |
| PREDICTED FAÇADE SOUND LEVELS – CONTINUOUS STATIONARY - DAYTIME | | Project No. 241.013026.00001 | |

SLR




| | | | |
|---|---|---|---|
| **TRIBUTE (BROOKDALE) LIMITED** | True North | Scale: 1: 1,000 | METRES |
| 1101, 1105, 1163 KINGSTON ROAD, PICKERING, ON | | Date: Dec. 2024 Rev 4.0 | Figure No. **9b** |
| PREDICTED FAÇADE SOUND LEVELS – CONTINUOUS STATIONARY - EVENING | | Project No. 241.013026.00001 | |

SLR

# Appendix A Development Drawings

## 1101, 1105, 1163 Kingston Road

Environmental Noise Assessment Pickering, ON

**Tribute (Brookdale) Limited**

SLR Project No.: 241.013026.00001

December 19, 2024

## STATISTICS

| | M² | FT² |
|---|---|---|
| TOTAL COMMERCIAL | 6,585 | 70,877 |
| TOTAL RESIDENTIAL | 331,918 | 3,572,767 |
| NET AVERAGE APARTMENT UNIT SIZE | 59 | 635 |
| TOTAL RESIDENTIAL UNIT# | 5,296 | |

| | |
|---|---|
| PHASE 1 | 11,321 |
| PHASE 2 | 12,373 |
| PHASE 3 | 5,968 |
| PHASE 4 | 23,139 |
| PHASE 5 | 24,675 |
| GROSS SITE AREA | 77,476 |

| | |
|---|---|
| STREET A R.O.W. DEDUCTION* | 5,861 |
| | |
| 5% PARKLAND DEDUCTION** | 3,581 |
| | |
| **NET SITE AREA** | **68,034** |

*STREET B 17M R.O.W. NOT DEDUCTED (AREA=3341 M²)

*WALNUT LANE ROAD WIDENING NOT DEDUCTED (AREA=437.5M²)

**5% OF GROSS SITE AREA EXCLUDING STREET A R.O.W.

| | M² | FT² |
|---|---|---|
| TOTAL NFA | 338,503 | 3,643,645 |
| FSI (ON NET SITE AREA) | 4.98 | |

| | |
|---|---|
| **GROSS SITE AREA EXCLUDING STREET A R.O.W.** | **71,615** |
| | |
| POPS | 5,013 |
| STRATA PARK | 2,312 |
| PARK | 6,491 |
| | |
| TOTAL (POPS AND PARK) | 13,816 |

| | |
|---|---|
| 7.0% | OF GROSS SITE AREA EXCLUDING STREET A R.O.W. |
| 3.2% | OF GROSS SITE AREA EXCLUDING STREET A R.O.W. |
| 9.1% | OF GROSS SITE AREA EXCLUDING STREET A R.O.W. |
| 19.3% | OF GROSS SITE AREA EXCLUDING STREET A R.O.W. |

**NFA CALCULATION**

| | DESCRIPTION | | COMMERCIAL | | RESIDENTIAL APARTMENT TOTAL NFA | | SALEABLE | | | TOTAL NFA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PORTION | FLOORS | M² | FT² | M² | FT² | M² | FT² | UNIT# | M² | FT² |
| BUILDING 'A' | F1~F6 | 7 | 4,771 | 51,351 | 17,572 | 189,149 | 16,455 | 177,122 | 279 | 22,343 | 240,500 |
| | TOWER (F7~F19) | 13 | | | 18,165 | 195,524 | 17,952 | 193,233 | 304 | 18,165 | 195,524 |
| BUILDING 'B' | F1~F6 | 7 | | | 18,588 | 200,080 | 14,832 | 159,652 | 251 | 18,588 | 200,080 |
| | TOWER (F7~F35) | 29 | | | 62,332 | 670,942 | 61,339 | 660,254 | 1,040 | 62,332 | 670,942 |
| BUILDING 'C' | F1~F6 | 7 | | | 14,584 | 156,980 | 13,278 | 142,923 | 225 | 14,584 | 156,980 |
| | TOWER (F7~F23) | 17 | | | 22,729 | 244,655 | 21,988 | 236,679 | 373 | 22,729 | 244,655 |
| BUILDING 'D' | F1~F3 | 3 | 1,249 | 13,449 | 9,135 | 98,325 | 6,486 | 69,820 | 110 | 10,384 | 111,774 |
| | TOWER (F4~F35) | 32 | | | 44,645 | 480,555 | 43,825 | 471,736 | 743 | 44,645 | 480,555 |
| BUILDING 'E' | F1~F6 | 7 | 565 | 6,077 | 19,625 | 211,241 | 13,929 | 149,932 | 236 | 20,189 | 217,318 |
| | TOWER (F7~F35) | 29 | | | 104,545 | 1,125,317 | 102,406 | 1,102,301 | 1,735 | 104,545 | 1,125,317 |
| | | | | | | | | | | | |
| **TOTAL** | | | **6,585** | **70,877** | **331,918** | **3,572,767** | **312,491** | **3,363,651** | **5,296** | **338,503** | **3,643,645** |

**UNIT MIX**

| | FLOOR | UNIT TYPE | | | | | | SUB-TOTAL |
|---|---|---|---|---|---|---|---|---|
| | | BACH | 1B | 1B+D | 2B | 2B+D | 3B | |
| BUILDING 'A' PHASE 1 | BASE( F1~F6) | 28 | 137 | 0 | 92 | 0 | 22 | 279 |
| | TOWER (F7~F19) | 30 | 149 | 0 | 100 | 0 | 24 | 304 |
| | TOTAL | 58 | 286 | 0 | 192 | 0 | 46 | 583 |
| | | 58 | 286 | | 192 | | 46 | |
| | UNIT MIX | 10.0% | 49.0% | | 33.0% | | 7.9% | 99.9% |
| | | 59.0% | | | 40.9% | | | |
| BUILDING 'B' PHASE 2 | BASE( F1~F6) | 25 | 123 | 0 | 83 | 0 | 20 | 251 |
| | TOWER (F7~F35) | 104 | 509 | 0 | 343 | 0 | 83 | 1,039 |
| | TOTAL | 129 | 632 | 0 | 426 | 0 | 103 | 1,291 |
| | | 129 | 632 | | 426 | | 103 | |
| | UNIT MIX | 10.0% | 49.0% | | 33.0% | | 8.0% | 100.0% |
| | | 59.0% | | | 41.0% | | | |
| BUILDING 'C' PHASE 3 | BASE( F1~F6) | 23 | 110 | 0 | 74 | 0 | 18 | 225 |
| | TOWER (F7~F23) | 37 | 183 | 0 | 123 | 0 | 30 | 373 |
| | TOTAL | 60 | 293 | 0 | 197 | 0 | 48 | 597 |
| | | 60 | 293 | | 197 | | 48 | |
| | UNIT MIX | 10.0% | 49.1% | | 33.0% | | 8.0% | 100.1% |
| | | 59.1% | | | 41.0% | | | |
| BUILDING 'D' PHASE 4 | BASE( F1~F6) | 11 | 54 | 0 | 36 | 0 | 9 | 110 |
| | TOWER (F7~F25) | 74 | 364 | 0 | 245 | 0 | 59 | 743 |
| | TOTAL | 85 | 418 | 0 | 281 | 0 | 68 | 853 |
| | | 85 | 418 | | 281 | | 68 | |
| | UNIT MIX | 10.0% | 49.0% | | 33.0% | | 8.0% | 100.0% |
| | | 59.0% | | | 41.0% | | | |
| BUILDING 'E' PHASE 5 | BASE( F1~F6) | 24 | 116 | 0 | 78 | 0 | 19 | 237 |
| | TOWER (F7~F35) | 174 | 850 | 0 | 573 | 0 | 139 | 1,735 |
| | TOTAL | 198 | 966 | 0 | 651 | 0 | 158 | 1,972 |
| | | 198 | 966 | | 651 | | 158 | |
| | UNIT MIX | 10.0% | 49.0% | | 33.0% | | 8.0% | 100.1% |
| | | 59.0% | | | 41.0% | | | |
| TOTAL | TOTAL | 530 | 2,595 | 0 | 1,748 | 0 | 423 | 5,296 |
| | | 530 | 2,595 | | 1,748 | | 423 | |
| | UNIT MIX | 10.0% | 49.0% | | 33.0% | | 8.0% | 100.0% |
| | | 59.0% | | | 41.0% | | | |

**PARKING REQUIRED (1)(2)(3)**

| | COMMERCIAL | RESIDENTIAL | VISITOR | TOTAL |
|---|---|---|---|---|
| | 3.3/100M² | 0.6/UNIT | 0.15/UNIT | |
| PARCEL 'A' | 158 | 350 | 88 | 596 |
| PARCEL 'B' | 0 | 775 | 194 | 969 |
| PARCEL 'C' | 0 | 359 | 90 | 449 |
| PARCEL 'D' | 42 | 512 | 128 | 682 |
| PARCEL 'E' | 19 | 1,183 | 296 | 1,498 |
| TOTAL | 219 | 3,179 | 796 | 4,193 |

**PARKING PROVIDED**

| | ABOVE GRADE/LEVEL1 | ABOVE GRADE/LEVEL2-6 | UG1 | UG2 | UG3 | TOTAL |
|---|---|---|---|---|---|---|
| PARCEL 'A' | | | 199 | 199 | 199 | 597 |
| PARCEL 'B' | 47 | 340 | 212 | 258 | | 857 |
| PARCEL 'C' | | | 144 | 156 | 156 | 456 |
| PARCEL 'D' | | | 221 | 228 | 228 | 677 |
| PARCEL 'E' | 149 | 995 | 435 | | | 1,579 |
| TOTAL | 196 | 1,335 | 1,211 | 841 | 583 | 4,166 |

NOTE: 1) ASSUMING COMMERCIAL PARKING RATIO= 3.3/100M2,

2 )ASSUMING RESIDENTIAL PARKLING RATIO= 0.6 /UNIT, 0.15/ VISITOR

3) ASSUMING TOWNHOUSE PARKING=0.6/ UNIT, 0.15/ VISITOR

4) 40% EV ROUGH IN AND 10% EV READY BEING PROPOSED

**PARKING PROVIDED (RATIO)**

| | COMMERCIAL | | RESIDENTIAL | | VISITOR | | TOTAL |
|---|---|---|---|---|---|---|---|
| | PARKING SPACES | RATIO/100M² | PARKING SPACES | RATIO/UNIT | PARKING SPACES | RATIO/UNIT | |
| PARCEL 'A' | 158 | 3.3 | 351 | 0.60 | 88 | 0.15 | 597 |
| PARCEL 'B' | 0 | 0.0 | 663 | 0.51 | 194 | 0.15 | 857 |
| PARCEL 'C' | 0 | 0 | 366 | 0.61 | 90 | 0.15 | 456 |
| PARCEL 'D' | 42 | 3.4 | 507 | 0.59 | 128 | 0.15 | 677 |
| PARCEL 'E' | 19 | 3.3 | 1,264 | 0.64 | 296 | 0.15 | 1,579 |
| TOTAL | 219 | 3.3 | 3,151 | 0.59 | 796 | 0.15 | 4,166 |

**BICYCLE PARKING REQUIRED**

*BY-LAW 7553/117*

| | COMMERCIAL | LONG-TERM | SHORT-TERM | TOTAL |
|---|---|---|---|---|
| | 1/1000M² | 0.5/UNIT | 0.1/UNIT | |
| PARCEL 'A' | 5 | 292 | 59 | 356 |
| PARCEL 'B' | 0 | 646 | 130 | 776 |
| PARCEL 'C' | 0 | 299 | 60 | 359 |
| PARCEL 'D' | 2 | 427 | 86 | 515 |
| PARCEL 'E' | 1 | 986 | 198 | 1,185 |
| TOTAL | 8 | 2,650 | 533 | 3,191 |

A MAXIMUM OF 50 PERCENT OF THE REQUIRED BICYCLE PARKING SPACES MAY BE VERTICALSPACES;

THE REST OF THE REQUIRED SPACES MUST BE HORIZONTAL SPACES.

**AMENITY REQUIRED (4)**

| | OUTDOOR | INDOOR |
|---|---|---|
| | 4M²/ UNIT | 2M²/ UNIT |
| PARCEL 'A' | 2,333 | 1,166 |
| PARCEL 'B' | 5,164 | 2,582 |
| PARCEL 'C' | 2,391 | 1,195 |
| PARCEL 'D' | 3,411 | 1,705 |
| PARCEL 'E' | 7,884 | 3,942 |
| TOTAL | 21,183 | 10,592 |

**AMENITY PROVIDED**

| | | OUTDOOR | | INDOOR | |
|---|---|---|---|---|---|
| | | AREA M² | RATIO/UNIT | AREA M² | RATIO/UNIT |
| PARCEL 'A' | PODIUM | 3,073 | 5.27 | 1,166 | 2.00 |
| | ROOF | 701 | 1.20 | | |
| | TOTAL | 3,774 | 6.47 | | |
| PARCEL 'B' | PODIUM | 4,309 | 3.34 | 2,582 | 2.00 |
| | ROOF | 927 | 0.72 | | |
| | TOTAL | 5,236 | 4.06 | | |
| PARCEL 'C' | PODIUM | 1,392 | 2.33 | 1,195 | 2.00 |
| | ROOF | 766 | 1.28 | | |
| | TOTAL | 2,158 | 3.61 | | |
| PARCEL 'D' | PODIUM | 3,307 | 3.88 | 2,866 | 3.36 |
| | ROOF | 623 | 0.73 | | |
| | TOTAL | 3,930 | 4.61 | | |
| PARCEL 'E' | PODIUM | 5,679 | 2.88 | 3,942 | 2.00 |
| | ROOF | 1,762 | 0.89 | | |
| | TOTAL | 7,441 | 3.77 | | |
| TOTAL (WITHOUT OUTDOOR AMENITY ON ROOF) | | 17,760 | 3.35 | 11,752 | 2.22 |
| TOTAL | | 22,539 | 4.26 | | |


# TURNER FLEISCHER

**Turner Fleischer Architects Inc.**

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com




| # | DATE | DESCRIPTION | BY |
|---|---|---|---|

Tribute communities 35 YEARS

PROJECT
**1101A/1105/1163 Kingston Road**

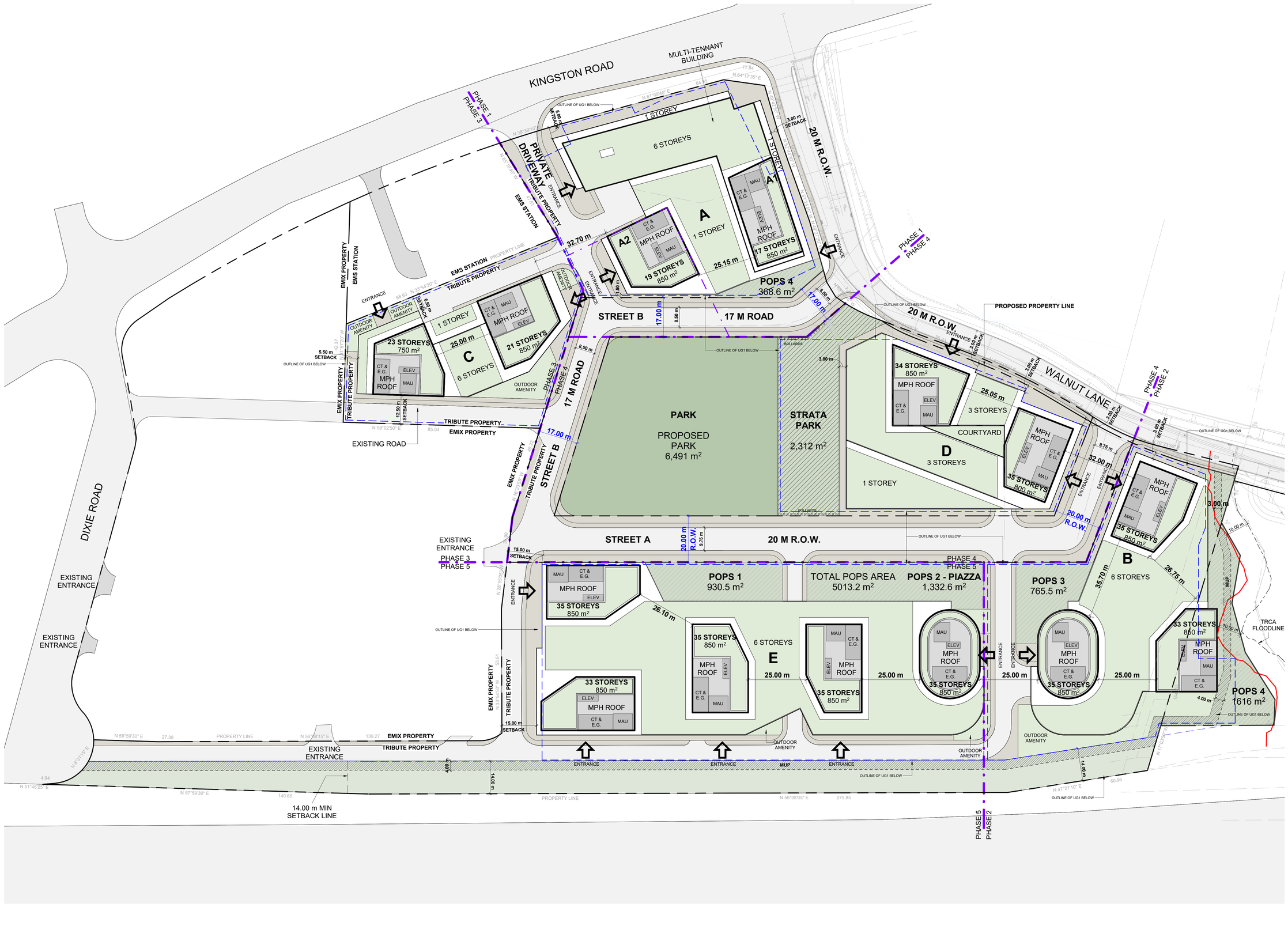
1101A/1105/1163 Kingston Road,
Pickering, ON L1V 1B5

DRAWING
**STATISTICS**

PROJECT NO. 22.122P01
PROJECT DATE 2024-11-22
DRAWN BY MZH
CHECKED BY AYU
SCALE

DRAWING NO. RZ002
REV.

2024-11-25 10:07:27 AM




# TURNER FLEISCHER


**Turner Fleischer Architects Inc.**

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com




| # | DATE | DESCRIPTION | BY |
|---|---|---|---|

Tribute communities 35 YEARS

PROJECT

**1101A/1105/1163 Kingston Road**

1101A/1105/1163 Kingston Road,
Pickering, ON L1V 1B5

DRAWING

**SITE PLAN / ROOF PLAN**

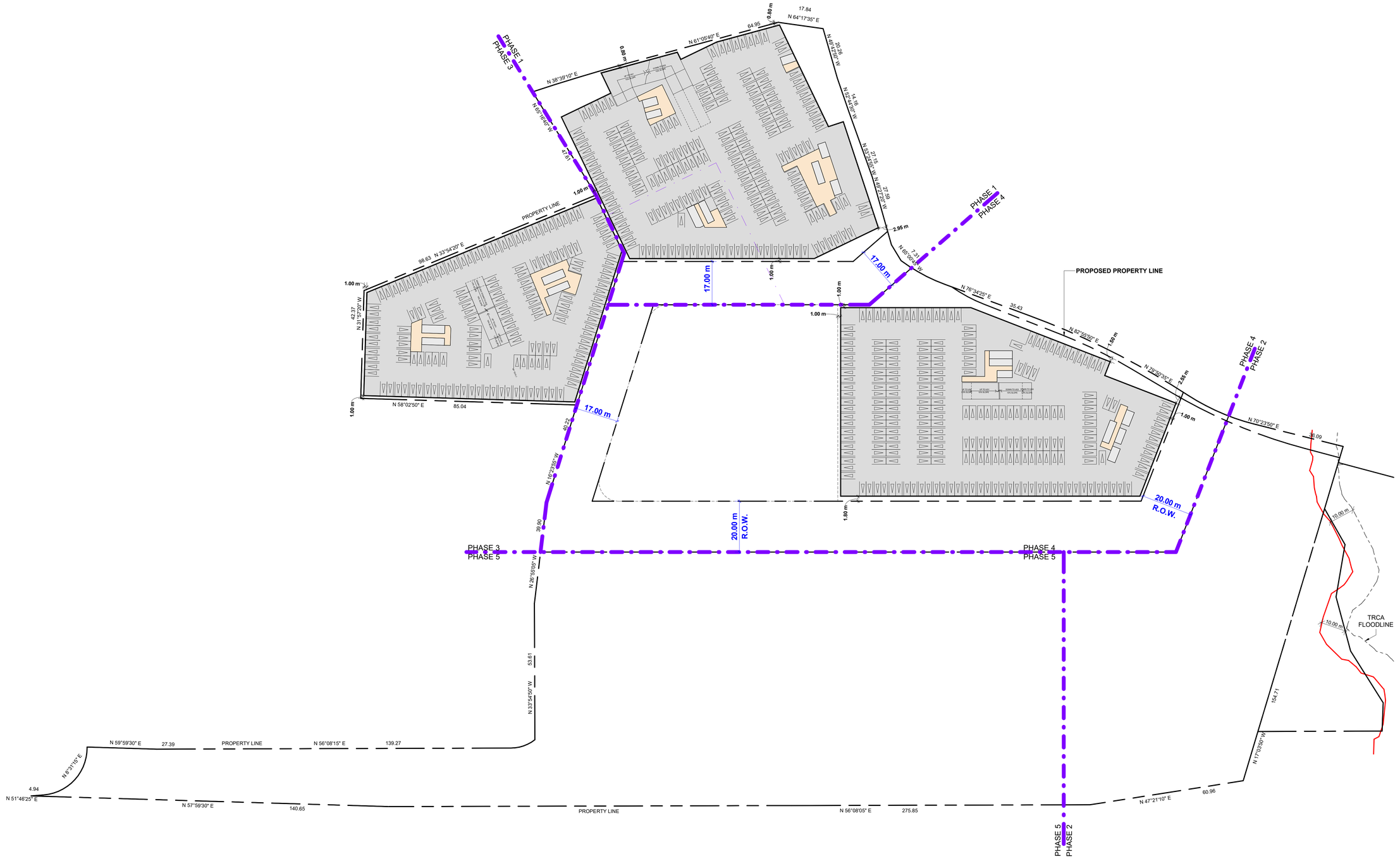
| | |
|---|---|
| PROJECT NO. | 22.122P01 |
| PROJECT DATE | 2024-11-22 |
| DRAWN BY | MZH |
| CHECKED BY | AYU |
| SCALE | 1 : 700 |

N

DRAWING NO. RZ005

REV.

2024-11-25 10:07:30 AM




# TURNER FLEISCHER

**Turner Fleischer Architects Inc.**

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com



| # | DATE | DESCRIPTION | BY |
|---|---|---|---|

Tribute communities 35 YEARS

PROJECT
**1101A/1105/1163 Kingston Road**

1101A/1105/1163 Kingston Road,
Pickering, ON L1V 1B5

DRAWING
**UNDERGROUND LEVEL 03**

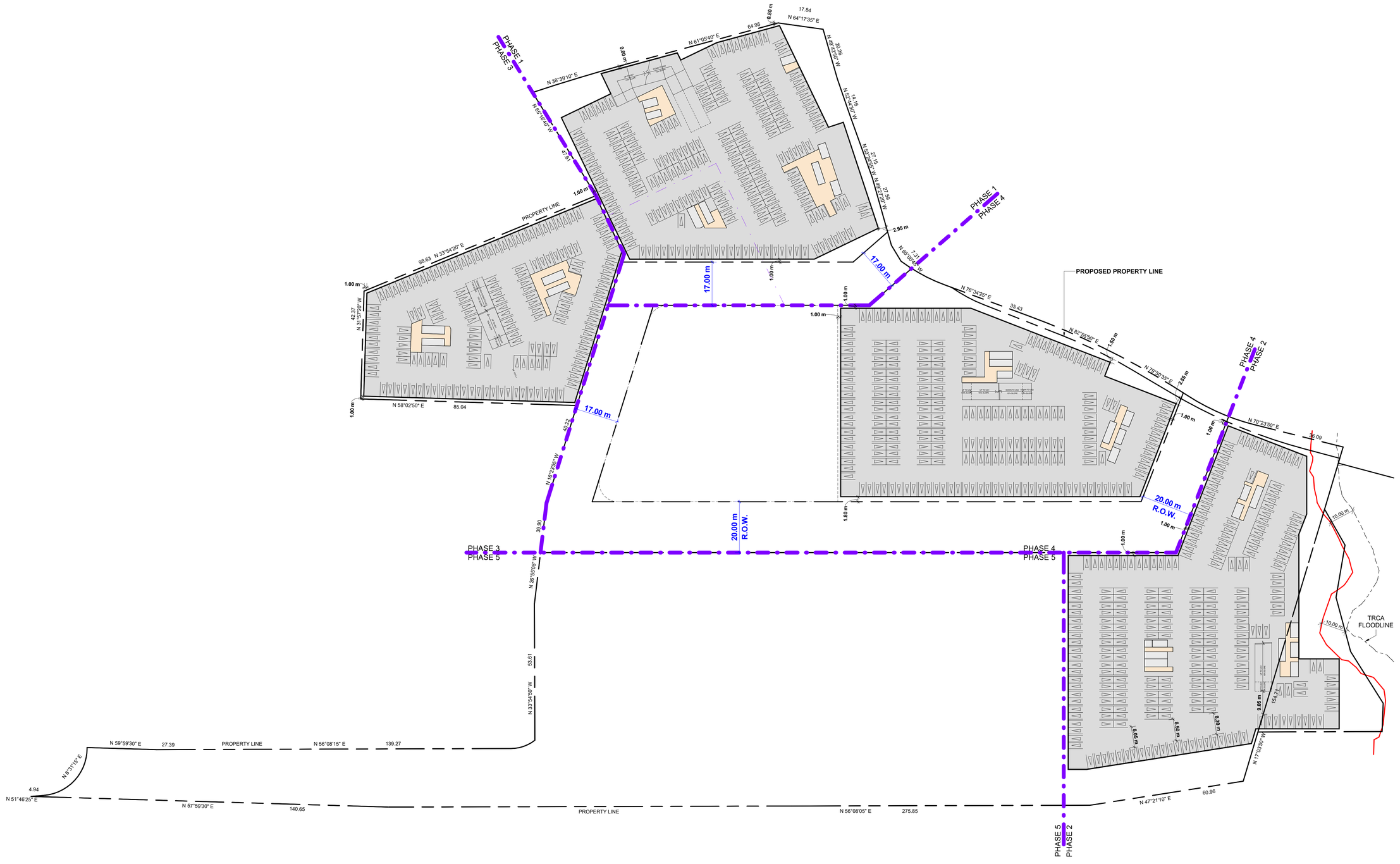
| | |
|---|---|
| PROJECT NO. | 22.122P01 |
| PROJECT DATE | 2024-11-22 |
| DRAWN BY | MZH |
| CHECKED BY | AYU |
| SCALE | 1 : 700 |

N

DRAWING NO. RZ101

REV.

2024-11-25 10:07:31 AM





# TURNER FLEISCHER

**Turner Fleischer Architects Inc.**

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com




| # | DATE | DESCRIPTION | BY |
|---|---|---|---|

Tribute communities 35 YEARS

PROJECT

**1101A/1105/1163 Kingston Road**

1101A/1105/1163 Kingston Road,
Pickering, ON L1V 1B5

DRAWING

**UNDERGROUND LEVEL 02**

| | |
|---|---|
| PROJECT NO. | 22.122P01 |
| PROJECT DATE | 2024-11-22 |
| DRAWN BY | MZH |
| CHECKED BY | AYU |
| SCALE | 1 : 700 |

N

DRAWING NO. RZ102

REV.

2024-11-25 10:07:31 AM

2024-11-25 10:07:32 AM

**TURNER FLEISCHER**

**Turner Fleischer Architects Inc.**

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com

| # | DATE | DESCRIPTION | BY |
|---|---|---|---|

PROJECT

**1101A/1105/1163 Kingston Road**

1101A/1105/1163 Kingston Road,
Pickering, ON L1V 1B5

DRAWING

**UNDERGROUND LEVEL 01**

PROJECT NO.
22.122P01

PROJECT DATE
2024-11-22

DRAWN BY
MZH

CHECKED BY
AYU

SCALE
1 : 700

N

DRAWING NO.
RZ103

REV.

## LEGEND

| | |
|---|---|
| | PRIMARY RESIDENTIAL ENTRANCE |
| | SECONDARY RESIDENTIAL ENTRANCE |
| | RETAIL ENTRANCE |
| EXIT | EXIT |
| FH | FIRE HYDRANT |
| | SIAMESE CONNECTION |
| | CONVEX MIRROR |
| | TRANSFORMER WITH CLEARANCES |
| A | FIRE ROUTE SIGN |
| 000.00 | SPOT ELEVATION |
| M C | GAS/HYDRO METER |

# TURNER FLEISCHER


**Turner Fleischer Architects Inc.**

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com




| # | DATE | DESCRIPTION | BY |
|---|---|---|---|

Tribute communities 35

PROJECT
**1101A/1105/1163 Kingston Road**

1101A/1105/1163 Kingston Road,
Pickering, ON L1V 1B5

DRAWING
**FLOOR 01**

| | |
|---|---|
| PROJECT NO. | 22.122P01 |
| PROJECT DATE | 2024-11-22 |
| DRAWN BY | MZH |
| CHECKED BY | AYU |
| SCALE | As indicated |

DRAWING NO. RZ151 REV.

1 FLOOR 1
RZ151 1 : 700

2024-11-25 10:07:34 AM

# Appendix B Traffic Data and Calculations

## 1101, 1105, 1163 Kingston Road

Environmental Noise Assessment Pickering, ON

**Tribute (Brookdale) Limited**

SLR Project No.: 241.013026.00001

December 19, 2024

Planning and Economic
Development Department

Planning Division

605 ROSSLAND RD. E.
4TH FLOOR
P.O. BOX 623
WHITBY, ON L1N 6A3
CANADA
905-668-7711
1-800-372-1102
Fax: 905-666-6208
E-Mail: planning@durham.ca

www.durham.ca

**Brian Bridgeman, MCIP, RPP**
Commissioner of Planning and
Economic Development

## The Regional Municipality of Durham

# ROAD SEGMENT TRAFFIC FORECASTS FOR NOISE ANALYSES

This information is to be used as the basis for assessing the potential impacts of noise, generated by traffic on Provincial Highways and arterial roads, on proposed land uses that are sensitive (e.g., residential subdivisions). Arterial roads include existing and future Type A, B and C, as designated in the Durham Regional Official Plan.

Noise assessment reports recommend specific measures to be integrated into the design of sensitive developments to reduce road noise impacts to acceptable levels.

## Provided For:

Name / Name of Firm: Jason Dorssers, SLR Consulting

Address: 100 Stone Road West, Guelph, ON N1G 5L3

Telephone: (519) 362-0958 Fax:

## Location of Proposal:

1163 Kingston Road, Pickering

Municipality: Lot(s): Concession:

Durham Region File No. (if available):

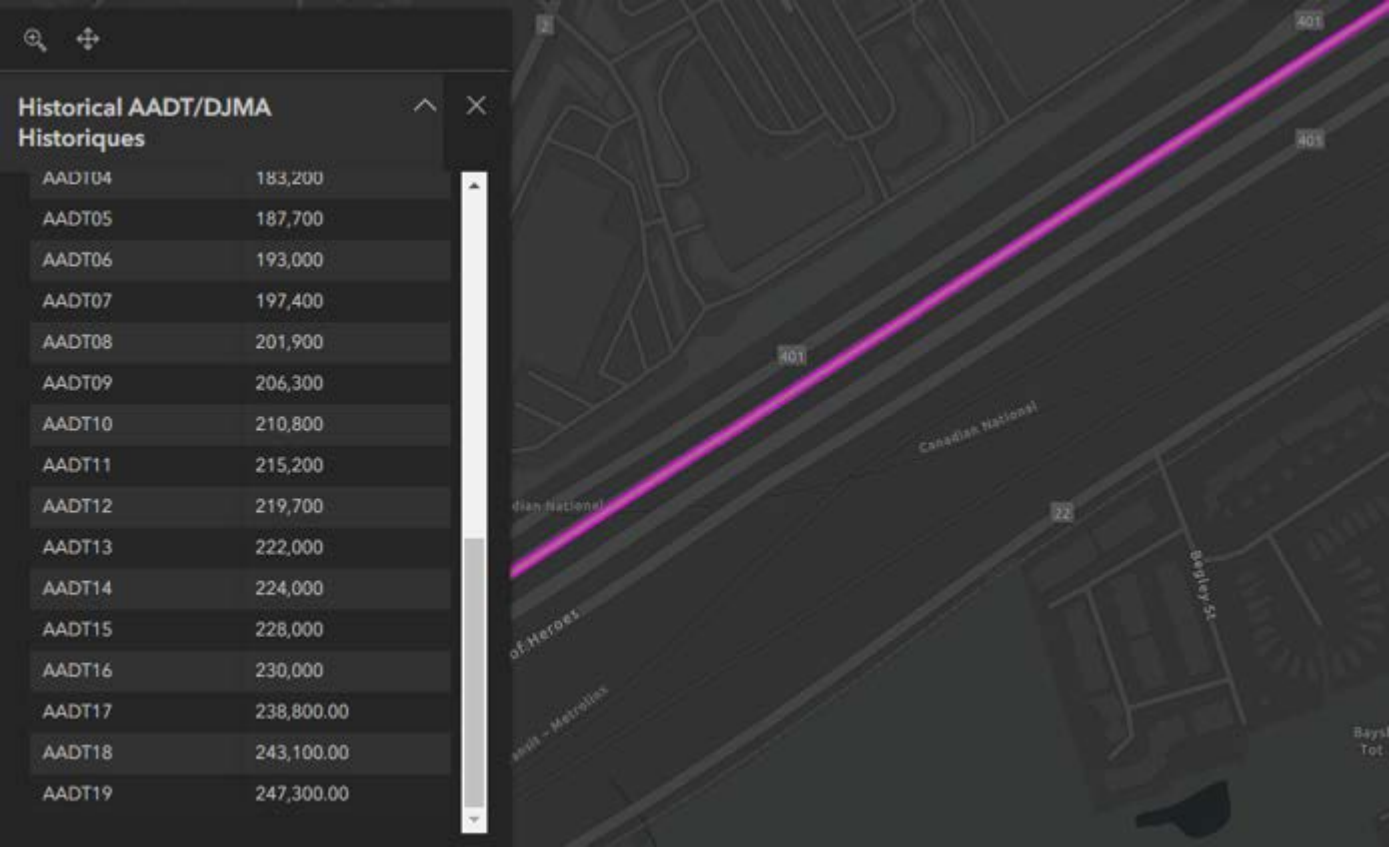
Name of Property Owner (if available):

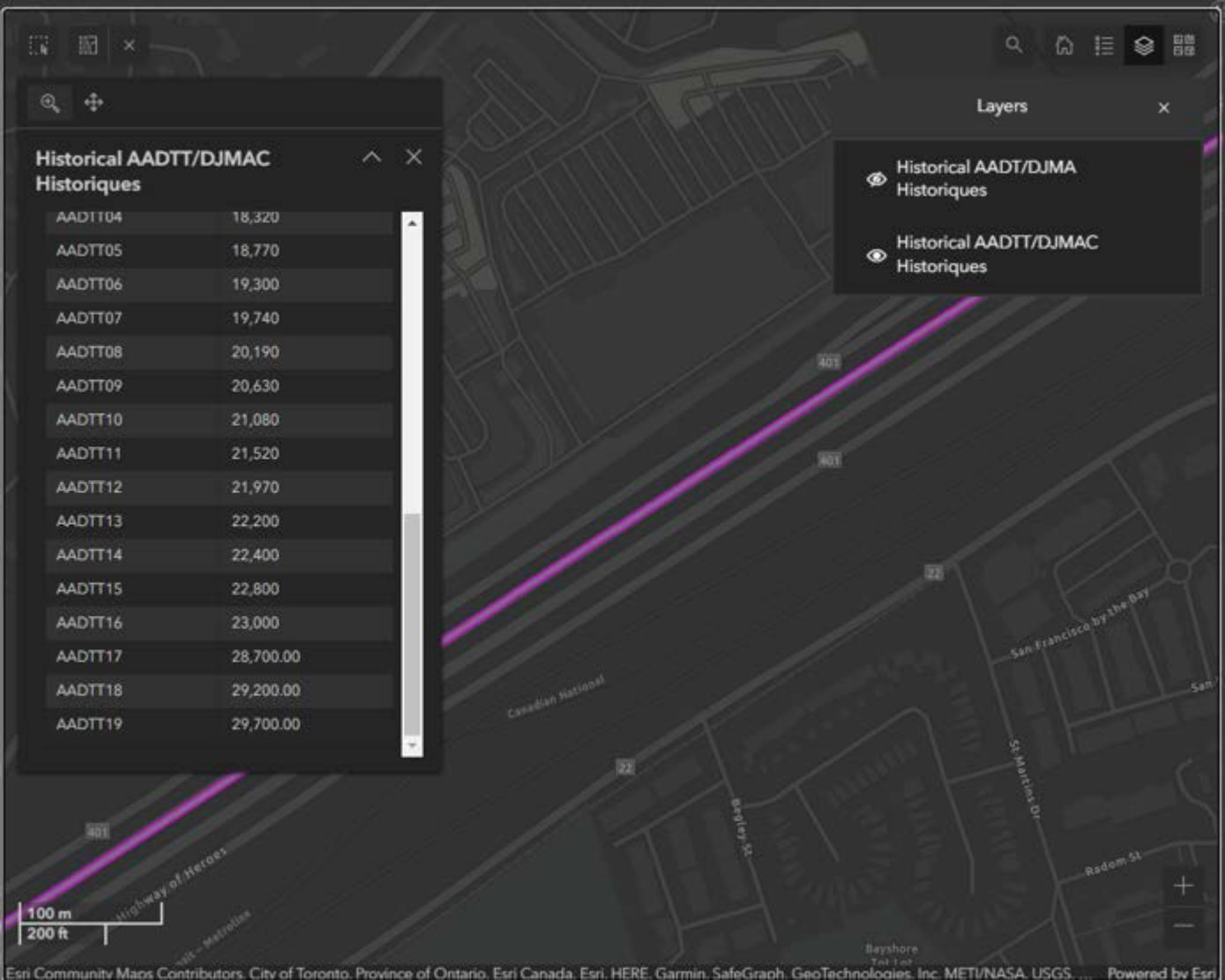
**Date Request Received:** July 26, 2023 Received By: Anthony Caruso

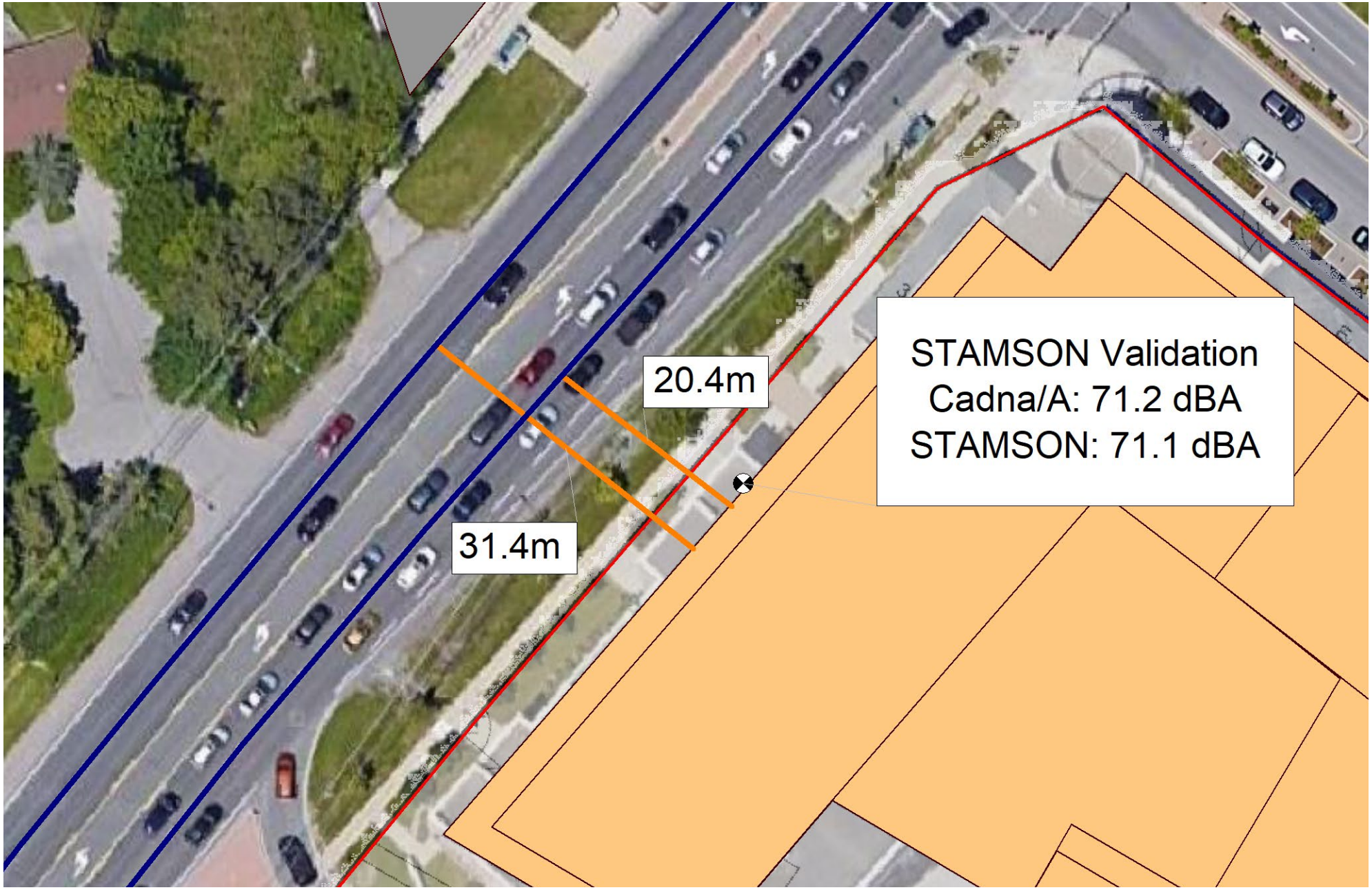
**Date Forecast Sent:** August 1, 2023

| Name of Road Segment | Forecasted AADT* | No. of Lanes | % of Trucks | Heavy : Medium Truck Ratio | | Speed (km/h) |
|---|---|---|---|---|---|---|
| Kingston Road (Dixie to Liverpool) | 35,000 | 4 | 8 | 30 | 70 | 60 |
| Liverpool Road (401 to Kingston) | 32,000 | 4 | 7 | 30 | 70 | 60 |
| | | | | | | |
| | | | | | | |

* Average Annual Daily Traffic. Forecast based on ultimate development according to the Durham Regional Official Plan.


Historical AADT/DJMA
Historiques
AADT04 183,200
AADT05 187,700
AADT06 193,000
AADT07 197,400
AADT08 201,900
AADT09 206,300
AADT10 210,800
AADT11 215,200
AADT12 219,700
AADT13 222,000
AADT14 224,000
AADT15 228,000
AADT16 230,000
AADT17 238,800.00
AADT18 243,100.00
AADT19 247,300.00
401
401
401
Canadian National
22
Bayley St


Historical AADTT/DJMAC
Historiques
AADTT04 18,320
AADTT05 18,770
AADTT06 19,300
AADTT07 19,740
AADTT08 20,190
AADTT09 20,630
AADTT10 21,080
AADTT11 21,520
AADTT12 21,970
AADTT13 22,200
AADTT14 22,400
AADTT15 22,800
AADTT16 23,000
AADTT17 28,700.00
AADTT18 29,200.00
AADTT19 29,700.00
Layers
Historical AADT/DJMA
Historiques
Historical AADTT/DJMAC
Historiques
401
401
22
22
Canadian National
San Francisco by the Bay
St Martins Dr
Bagley St
Radom St
Bayshore
Highway of Heroes
100 m
200 ft
Esri Community Maps Contributors, City of Toronto, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS,
Powered by Esri




**TRIBUTE (BROOKDALE) LIMITED**

1101, 1105, 1163 KINGSTON ROAD – PICKERING, ON

STAMSON VALIDATION

True North

Scale: 1: 500

METRES

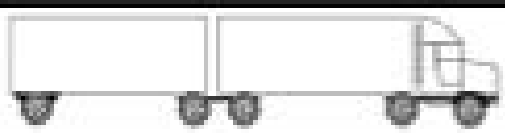
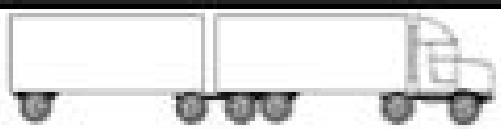
Date: Oct. 2023

Rev 3.0

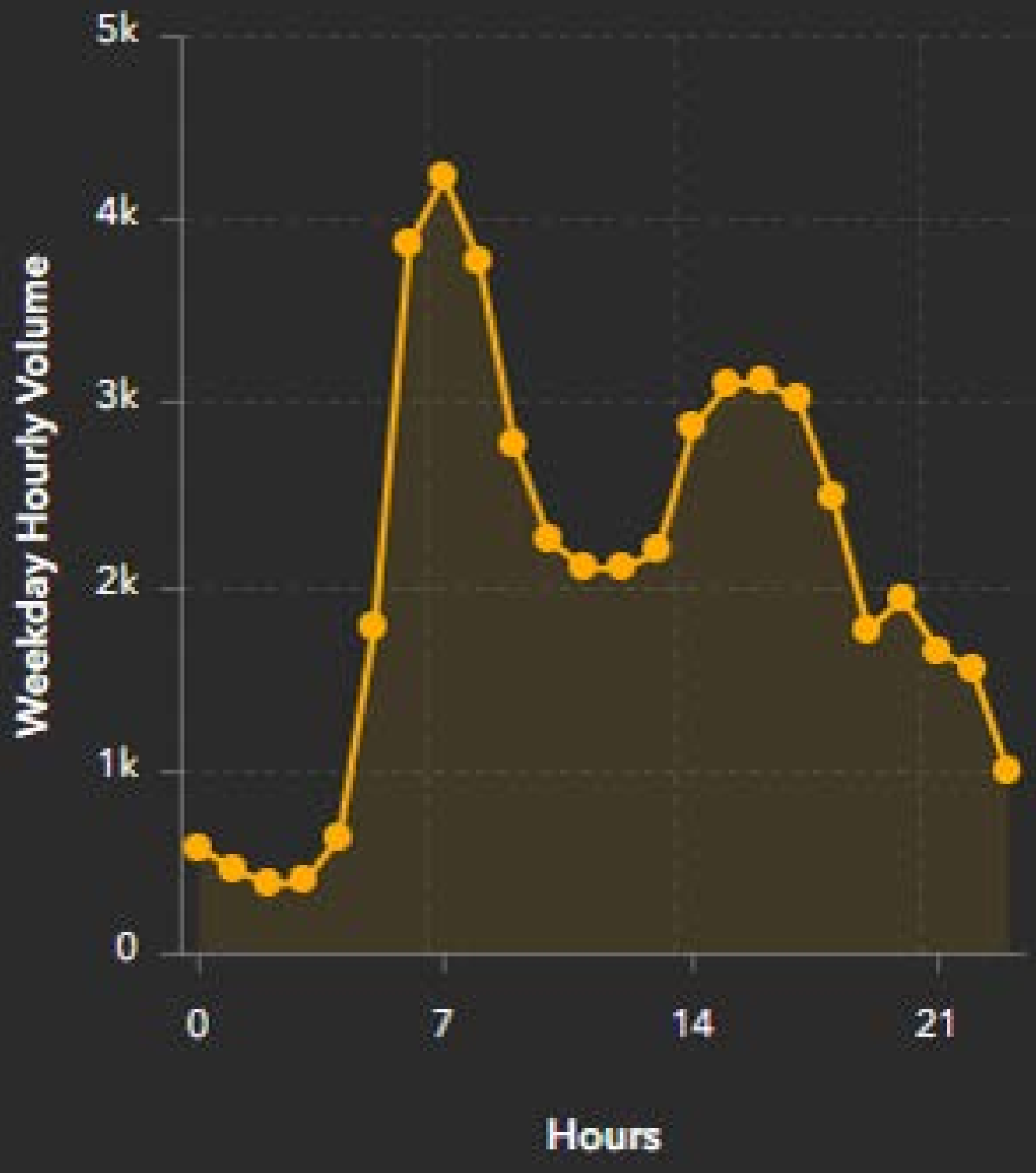
Figure No. **B1**

Project No. 241.013026.00001

SLR

| FHWA VEH. CLASS | CONF. | TRUCK FLOW VOL. | TRUCK FLOW % |
|---|---|---|---|
| 4 |  | 333 | 1.5 |
| 5 |  | 2845 | 12.82 |
| 6 |  | 1358 | 6.12 |
| 7 |  | 313 | 1.41 |
| 8 |  | 328 | 1.48 |
| 9 |  | 11093 | 49.98 |
| 10 |  | 4881 | 21.99 |
| 11 |  | 78 | 0.35 |
| 12 |  | 40 | 0.18 |
| 13 |  | 926 | 4.17 |
| | TOTAL | 22195.0 | 100% |

# 2008 Weekday Hourly Volume - All Traffic



Records: **1,917**

REGIONAL ROAD: Kingston Road

**Traffic_AADT**

| | |
|---|---|
| OBJECTID | 21 |
| SLRN_ID | 111,591 |
| REGIONAL_ROAD | Kingston Road |
| MUNICIPALITY | Pickering |
| AADT_2017 | 27,635 |
| AADT_2018 | 22,720 |
| AADT_2019 | 30,405 |
| COMMENTS | PCS 258 count used for 2019.<br>PCS 265 has no count. |
| SHAPE | undefined |
| SHAPE.STLength() | 321.64 |
| AADT_2022 | 24,450 |
| Comments_2022 | Used ATR 7026 count |

Zoom to

# O R N A M E N T - Sound Power Emissions & Source Heights

Ontario Road Noise Analysis Method for Environment and Transportation

| Road Segment ID | Roadway Name | Link Description | Speed (kph) | Period (h) | Total Traffic Volumes | Auto % | Med % | Hvy % | Auto | Med | Heavy | Road Gradient (%) | Cadna/A Ground Absorption G | PWL (dBA) | Source Height, s (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KingstonE_avg | Kingston Road - Eastbound | Daytime Impacts | 60 | 16 | 15750 | 92.0% | 2.4% | 5.6% | 14490 | 378 | 882 | 0 | 0.00 | **85.3** | **1.5** |
| KingstonE_avg | Kingston Road - Eastbound | Nighttime Impacts | 60 | 8 | 1750 | 92.0% | 2.4% | 5.6% | 1610 | 42 | 98 | 0 | 0.00 | **78.8** | **1.5** |
| KingstonW_avg | Kingston Road - Westbound | Daytime Impacts | 60 | 16 | 15750 | 92.0% | 2.4% | 5.6% | 14490 | 378 | 882 | 0 | 0.00 | **85.3** | **1.5** |
| KingstonW_avg | Kingston Road - Westbound | Nighttime Impacts | 60 | 8 | 1750 | 92.0% | 2.4% | 5.6% | 1610 | 42 | 98 | 0 | 0.00 | **78.8** | **1.5** |
| LiverpoolN_avg | Liverpool Road - Northbound | Daytime Impacts | 60 | 16 | 14400 | 93.0% | 2.1% | 4.9% | 13392 | 302 | 706 | 0 | 0.00 | **84.5** | **1.5** |
| LiverpoolN_avg | Liverpool Road - Northbound | Nighttime Impacts | 60 | 8 | 1600 | 93.0% | 2.1% | 4.9% | 1488 | 34 | 78 | 0 | 0.00 | **78.0** | **1.5** |
| LiverpoolS_avg | Liverpool Road - Southbound | Daytime Impacts | 60 | 16 | 14400 | 93.0% | 2.1% | 4.9% | 13392 | 302 | 706 | 0 | 0.00 | **84.5** | **1.5** |
| LiverpoolS_avg | Liverpool Road - Southbound | Nighttime Impacts | 60 | 8 | 1600 | 93.0% | 2.1% | 4.9% | 1488 | 34 | 78 | 0 | 0.00 | **78.0** | **1.5** |
| 401_avg | Highway 401 - 1 Segment (x4) | Daytime Impacts | 100 | 16 | 62764 | 88.0% | 1.5% | 10.5% | 55226 | 966 | 6572 | 0 | 0.00 | **97.2** | **1.8** |
| 401_avg | Highway 401 - 1 Segment (x4) | Nighttime Impacts | 100 | 8 | 15691 | 88.0% | 1.5% | 10.5% | 13807 | 242 | 1643 | 0 | 0.00 | **94.1** | **1.8** |
| Kingston_min | Kingston Road - Eastbound | Daytime Ambient | 60 | 1 | 532 | 92.0% | 2.4% | 5.6% | 490 | 13 | 30 | 0 | 0.00 | **82.7** | **1.5** |
| Kingston_min | Kingston Road - Eastbound | Evening Ambient | 60 | 1 | 380 | 92.0% | 2.4% | 5.6% | 350 | 9 | 21 | 0 | 0.00 | **81.2** | **1.5** |
| Kingston_min | Kingston Road - Eastbound | Nighttime Ambient | 60 | 1 | 30 | 92.0% | 2.4% | 5.6% | 28 | 1 | 2 | 0 | 0.00 | **70.2** | **1.5** |
| Kingston_min | Kingston Road - Westbound | Daytime Ambient | 60 | 1 | 532 | 92.0% | 2.4% | 5.6% | 490 | 13 | 30 | 0 | 0.00 | **82.7** | **1.5** |
| Kingston_min | Kingston Road - Westbound | Evening Ambient | 60 | 1 | 380 | 92.0% | 2.4% | 5.6% | 350 | 9 | 21 | 0 | 0.00 | **81.2** | **1.5** |
| Kingston_min | Kingston Road - Westbound | Nighttime Ambient | 60 | 1 | 30 | 92.0% | 2.4% | 5.6% | 28 | 1 | 2 | 0 | 0.00 | **70.2** | **1.5** |

**From:** Rail Data Requests
**To:** Jason Dorssers
**Cc:** Aaron Haniff
**Subject:** RE: Rail Data Request - 1105 Kingston Road - Pickering
**Date:** August 21, 2023 10:31:12 AM
**Attachments:** image001.png
image002.png
image003.png

---

Hi Jason,

Further to your request dated August 16th, 2023, the subject lands (1105 Kingston Road) are located within 300 metres of the Metrolinx GO Subdivision (which carries Lakeshore East GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel and electric trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 324 trains. The planned detailed trip breakdown is listed below:

| | 1 Diesel Locomotive | 2 Diesel Locomotives | 1 Electric Locomotive | 2 Electric Locomotives | | 1 Diesel Locomotive | 2 Diesel Locomotives | 1 Electric Locomotive | 2 Electric Locomotives |
|---|---|---|---|---|---|---|---|---|---|
| Day (0700-2300) | 64 | 0 | 213 | 0 | Night (2300-0700) | 10 | 0 | 37 | 0 |

The current track design speed near the subject lands is 45 (72 km/h).

There are no *anti-whistling by-laws* in affect near the subject lands.

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase.
Options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams have submitted their bids to Infrastructure Ontario and Metrolinx for evaluation and contract award. GO Expansion construction will get underway in late 2023.

However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel- track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.
Given the above considerations, it would be prudent at this time, for the purposes of acoustical analyses for development in proximity to Metrolinx corridors, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future once the proponent team is selected.

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

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.

**Justin Neale**
Third Party Projects Review Team
Metrolinx | Toronto | Ontario | M5J 2W3

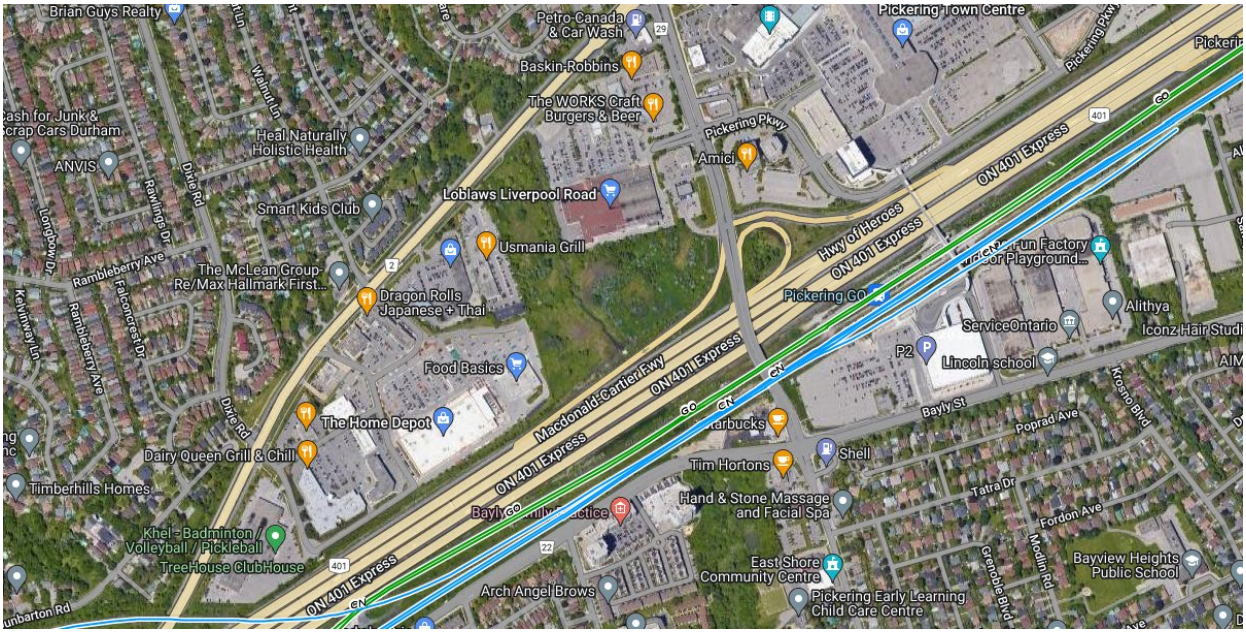
---

**From:** Jason Dorssers <jdorssers@slrconsulting.com>
**Sent:** August 16, 2023 4:19 PM
**To:** Rail Data Requests <RailDataRequests@metrolinx.com>
**Cc:** Aaron Haniff <ahaniff@slrconsulting.com>
**Subject:** Rail Data Request - 1105 Kingston Road - Pickering



Good afternoon,

I am working on a proposed residential development on Kingston Road located at 1105 Kingston Road in Ajax/Pickering. The project is in close proximity to the Lakeshore East corridor. We also believe that CN could be using this as well.
We require forecasted rail traffic data and any further clarification about the operations on this line to use in our assessment. I have attached an image of the area being developed.




Thank you,
Jason

**Jason Dorssers** B.Eng., EIT

Acoustics Consultant

**O** +1 226 706 8080
**M** 519-362-0958
**E** jdorssers@slrconsulting.com

SLR Consulting (Canada) Ltd
100 Stone Road West, Suite 201, Guelph ON Canada N1G 5L3

System Engineering
Engineering Services

1 Administration Road
P.O. Box 1000
Concord, ON, L4K 1B9
T: 905.669.3184
F: 905.760.3406

# Train Count Data

## TRANSMITTAL

| | | | |
|---|---|---|---|
| *To:* *Destinataire :* | Novus Environmental<br>150 Redesrch Lane, Suite 105<br>Guelph, ON<br>N1G 4T2 | *Project :* | KNG – 312.02 - 313.04 – Liverpool Rd and Brock Rd, Pickering, ON |
| *Att'n:* | Luke Arnold | *Routing:* | lucasa@novusenv.com |
| *From:* *Expéditeur :* | Derek Basso | *Date:* *date :* | July 12th, 2016 |
| *Cc:* | Raymond Beshro CN<br>via e-mail | | |

☐ Urgent ☐ For Your Use ☐ For Review ■ For Your Information ☐ Confidential

**Re: Train Traffic Data – CN Kingston Subdivision near _____ Road in Pickering, ON**

Please find attached the requested Train Traffic Data; this data does not reflect GO Metrolinx Traffic. The application fee in the amount of **$500.00** +HST will be invoiced.

Should you have any questions, please do not hesitate to contact the undersigned at 905-669-3184.

Sincerely,
CN Design & Construction

Derek Basso
Engineering Technician
Derek.Basso@cn.ca

Dear Luke:

**Re: Train Traffic Data – CN Kingston Subdivision between Liverpool road and Brock Road in Pickering, ON**

The following is provided in response to Luke's 2016/07/27 request for information regarding rail traffic in the vicinity of Liverpool road and Brock road in Pickering between Miles approximately 312.02 - 313.04 on CN's Kingston Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

***Maximum train speed is given in Miles per Hour**

| | 0700-2300 | | | |
|---|---|---|---|---|
| Type of Train | Volumes | Max.Consist | Max. Speed | Max. Power |
| Freight | 10 | 140 | 40 | 4 |
| Way Freight | 1 | 25 | 40 | 4 |
| Passenger | 28 | 10 | 40 | 2 |

| | 2300-0700 | | | |
|---|---|---|---|---|
| Type of Train | Volumes | Max.Consist | Max. Speed | Max. Power |
| Freight | 4 | 140 | 40 | 4 |
| Way Freight | 3 | 25 | 40 | 4 |
| Passenger | 0 | 10 | 40 | 2 |

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN's Kingston Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are zero at-grade crossing in the immediate vicinity of the study area. Anti-whistling bylaws are not in effect at this crossing. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The quintuple mainline track is considered to be continuously welded rail throughout the study area. The presence of 7 switches located at Mile 311.25, 311.34, 311.39, 312.9, 313.04, 313.05 and 313.06 may exacerbate the noise and vibration caused by train movements.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Mr. Raymond Beshro, Canadian National Railway Properties at 514-399-7627 should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,

Derek Basso
Engineering Technician
Derek.Basso@cn.ca

cc. Raymond Beshro – CN – via e-mail

STAMSON 5.0 NORMAL REPORT Date: 08-09-2023 14:50:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Time Period: 16 hours
Description: 1st Floor Test Receptor - Kingston Road

Road data, segment # 1: Kingston EB
---
Car traffic volume : 14490 veh/TimePeriod
Medium truck volume : 378 veh/TimePeriod
Heavy truck volume : 882 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Kingston EB
---
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 20.44 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↟
Road data, segment # 2: Kingston WB
---
Car traffic volume : 14490 veh/TimePeriod
Medium truck volume : 378 veh/TimePeriod
Heavy truck volume : 882 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Kingston WB
---
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 31.35 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↟
Results segment # 1: Kingston EB

---

Source height = 1.54 m

ROAD (0.00 + 68.92 + 0.00) = 68.92 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 70.26 | 0.00 | -1.34 | 0.00 | 0.00 | 0.00 | 0.00 | 68.92 |

Segment Leq : 68.92 dBA

🡅

Results segment # 2: Kingston WB

---

Source height = 1.54 m

ROAD (0.00 + 67.06 + 0.00) = 67.06 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 70.26 | 0.00 | -3.20 | 0.00 | 0.00 | 0.00 | 0.00 | 67.06 |

Segment Leq : 67.06 dBA

Total Leq All Segments: 71.10 dBA

🡅

TOTAL Leq FROM ALL SOURCES: 71.10

🡅

🡅

# Appendix C Warning Clause Text

## 1101, 1105, 1163 Kingston Road

Environmental Noise Assessment Pickering, ON

**Tribute (Brookdale) Limited**

SLR Project No.: 241.013026.00001

December 19, 2024

# Appendix C Warning Clause Text

### Type B Warning Clause

"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 and rail 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."

### Type C Warning Clause

"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 Warning Clause

"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."

### Type E Warning Clause

"Purchasers/tenants are advised that due to the proximity of adjacent industries, noise from these facilities may at times be audible."

### Canadian National Railways Warning Clause

"Purchasers are advised that the Canadian National Railway Company or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject thereof. 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 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."

### Metrolinx Warning Clause

Metrolinx, carrying on business as GO Transit, and its assigns and successors in interest are the owners of lands within 300 metres from the land which is the subject hereof. In addition to the current use of the lands owned by Metrolinx, there may be alterations to or expansions of the rail and other facilities on such lands in the future including the possibility that GO Transit or any railway entering into an agreement with GO Transit to use the Metrolinx lands or Metrolinx and their respective assigns or successors as aforesaid may expand their operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwellings. Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under its lands."

# Appendix D BPN-56 Calculations

## 1101, 1105, 1163 Kingston Road

Environmental Noise Assessment Pickering, ON

**Tribute (Brookdale) Limited**

SLR Project No.: 241.013026.00001

December 19, 2024

# BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

**Roadway**

**1105 Kingston Road, Ajax, Ontario**

| | | Sound Levels | | Room / Façade Inputs | | | | | Source Inputs | | | Veneer - Component 1 | | Glazing - Component 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Receptor ID | Source Description | Façade Sound Level: (dBA) | Required Indoor Sound Level: (dBA) | Glazing as % of Wall Area | Exposed Wall Height (m) | Exposed Wall Length (m) | Room Depth (m) | Room Absorption: | Incident Sound Angle: (deg) | Angle Correction Factor: | Spectrum type: | Assumed Veneer STC (STC) | Component Category: | Component Category: | Require Glazing STC (STC) |
| **DAYTIME** | | | | | | | | | | | | | | | |
| A - 6 storey - North | Roadways, Daytime | 71 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| A - 6 storey - East | Roadways, Daytime | 68 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| A - 6 storey - South | Roadways, Daytime | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A - 6 storey - West | Roadways, Daytime | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A1 - 17 storey - North | Roadways, Daytime | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A1 - 17 storey - East | Roadways, Daytime | 66 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A1 - 17 storey - South | Roadways, Daytime | 68 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| A1 - 17 storey - West | Roadways, Daytime | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A2 - 19 storey - North | Roadways, Daytime | 66 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A2 - 19 storey - East | Roadways, Daytime | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A2 - 19 storey - South | Roadways, Daytime | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A2 - 19 storey - West | Roadways, Daytime | 68 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| B - 6 storey - North | Roadways, Daytime | 66 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| B - 6 storey - East | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| B - 6 storey - South | Roadways, Daytime | 81 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| B - 6 storey - West | Roadways, Daytime | 78 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| B - 35 storey 1 - North | Roadways, Daytime | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| B - 35 storey 1 - East | Roadways, Daytime | 72 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| B - 35 storey 1 - South | Roadways, Daytime | 71 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| B - 35 storey 1 - West | Roadways, Daytime | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| B - 33 storey - North | Roadways, Daytime | 63 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| B - 33 storey - East | Roadways, Daytime | 76 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| B - 33 storey - South | Roadways, Daytime | 79 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| B - 33 storey - West | Roadways, Daytime | 76 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| B - 35 storey 2 - North | Roadways, Daytime | 63 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| B - 35 storey 2 - East | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| B - 35 storey 2 - South | Roadways, Daytime | 79 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| B - 35 storey 2 - West | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| C - 6 storey - North | Roadways, Daytime | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 6 storey - East | Roadways, Daytime | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 6 storey - South | Roadways, Daytime | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 6 storey - West | Roadways, Daytime | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 23 storey - North | Roadways, Daytime | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| C - 23 storey - East | Roadways, Daytime | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| C - 23 storey - South | Roadways, Daytime | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 23 storey - West | Roadways, Daytime | 72 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| C - 21 storey - North | Roadways, Daytime | 66 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| C - 21 storey - East | Roadways, Daytime | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| C - 21 storey - South | Roadways, Daytime | 71 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| C - 21 storey - West | Roadways, Daytime | 71 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| D - 3 storey - North | Roadways, Daytime | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 3 storey - East | Roadways, Daytime | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| D - 3 storey - South | Roadways, Daytime | 66 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| D - 3 storey - West | Roadways, Daytime | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 34 storey - North | Roadways, Daytime | 63 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 34 storey - East | Roadways, Daytime | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| D - 34 storey - South | Roadways, Daytime | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| D - 34 storey - West | Roadways, Daytime | 68 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| D - 35 storey - North | Roadways, Daytime | 63 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 35 storey - East | Roadways, Daytime | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| D - 35 storey - South | Roadways, Daytime | 70 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| D - 35 storey - West | Roadways, Daytime | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| E - 6 storey - North | Roadways, Daytime | 62 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 6 storey - East | Roadways, Daytime | 78 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 6 storey - South | Roadways, Daytime | 81 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| E - 6 storey - West | Roadways, Daytime | 78 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 33 storey - North | Roadways, Daytime | 72 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 33 storey - East | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 33 storey - South | Roadways, Daytime | 80 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 38 |
| E - 33 storey - West | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 1 - North | Roadways, Daytime | 62 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 35 storey 1 - East | Roadways, Daytime | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| E - 35 storey 1 - South | Roadways, Daytime | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 1 - West | Roadways, Daytime | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 2 - North | Roadways, Daytime | 61 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| E - 35 storey 2 - East | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 2 - South | Roadways, Daytime | 80 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 38 |
| E - 35 storey 2 - West | Roadways, Daytime | 76 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| E - 35 storey 3 - North | Roadways, Daytime | 59 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 3 - East | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 3 - South | Roadways, Daytime | 80 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 38 |
| E - 35 storey 3 - West | Roadways, Daytime | 78 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 35 storey 4 - North | Roadways, Daytime | 70 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 4 - East | Roadways, Daytime | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - South | Roadways, Daytime | 79 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **37** |
| E - 35 storey 4 - West | Roadways, Daytime | 76 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **34** |

## NIGHT-TIME

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A - 6 storey - North | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A - 6 storey - East | Roadways, Night-time | 63 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| A - 6 storey - South | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A - 6 storey - West | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A1 - 17 storey - North | Roadways, Night-time | 61 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| A1 - 17 storey - East | Roadways, Night-time | 61 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| A1 - 17 storey - South | Roadways, Night-time | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| A1 - 17 storey - West | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A2 - 19 storey - North | Roadways, Night-time | 61 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| A2 - 19 storey - East | Roadways, Night-time | 60 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A2 - 19 storey - South | Roadways, Night-time | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| A2 - 19 storey - West | Roadways, Night-time | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| B - 6 storey - North | Roadways, Night-time | 62 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 6 storey - East | Roadways, Night-time | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| B - 6 storey - South | Roadways, Night-time | 78 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| B - 6 storey - West | Roadways, Night-time | 75 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| B - 35 storey 1 - North | Roadways, Night-time | 61 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| B - 35 storey 1 - East | Roadways, Night-time | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| B - 35 storey 1 - South | Roadways, Night-time | 68 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| B - 35 storey 1 - West | Roadways, Night-time | 62 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 33 storey - North | Roadways, Night-time | 60 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| B - 33 storey - East | Roadways, Night-time | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| B - 33 storey - South | Roadways, Night-time | 76 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| B - 33 storey - West | Roadways, Night-time | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| B - 35 storey 2 - North | Roadways, Night-time | 60 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| B - 35 storey 2 - East | Roadways, Night-time | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 35 storey 2 - South | Roadways, Night-time | 76 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| B - 35 storey 2 - West | Roadways, Night-time | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| C - 6 storey - North | Roadways, Night-time | 70 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - East | Roadways, Night-time | 70 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - South | Roadways, Night-time | 70 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - West | Roadways, Night-time | 70 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 23 storey - North | Roadways, Night-time | 63 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| C - 23 storey - East | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| C - 23 storey - South | Roadways, Night-time | 70 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 23 storey - West | Roadways, Night-time | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| C - 21 storey - North | Roadways, Night-time | 61 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| C - 21 storey - East | Roadways, Night-time | 60 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| C - 21 storey - South | Roadways, Night-time | 68 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| C - 21 storey - West | Roadways, Night-time | 68 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| D - 3 storey - North | Roadways, Night-time | 60 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| D - 3 storey - East | Roadways, Night-time | 62 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| D - 3 storey - South | Roadways, Night-time | 63 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 3 storey - West | Roadways, Night-time | 61 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| D - 34 storey - North | Roadways, Night-time | 59 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| D - 34 storey - East | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 34 storey - South | Roadways, Night-time | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| D - 34 storey - West | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 35 storey - North | Roadways, Night-time | 59 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| D - 35 storey - East | Roadways, Night-time | 65 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| D - 35 storey - South | Roadways, Night-time | 67 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| D - 35 storey - West | Roadways, Night-time | 64 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| E - 6 storey - North | Roadways, Night-time | 59 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 6 storey - East | Roadways, Night-time | 75 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| E - 6 storey - South | Roadways, Night-time | 78 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 6 storey - West | Roadways, Night-time | 75 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| E - 33 storey - North | Roadways, Night-time | 69 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| E - 33 storey - East | Roadways, Night-time | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 33 storey - South | Roadways, Night-time | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 33 storey - West | Roadways, Night-time | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 1 - North | Roadways, Night-time | 58 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 1 - East | Roadways, Night-time | 66 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| E - 35 storey 1 - South | Roadways, Night-time | 71 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 1 - West | Roadways, Night-time | 71 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 2 - North | Roadways, Night-time | 58 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 2 - East | Roadways, Night-time | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 2 - South | Roadways, Night-time | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 2 - West | Roadways, Night-time | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| E - 35 storey 3 - North | Roadways, Night-time | 55 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 13 |
| E - 35 storey 3 - East | Roadways, Night-time | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 3 - South | Roadways, Night-time | 77 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 3 - West | Roadways, Night-time | 75 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| E - 35 storey 4 - North | Roadways, Night-time | 66 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| E - 35 storey 4 - East | Roadways, Night-time | 74 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 4 - South | Roadways, Night-time | 76 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| E - 35 storey 4 - West | Roadways, Night-time | 73 | 45 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |

# BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

**Roadway**

**1105 Kingston Road, Ajax, Ontario**

| Receptor ID | Source Description | Sound Levels | | Room / Façade Inputs | | | | | Source Inputs | | | Veneer - Component 1 | | Glazing - Component 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Façade Sound Level: (dBA) | Required Indoor Sound Level: (dBA) | Glazing as % of Wall Area | Exposed Wall Height (m) | Exposed Wall Length (m) | Room Depth (m) | Room Absorption: | Incident Sound Angle: (deg) | Angle Correction Factor: | Spectrum type: | Assumed Veneer STC (STC) | Component Category: | Component Category: | Require Glazing STC (STC) |
| **DAYTIME** | | | | | | | | | | | | | | | |
| A - 6 storey - North | Roadways, Daytime | 71 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| A - 6 storey - East | Roadways, Daytime | 68 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| A - 6 storey - South | Roadways, Daytime | 67 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A - 6 storey - West | Roadways, Daytime | 69 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A1 - 17 storey - North | Roadways, Daytime | 67 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A1 - 17 storey - East | Roadways, Daytime | 66 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A1 - 17 storey - South | Roadways, Daytime | 68 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| A1 - 17 storey - West | Roadways, Daytime | 67 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A2 - 19 storey - North | Roadways, Daytime | 66 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A2 - 19 storey - East | Roadways, Daytime | 64 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A2 - 19 storey - South | Roadways, Daytime | 69 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A2 - 19 storey - West | Roadways, Daytime | 68 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| B - 6 storey - North | Roadways, Daytime | 66 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| B - 6 storey - East | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| B - 6 storey - South | Roadways, Daytime | 81 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 40 |
| B - 6 storey - West | Roadways, Daytime | 78 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| B - 35 storey 1 - North | Roadways, Daytime | 65 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| B - 35 storey 1 - East | Roadways, Daytime | 72 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| B - 35 storey 1 - South | Roadways, Daytime | 71 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| B - 35 storey 1 - West | Roadways, Daytime | 65 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| B - 33 storey - North | Roadways, Daytime | 63 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| B - 33 storey - East | Roadways, Daytime | 76 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| B - 33 storey - South | Roadways, Daytime | 79 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| B - 33 storey - West | Roadways, Daytime | 76 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| B - 35 storey 2 - North | Roadways, Daytime | 63 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| B - 35 storey 2 - East | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| B - 35 storey 2 - South | Roadways, Daytime | 79 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| B - 35 storey 2 - West | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| C - 6 storey - North | Roadways, Daytime | 73 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 6 storey - East | Roadways, Daytime | 73 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 6 storey - South | Roadways, Daytime | 73 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 6 storey - West | Roadways, Daytime | 73 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 23 storey - North | Roadways, Daytime | 67 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| C - 23 storey - East | Roadways, Daytime | 67 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| C - 23 storey - South | Roadways, Daytime | 73 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 23 storey - West | Roadways, Daytime | 72 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| C - 21 storey - North | Roadways, Daytime | 66 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| C - 21 storey - East | Roadways, Daytime | 64 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| C - 21 storey - South | Roadways, Daytime | 71 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| C - 21 storey - West | Roadways, Daytime | 71 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| D - 3 storey - North | Roadways, Daytime | 64 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 3 storey - East | Roadways, Daytime | 65 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| D - 3 storey - South | Roadways, Daytime | 66 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| D - 3 storey - West | Roadways, Daytime | 64 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 34 storey - North | Roadways, Daytime | 63 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 34 storey - East | Roadways, Daytime | 67 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| D - 34 storey - South | Roadways, Daytime | 69 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| D - 34 storey - West | Roadways, Daytime | 68 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| D - 35 storey - North | Roadways, Daytime | 63 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 35 storey - East | Roadways, Daytime | 69 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| D - 35 storey - South | Roadways, Daytime | 70 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| D - 35 storey - West | Roadways, Daytime | 67 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| E - 6 storey - North | Roadways, Daytime | 62 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 6 storey - East | Roadways, Daytime | 78 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 6 storey - South | Roadways, Daytime | 81 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 40 |
| E - 6 storey - West | Roadways, Daytime | 78 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 33 storey - North | Roadways, Daytime | 72 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 33 storey - East | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 33 storey - South | Roadways, Daytime | 80 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| E - 33 storey - West | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 1 - North | Roadways, Daytime | 62 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 35 storey 1 - East | Roadways, Daytime | 69 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| E - 35 storey 1 - South | Roadways, Daytime | 74 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 1 - West | Roadways, Daytime | 74 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 2 - North | Roadways, Daytime | 61 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| E - 35 storey 2 - East | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 2 - South | Roadways, Daytime | 80 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| E - 35 storey 2 - West | Roadways, Daytime | 76 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| E - 35 storey 3 - North | Roadways, Daytime | 59 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 3 - East | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |
| E - 35 storey 3 - South | Roadways, Daytime | 80 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| E - 35 storey 3 - West | Roadways, Daytime | 78 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 35 storey 4 - North | Roadways, Daytime | 70 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 4 - East | Roadways, Daytime | 77 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 35 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - South | Roadways, Daytime | 79 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| E - 35 storey 4 - West | Roadways, Daytime | 76 | 45 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |

**NIGHT-TIME**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A - 6 storey - North | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A - 6 storey - East | Roadways, Night-time | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| A - 6 storey - South | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A - 6 storey - West | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A1 - 17 storey - North | Roadways, Night-time | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A1 - 17 storey - East | Roadways, Night-time | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A1 - 17 storey - South | Roadways, Night-time | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| A1 - 17 storey - West | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| A2 - 19 storey - North | Roadways, Night-time | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A2 - 19 storey - East | Roadways, Night-time | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| A2 - 19 storey - South | Roadways, Night-time | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| A2 - 19 storey - West | Roadways, Night-time | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| B - 6 storey - North | Roadways, Night-time | 62 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| B - 6 storey - East | Roadways, Night-time | 73 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| B - 6 storey - South | Roadways, Night-time | 78 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 42 |
| B - 6 storey - West | Roadways, Night-time | 75 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| B - 35 storey 1 - North | Roadways, Night-time | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| B - 35 storey 1 - East | Roadways, Night-time | 69 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 35 storey 1 - South | Roadways, Night-time | 68 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| B - 35 storey 1 - West | Roadways, Night-time | 62 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| B - 33 storey - North | Roadways, Night-time | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| B - 33 storey - East | Roadways, Night-time | 73 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| B - 33 storey - South | Roadways, Night-time | 76 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 40 |
| B - 33 storey - West | Roadways, Night-time | 73 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| B - 35 storey 2 - North | Roadways, Night-time | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| B - 35 storey 2 - East | Roadways, Night-time | 74 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| B - 35 storey 2 - South | Roadways, Night-time | 76 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 40 |
| B - 35 storey 2 - West | Roadways, Night-time | 74 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| C - 6 storey - North | Roadways, Night-time | 70 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| C - 6 storey - East | Roadways, Night-time | 70 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| C - 6 storey - South | Roadways, Night-time | 70 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| C - 6 storey - West | Roadways, Night-time | 70 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| C - 23 storey - North | Roadways, Night-time | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| C - 23 storey - East | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| C - 23 storey - South | Roadways, Night-time | 70 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| C - 23 storey - West | Roadways, Night-time | 69 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| C - 21 storey - North | Roadways, Night-time | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| C - 21 storey - East | Roadways, Night-time | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| C - 21 storey - South | Roadways, Night-time | 68 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| C - 21 storey - West | Roadways, Night-time | 68 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 31 |
| D - 3 storey - North | Roadways, Night-time | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| D - 3 storey - East | Roadways, Night-time | 62 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| D - 3 storey - South | Roadways, Night-time | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| D - 3 storey - West | Roadways, Night-time | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| D - 34 storey - North | Roadways, Night-time | 59 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 34 storey - East | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| D - 34 storey - South | Roadways, Night-time | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| D - 34 storey - West | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| D - 35 storey - North | Roadways, Night-time | 59 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 35 storey - East | Roadways, Night-time | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| D - 35 storey - South | Roadways, Night-time | 67 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| D - 35 storey - West | Roadways, Night-time | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| E - 6 storey - North | Roadways, Night-time | 59 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| E - 6 storey - East | Roadways, Night-time | 75 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| E - 6 storey - South | Roadways, Night-time | 78 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 42 |
| E - 6 storey - West | Roadways, Night-time | 75 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| E - 33 storey - North | Roadways, Night-time | 69 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 33 storey - East | Roadways, Night-time | 74 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| E - 33 storey - South | Roadways, Night-time | 77 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 41 |
| E - 33 storey - West | Roadways, Night-time | 74 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| E - 35 storey 1 - North | Roadways, Night-time | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 35 storey 1 - East | Roadways, Night-time | 66 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 1 - South | Roadways, Night-time | 71 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| E - 35 storey 1 - West | Roadways, Night-time | 71 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 34 |
| E - 35 storey 2 - North | Roadways, Night-time | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 35 storey 2 - East | Roadways, Night-time | 74 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| E - 35 storey 2 - South | Roadways, Night-time | 77 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 41 |
| E - 35 storey 2 - West | Roadways, Night-time | 73 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |
| E - 35 storey 3 - North | Roadways, Night-time | 55 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 35 storey 3 - East | Roadways, Night-time | 74 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| E - 35 storey 3 - South | Roadways, Night-time | 77 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 41 |
| E - 35 storey 3 - West | Roadways, Night-time | 75 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 39 |
| E - 35 storey 4 - North | Roadways, Night-time | 66 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 4 - East | Roadways, Night-time | 74 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 37 |
| E - 35 storey 4 - South | Roadways, Night-time | 76 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 40 |
| E - 35 storey 4 - West | Roadways, Night-time | 73 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | D. mixed road traffic, distant aircraft | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 36 |

# BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

**1105 Kingston Road, Ajax, Ontario**

| Receptor ID | Source Description | Sound Levels | | Room / Façade Inputs | | | | | Source Inputs | | | Veneer - Component 1 | | Glazing - Component 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Façade Sound Level: (dBA) | Required Indoor Sound Level: (dBA) | Glazing as % of Wall Area | Exposed Wall Height (m) | Exposed Wall Length (m) | Room Depth (m) | Room Absorption: | Incident Sound Angle: (deg) | Angle Correction Factor: | Spectrum type: | Assumed Veneer STC (STC) | Component Category: | Component Category: | Require Glazing STC (STC) |
| **DAYTIME** | | | | | | | | | | | | | | | |
| A - 6 storey - North | Locomotives, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| A - 6 storey - East | Locomotives, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A - 6 storey - South | Locomotives, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A - 6 storey - West | Locomotives, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| A1 - 17 storey - North | Locomotives, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A1 - 17 storey - East | Locomotives, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A1 - 17 storey - South | Locomotives, Daytime | 59 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A1 - 17 storey - West | Locomotives, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| A2 - 19 storey - North | Locomotives, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A2 - 19 storey - East | Locomotives, Daytime | 52 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| A2 - 19 storey - South | Locomotives, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A2 - 19 storey - West | Locomotives, Daytime | 59 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| B - 6 storey - North | Locomotives, Daytime | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 15 |
| B - 6 storey - East | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| B - 6 storey - South | Locomotives, Daytime | 67 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 6 storey - West | Locomotives, Daytime | 65 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| B - 35 storey 1 - North | Locomotives, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| B - 35 storey 1 - East | Locomotives, Daytime | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| B - 35 storey 1 - South | Locomotives, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| B - 35 storey 1 - West | Locomotives, Daytime | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 33 storey - North | Locomotives, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 33 storey - East | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| B - 33 storey - South | Locomotives, Daytime | 67 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 33 storey - West | Locomotives, Daytime | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| B - 35 storey 2 - North | Locomotives, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 35 storey 2 - East | Locomotives, Daytime | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| B - 35 storey 2 - South | Locomotives, Daytime | 67 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 35 storey 2 - West | Locomotives, Daytime | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| C - 6 storey - North | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - East | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - South | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - West | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 23 storey - North | Locomotives, Daytime | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| C - 23 storey - East | Locomotives, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| C - 23 storey - South | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 23 storey - West | Locomotives, Daytime | 62 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| C - 21 storey - North | Locomotives, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| C - 21 storey - East | Locomotives, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 21 storey - South | Locomotives, Daytime | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| C - 21 storey - West | Locomotives, Daytime | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| D - 3 storey - North | Locomotives, Daytime | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| D - 3 storey - East | Locomotives, Daytime | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| D - 3 storey - South | Locomotives, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 3 storey - West | Locomotives, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 34 storey - North | Locomotives, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| D - 34 storey - East | Locomotives, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 34 storey - South | Locomotives, Daytime | 59 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| D - 34 storey - West | Locomotives, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 35 storey - North | Locomotives, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| D - 35 storey - East | Locomotives, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| D - 35 storey - South | Locomotives, Daytime | 59 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| D - 35 storey - West | Locomotives, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 6 storey - North | Locomotives, Daytime | 52 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 6 storey - East | Locomotives, Daytime | 65 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 6 storey - South | Locomotives, Daytime | 68 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| E - 6 storey - West | Locomotives, Daytime | 65 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 33 storey - North | Locomotives, Daytime | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| E - 33 storey - East | Locomotives, Daytime | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 33 storey - South | Locomotives, Daytime | 68 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| E - 33 storey - West | Locomotives, Daytime | 65 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 35 storey 1 - North | Locomotives, Daytime | 52 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 1 - East | Locomotives, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| E - 35 storey 1 - South | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 1 - West | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 2 - North | Locomotives, Daytime | 52 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 2 - East | Locomotives, Daytime | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 2 - South | Locomotives, Daytime | 67 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 2 - West | Locomotives, Daytime | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 3 - North | Locomotives, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 3 - East | Locomotives, Daytime | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 3 - South | Locomotives, Daytime | 67 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 3 - West | Locomotives, Daytime | 65 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 35 storey 4 - North | Locomotives, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| E - 35 storey 4 - East | Locomotives, Daytime | 65 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - South | Locomotives, Daytime | 67 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **32** |
| E - 35 storey 4 - West | Locomotives, Daytime | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |

**NIGHT-TIME**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A - 6 storey - North | Locomotives, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| A - 6 storey - East | Locomotives, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A - 6 storey - South | Locomotives, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| A - 6 storey - West | Locomotives, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| A1 - 17 storey - North | Locomotives, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A1 - 17 storey - East | Locomotives, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A1 - 17 storey - South | Locomotives, Night-time | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| A1 - 17 storey - West | Locomotives, Night-time | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| A2 - 19 storey - North | Locomotives, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A2 - 19 storey - East | Locomotives, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| A2 - 19 storey - South | Locomotives, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| A2 - 19 storey - West | Locomotives, Night-time | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| B - 6 storey - North | Locomotives, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| B - 6 storey - East | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| B - 6 storey - South | Locomotives, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| B - 6 storey - West | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| B - 35 storey 1 - North | Locomotives, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| B - 35 storey 1 - East | Locomotives, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| B - 35 storey 1 - South | Locomotives, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| B - 35 storey 1 - West | Locomotives, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| B - 33 storey - North | Locomotives, Night-time | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **12** |
| B - 33 storey - East | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| B - 33 storey - South | Locomotives, Night-time | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |
| B - 33 storey - West | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| B - 35 storey 2 - North | Locomotives, Night-time | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **12** |
| B - 35 storey 2 - East | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| B - 35 storey 2 - South | Locomotives, Night-time | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |
| B - 35 storey 2 - West | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| C - 6 storey - North | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 6 storey - East | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 6 storey - South | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 6 storey - West | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 23 storey - North | Locomotives, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| C - 23 storey - East | Locomotives, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| C - 23 storey - South | Locomotives, Night-time | 59 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| C - 23 storey - West | Locomotives, Night-time | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| C - 21 storey - North | Locomotives, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| C - 21 storey - East | Locomotives, Night-time | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **12** |
| C - 21 storey - South | Locomotives, Night-time | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| C - 21 storey - West | Locomotives, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| D - 3 storey - North | Locomotives, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| D - 3 storey - East | Locomotives, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| D - 3 storey - South | Locomotives, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| D - 3 storey - West | Locomotives, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| D - 34 storey - North | Locomotives, Night-time | 45 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **10** |
| D - 34 storey - East | Locomotives, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| D - 34 storey - South | Locomotives, Night-time | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| D - 34 storey - West | Locomotives, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| D - 35 storey - North | Locomotives, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| D - 35 storey - East | Locomotives, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| D - 35 storey - South | Locomotives, Night-time | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| D - 35 storey - West | Locomotives, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| E - 6 storey - North | Locomotives, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| E - 6 storey - East | Locomotives, Night-time | 62 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| E - 6 storey - South | Locomotives, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 6 storey - West | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 33 storey - North | Locomotives, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| E - 33 storey - East | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 33 storey - South | Locomotives, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 33 storey - West | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 35 storey 1 - North | Locomotives, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| E - 35 storey 1 - East | Locomotives, Night-time | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 1 - South | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 1 - West | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 2 - North | Locomotives, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| E - 35 storey 2 - East | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 35 storey 2 - South | Locomotives, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 35 storey 2 - West | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 3 - North | Locomotives, Night-time | 48 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| E - 35 storey 3 - East | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 3 - South | Locomotives, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 35 storey 3 - West | Locomotives, Night-time | 62 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| E - 35 storey 4 - North | Locomotives, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| E - 35 storey 4 - East | Locomotives, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 35 storey 4 - South | Locomotives, Night-time | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - West | Locomotives, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |

# BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

**1105 Kingston Road, Ajax, Ontario**

| Receptor ID | Source Description | Sound Levels | | Room / Façade Inputs | | | | | Source Inputs | | | Veneer - Component 1 | | Glazing - Component 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Façade Sound Level: (dBA) | Required Indoor Sound Level: (dBA) | Glazing as % of Wall Area | Exposed Wall Height (m) | Exposed Wall Length (m) | Room Depth (m) | Room Absorption: | Incident Sound Angle: (deg) | Angle Correction Factor: | Spectrum type: | Assumed Veneer STC (STC) | Component Category: | Component Category: | Require Glazing STC (STC) |
| **DAYTIME** | | | | | | | | | | | | | | | |
| A - 6 storey - North | Locomotives, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| A - 6 storey - East | Locomotives, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A - 6 storey - South | Locomotives, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| A - 6 storey - West | Locomotives, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| A1 - 17 storey - North | Locomotives, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A1 - 17 storey - East | Locomotives, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A1 - 17 storey - South | Locomotives, Daytime | 59 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| A1 - 17 storey - West | Locomotives, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| A2 - 19 storey - North | Locomotives, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| A2 - 19 storey - East | Locomotives, Daytime | 52 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| A2 - 19 storey - South | Locomotives, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| A2 - 19 storey - West | Locomotives, Daytime | 59 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| B - 6 storey - North | Locomotives, Daytime | 50 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 15 |
| B - 6 storey - East | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| B - 6 storey - South | Locomotives, Daytime | 67 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 6 storey - West | Locomotives, Daytime | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| B - 35 storey 1 - North | Locomotives, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| B - 35 storey 1 - East | Locomotives, Daytime | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| B - 35 storey 1 - South | Locomotives, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 25 |
| B - 35 storey 1 - West | Locomotives, Daytime | 55 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 33 storey - North | Locomotives, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 33 storey - East | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| B - 33 storey - South | Locomotives, Daytime | 67 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 33 storey - West | Locomotives, Daytime | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| B - 35 storey 2 - North | Locomotives, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 35 storey 2 - East | Locomotives, Daytime | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| B - 35 storey 2 - South | Locomotives, Daytime | 67 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| B - 35 storey 2 - West | Locomotives, Daytime | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| C - 6 storey - North | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - East | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - South | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 6 storey - West | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 23 storey - North | Locomotives, Daytime | 54 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| C - 23 storey - East | Locomotives, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| C - 23 storey - South | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| C - 23 storey - West | Locomotives, Daytime | 62 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 27 |
| C - 21 storey - North | Locomotives, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| C - 21 storey - East | Locomotives, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 21 storey - South | Locomotives, Daytime | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| C - 21 storey - West | Locomotives, Daytime | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| D - 3 storey - North | Locomotives, Daytime | 54 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 19 |
| D - 3 storey - East | Locomotives, Daytime | 55 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| D - 3 storey - South | Locomotives, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 3 storey - West | Locomotives, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 34 storey - North | Locomotives, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| D - 34 storey - East | Locomotives, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| D - 34 storey - South | Locomotives, Daytime | 59 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| D - 34 storey - West | Locomotives, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| D - 35 storey - North | Locomotives, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| D - 35 storey - East | Locomotives, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| D - 35 storey - South | Locomotives, Daytime | 59 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 24 |
| D - 35 storey - West | Locomotives, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 6 storey - North | Locomotives, Daytime | 52 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 6 storey - East | Locomotives, Daytime | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 6 storey - South | Locomotives, Daytime | 68 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| E - 6 storey - West | Locomotives, Daytime | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 33 storey - North | Locomotives, Daytime | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 26 |
| E - 33 storey - East | Locomotives, Daytime | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 33 storey - South | Locomotives, Daytime | 68 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 33 |
| E - 33 storey - West | Locomotives, Daytime | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 35 storey 1 - North | Locomotives, Daytime | 52 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 1 - East | Locomotives, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 23 |
| E - 35 storey 1 - South | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 1 - West | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 2 - North | Locomotives, Daytime | 52 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 2 - East | Locomotives, Daytime | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 2 - South | Locomotives, Daytime | 67 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 2 - West | Locomotives, Daytime | 63 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 28 |
| E - 35 storey 3 - North | Locomotives, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 3 - East | Locomotives, Daytime | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 29 |
| E - 35 storey 3 - South | Locomotives, Daytime | 67 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 32 |
| E - 35 storey 3 - West | Locomotives, Daytime | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |
| E - 35 storey 4 - North | Locomotives, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 22 |
| E - 35 storey 4 - East | Locomotives, Daytime | 65 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 30 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - South | Locomotives, Daytime | 67 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **32** |
| E - 35 storey 4 - West | Locomotives, Daytime | 64 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Locomotives, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |

**NIGHT-TIME**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A - 6 storey - North | Locomotives, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| A - 6 storey - East | Locomotives, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| A - 6 storey - South | Locomotives, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| A - 6 storey - West | Locomotives, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| A1 - 17 storey - North | Locomotives, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| A1 - 17 storey - East | Locomotives, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| A1 - 17 storey - South | Locomotives, Night-time | 56 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| A1 - 17 storey - West | Locomotives, Night-time | 55 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| A2 - 19 storey - North | Locomotives, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| A2 - 19 storey - East | Locomotives, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| A2 - 19 storey - South | Locomotives, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| A2 - 19 storey - West | Locomotives, Night-time | 56 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| B - 6 storey - North | Locomotives, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| B - 6 storey - East | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| B - 6 storey - South | Locomotives, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **34** |
| B - 6 storey - West | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| B - 35 storey 1 - North | Locomotives, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| B - 35 storey 1 - East | Locomotives, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| B - 35 storey 1 - South | Locomotives, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| B - 35 storey 1 - West | Locomotives, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| B - 33 storey - North | Locomotives, Night-time | 47 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| B - 33 storey - East | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| B - 33 storey - South | Locomotives, Night-time | 63 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **33** |
| B - 33 storey - West | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| B - 35 storey 2 - North | Locomotives, Night-time | 47 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| B - 35 storey 2 - East | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| B - 35 storey 2 - South | Locomotives, Night-time | 63 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **33** |
| B - 35 storey 2 - West | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| C - 6 storey - North | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| C - 6 storey - East | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| C - 6 storey - South | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| C - 6 storey - West | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| C - 23 storey - North | Locomotives, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| C - 23 storey - East | Locomotives, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| C - 23 storey - South | Locomotives, Night-time | 59 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| C - 23 storey - West | Locomotives, Night-time | 58 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |
| C - 21 storey - North | Locomotives, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| C - 21 storey - East | Locomotives, Night-time | 47 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| C - 21 storey - South | Locomotives, Night-time | 58 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |
| C - 21 storey - West | Locomotives, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| D - 3 storey - North | Locomotives, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| D - 3 storey - East | Locomotives, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| D - 3 storey - South | Locomotives, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| D - 3 storey - West | Locomotives, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| D - 34 storey - North | Locomotives, Night-time | 45 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| D - 34 storey - East | Locomotives, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| D - 34 storey - South | Locomotives, Night-time | 55 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| D - 34 storey - West | Locomotives, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| D - 35 storey - North | Locomotives, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| D - 35 storey - East | Locomotives, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| D - 35 storey - South | Locomotives, Night-time | 56 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| D - 35 storey - West | Locomotives, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| E - 6 storey - North | Locomotives, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| E - 6 storey - East | Locomotives, Night-time | 62 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **32** |
| E - 6 storey - South | Locomotives, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **34** |
| E - 6 storey - West | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| E - 33 storey - North | Locomotives, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| E - 33 storey - East | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| E - 33 storey - South | Locomotives, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **34** |
| E - 33 storey - West | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| E - 35 storey 1 - North | Locomotives, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| E - 35 storey 1 - East | Locomotives, Night-time | 55 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 1 - South | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| E - 35 storey 1 - West | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| E - 35 storey 2 - North | Locomotives, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| E - 35 storey 2 - East | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| E - 35 storey 2 - South | Locomotives, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **34** |
| E - 35 storey 2 - West | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| E - 35 storey 3 - North | Locomotives, Night-time | 48 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| E - 35 storey 3 - East | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| E - 35 storey 3 - South | Locomotives, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **34** |
| E - 35 storey 3 - West | Locomotives, Night-time | 62 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **32** |
| E - 35 storey 4 - North | Locomotives, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| E - 35 storey 4 - East | Locomotives, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **31** |
| E - 35 storey 4 - South | Locomotives, Night-time | 63 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **33** |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - West | Locomotives, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |
| 0 | Locomotives, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | F. diesel railway locomotive | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-30** |

# BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

**1105 Kingston Road, Ajax, Ontario**

## DAYTIME

| Receptor ID | Source Description | Sound Levels | | Room / Façade Inputs | | | | | Source Inputs | | | Veneer - Component 1 | | Glazing - Component 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Façade Sound Level: (dBA) | Required Indoor Sound Level: (dBA) | Glazing as % of Wall Area | Exposed Wall Height (m) | Exposed Wall Length (m) | Room Depth (m) | Room Absorption: | Incident Sound Angle: (deg) | Angle Correction Factor: | Spectrum type: | Assumed Veneer STC (STC) | Component Category: | Component Category: | Require Glazing STC (STC) |
| A - 6 storey - North | Rail Cars, Daytime | 42 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 2 |
| A - 6 storey - East | Rail Cars, Daytime | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 6 |
| A - 6 storey - South | Rail Cars, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| A - 6 storey - West | Rail Cars, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| A1 - 17 storey - North | Rail Cars, Daytime | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 6 |
| A1 - 17 storey - East | Rail Cars, Daytime | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 6 |
| A1 - 17 storey - South | Rail Cars, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 13 |
| A1 - 17 storey - West | Rail Cars, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| A2 - 19 storey - North | Rail Cars, Daytime | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| A2 - 19 storey - East | Rail Cars, Daytime | 45 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| A2 - 19 storey - South | Rail Cars, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 13 |
| A2 - 19 storey - West | Rail Cars, Daytime | 52 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 12 |
| B - 6 storey - North | Rail Cars, Daytime | 43 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 3 |
| B - 6 storey - East | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 6 storey - South | Rail Cars, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 6 storey - West | Rail Cars, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| B - 35 storey 1 - North | Rail Cars, Daytime | 43 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 3 |
| B - 35 storey 1 - East | Rail Cars, Daytime | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| B - 35 storey 1 - South | Rail Cars, Daytime | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 13 |
| B - 35 storey 1 - West | Rail Cars, Daytime | 48 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 8 |
| B - 33 storey - North | Rail Cars, Daytime | 44 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| B - 33 storey - East | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 33 storey - South | Rail Cars, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 33 storey - West | Rail Cars, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| B - 35 storey 2 - North | Rail Cars, Daytime | 44 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| B - 35 storey 2 - East | Rail Cars, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| B - 35 storey 2 - South | Rail Cars, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 35 storey 2 - West | Rail Cars, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| C - 6 storey - North | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 6 storey - East | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 6 storey - South | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 6 storey - West | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 23 storey - North | Rail Cars, Daytime | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| C - 23 storey - East | Rail Cars, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| C - 23 storey - South | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 23 storey - West | Rail Cars, Daytime | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 15 |
| C - 21 storey - North | Rail Cars, Daytime | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| C - 21 storey - East | Rail Cars, Daytime | 44 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| C - 21 storey - South | Rail Cars, Daytime | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| C - 21 storey - West | Rail Cars, Daytime | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| D - 3 storey - North | Rail Cars, Daytime | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| D - 3 storey - East | Rail Cars, Daytime | 48 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 8 |
| D - 3 storey - South | Rail Cars, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| D - 3 storey - West | Rail Cars, Daytime | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| D - 34 storey - North | Rail Cars, Daytime | 42 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 2 |
| D - 34 storey - East | Rail Cars, Daytime | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| D - 34 storey - South | Rail Cars, Daytime | 52 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 12 |
| D - 34 storey - West | Rail Cars, Daytime | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| D - 35 storey - North | Rail Cars, Daytime | 43 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 3 |
| D - 35 storey - East | Rail Cars, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| D - 35 storey - South | Rail Cars, Daytime | 52 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 12 |
| D - 35 storey - West | Rail Cars, Daytime | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| E - 6 storey - North | Rail Cars, Daytime | 45 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| E - 6 storey - East | Rail Cars, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 6 storey - South | Rail Cars, Daytime | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 6 storey - West | Rail Cars, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 33 storey - North | Rail Cars, Daytime | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| E - 33 storey - East | Rail Cars, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 33 storey - South | Rail Cars, Daytime | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 33 storey - West | Rail Cars, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 35 storey 1 - North | Rail Cars, Daytime | 45 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| E - 35 storey 1 - East | Rail Cars, Daytime | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| E - 35 storey 1 - South | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 1 - West | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 2 - North | Rail Cars, Daytime | 45 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| E - 35 storey 2 - East | Rail Cars, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 2 - South | Rail Cars, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 35 storey 2 - West | Rail Cars, Daytime | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 3 - North | Rail Cars, Daytime | 44 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| E - 35 storey 3 - East | Rail Cars, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 3 - South | Rail Cars, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 35 storey 3 - West | Rail Cars, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 35 storey 4 - North | Rail Cars, Daytime | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| E - 35 storey 4 - East | Rail Cars, Daytime | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - South | Rail Cars, Daytime | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 4 - West | Rail Cars, Daytime | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |

**NIGHT-TIME**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A - 6 storey - North | Rail Cars, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **6** |
| A - 6 storey - East | Rail Cars, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **10** |
| A - 6 storey - South | Rail Cars, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| A - 6 storey - West | Rail Cars, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| A1 - 17 storey - North | Rail Cars, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **10** |
| A1 - 17 storey - East | Rail Cars, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **10** |
| A1 - 17 storey - South | Rail Cars, Night-time | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| A1 - 17 storey - West | Rail Cars, Night-time | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A2 - 19 storey - North | Rail Cars, Night-time | 50 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **10** |
| A2 - 19 storey - East | Rail Cars, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **9** |
| A2 - 19 storey - South | Rail Cars, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| A2 - 19 storey - West | Rail Cars, Night-time | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| B - 6 storey - North | Rail Cars, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **6** |
| B - 6 storey - East | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| B - 6 storey - South | Rail Cars, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| B - 6 storey - West | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| B - 35 storey 1 - North | Rail Cars, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **6** |
| B - 35 storey 1 - East | Rail Cars, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| B - 35 storey 1 - South | Rail Cars, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| B - 35 storey 1 - West | Rail Cars, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| B - 33 storey - North | Rail Cars, Night-time | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **7** |
| B - 33 storey - East | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| B - 33 storey - South | Rail Cars, Night-time | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| B - 33 storey - West | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| B - 35 storey 2 - North | Rail Cars, Night-time | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **7** |
| B - 35 storey 2 - East | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| B - 35 storey 2 - South | Rail Cars, Night-time | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| B - 35 storey 2 - West | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| C - 6 storey - North | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| C - 6 storey - East | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| C - 6 storey - South | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| C - 6 storey - West | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| C - 23 storey - North | Rail Cars, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| C - 23 storey - East | Rail Cars, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| C - 23 storey - South | Rail Cars, Night-time | 59 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| C - 23 storey - West | Rail Cars, Night-time | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| C - 21 storey - North | Rail Cars, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| C - 21 storey - East | Rail Cars, Night-time | 47 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **7** |
| C - 21 storey - South | Rail Cars, Night-time | 58 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| C - 21 storey - West | Rail Cars, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| D - 3 storey - North | Rail Cars, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| D - 3 storey - East | Rail Cars, Night-time | 51 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| D - 3 storey - South | Rail Cars, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| D - 3 storey - West | Rail Cars, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| D - 34 storey - North | Rail Cars, Night-time | 45 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **5** |
| D - 34 storey - East | Rail Cars, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| D - 34 storey - South | Rail Cars, Night-time | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| D - 34 storey - West | Rail Cars, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| D - 35 storey - North | Rail Cars, Night-time | 46 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **6** |
| D - 35 storey - East | Rail Cars, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| D - 35 storey - South | Rail Cars, Night-time | 56 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| D - 35 storey - West | Rail Cars, Night-time | 53 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| E - 6 storey - North | Rail Cars, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **9** |
| E - 6 storey - East | Rail Cars, Night-time | 62 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| E - 6 storey - South | Rail Cars, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| E - 6 storey - West | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| E - 33 storey - North | Rail Cars, Night-time | 57 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| E - 33 storey - East | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| E - 33 storey - South | Rail Cars, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| E - 33 storey - West | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| E - 35 storey 1 - North | Rail Cars, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **9** |
| E - 35 storey 1 - East | Rail Cars, Night-time | 55 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| E - 35 storey 1 - South | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 1 - West | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 2 - North | Rail Cars, Night-time | 49 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **9** |
| E - 35 storey 2 - East | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| E - 35 storey 2 - South | Rail Cars, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| E - 35 storey 2 - West | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 3 - North | Rail Cars, Night-time | 48 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **8** |
| E - 35 storey 3 - East | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 3 - South | Rail Cars, Night-time | 64 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| E - 35 storey 3 - West | Rail Cars, Night-time | 62 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| E - 35 storey 4 - North | Rail Cars, Night-time | 54 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| E - 35 storey 4 - East | Rail Cars, Night-time | 61 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| E - 35 storey 4 - South | Rail Cars, Night-time | 63 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - West | Rail Cars, Night-time | 60 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Night-time | 0 | 40 | 70% | 2.9 | 3.0 | 6.0 | Intermediate | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |

# BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

**1105 Kingston Road, Ajax, Ontario**

## DAYTIME

| Receptor ID | Source Description | Sound Levels: Façade Sound Level: (dBA) | Sound Levels: Required Indoor Sound Level: (dBA) | Room / Façade Inputs: Glazing as % of Wall Area | Exposed Wall Height (m) | Exposed Wall Length (m) | Room Depth (m) | Room Absorption: | Source Inputs: Incident Sound Angle: (deg) | Angle Correction Factor: | Spectrum type: | Veneer - Component 1: Assumed Veneer STC (STC) | Component Category: | Glazing - Component 2: Component Category: | Require Glazing STC (STC) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A - 6 storey - North | Rail Cars, Daytime | 42 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 2 |
| A - 6 storey - East | Rail Cars, Daytime | 46 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 6 |
| A - 6 storey - South | Rail Cars, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| A - 6 storey - West | Rail Cars, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| A1 - 17 storey - North | Rail Cars, Daytime | 46 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 6 |
| A1 - 17 storey - East | Rail Cars, Daytime | 46 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 6 |
| A1 - 17 storey - South | Rail Cars, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 13 |
| A1 - 17 storey - West | Rail Cars, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| A2 - 19 storey - North | Rail Cars, Daytime | 47 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| A2 - 19 storey - East | Rail Cars, Daytime | 45 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| A2 - 19 storey - South | Rail Cars, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 13 |
| A2 - 19 storey - West | Rail Cars, Daytime | 52 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 12 |
| B - 6 storey - North | Rail Cars, Daytime | 43 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 3 |
| B - 6 storey - East | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 6 storey - South | Rail Cars, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 6 storey - West | Rail Cars, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| B - 35 storey 1 - North | Rail Cars, Daytime | 43 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 3 |
| B - 35 storey 1 - East | Rail Cars, Daytime | 54 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| B - 35 storey 1 - South | Rail Cars, Daytime | 53 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 13 |
| B - 35 storey 1 - West | Rail Cars, Daytime | 48 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 8 |
| B - 33 storey - North | Rail Cars, Daytime | 44 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| B - 33 storey - East | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| B - 33 storey - South | Rail Cars, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 33 storey - West | Rail Cars, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| B - 35 storey 2 - North | Rail Cars, Daytime | 44 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| B - 35 storey 2 - East | Rail Cars, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| B - 35 storey 2 - South | Rail Cars, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| B - 35 storey 2 - West | Rail Cars, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| C - 6 storey - North | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 6 storey - East | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 6 storey - South | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 6 storey - West | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 23 storey - North | Rail Cars, Daytime | 47 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| C - 23 storey - East | Rail Cars, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| C - 23 storey - South | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| C - 23 storey - West | Rail Cars, Daytime | 55 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 15 |
| C - 21 storey - North | Rail Cars, Daytime | 47 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| C - 21 storey - East | Rail Cars, Daytime | 44 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| C - 21 storey - South | Rail Cars, Daytime | 54 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| C - 21 storey - West | Rail Cars, Daytime | 54 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| D - 3 storey - North | Rail Cars, Daytime | 47 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 7 |
| D - 3 storey - East | Rail Cars, Daytime | 48 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 8 |
| D - 3 storey - South | Rail Cars, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| D - 3 storey - West | Rail Cars, Daytime | 49 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 9 |
| D - 34 storey - North | Rail Cars, Daytime | 42 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 2 |
| D - 34 storey - East | Rail Cars, Daytime | 50 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| D - 34 storey - South | Rail Cars, Daytime | 52 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 12 |
| D - 34 storey - West | Rail Cars, Daytime | 50 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| D - 35 storey - North | Rail Cars, Daytime | 43 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 3 |
| D - 35 storey - East | Rail Cars, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| D - 35 storey - South | Rail Cars, Daytime | 52 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 12 |
| D - 35 storey - West | Rail Cars, Daytime | 50 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| E - 6 storey - North | Rail Cars, Daytime | 45 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| E - 6 storey - East | Rail Cars, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 6 storey - South | Rail Cars, Daytime | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 6 storey - West | Rail Cars, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 33 storey - North | Rail Cars, Daytime | 54 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 14 |
| E - 33 storey - East | Rail Cars, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 33 storey - South | Rail Cars, Daytime | 61 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 21 |
| E - 33 storey - West | Rail Cars, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 35 storey 1 - North | Rail Cars, Daytime | 45 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| E - 35 storey 1 - East | Rail Cars, Daytime | 51 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 11 |
| E - 35 storey 1 - South | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 1 - West | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 2 - North | Rail Cars, Daytime | 45 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 5 |
| E - 35 storey 2 - East | Rail Cars, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 2 - South | Rail Cars, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 35 storey 2 - West | Rail Cars, Daytime | 56 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 16 |
| E - 35 storey 3 - North | Rail Cars, Daytime | 44 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 4 |
| E - 35 storey 3 - East | Rail Cars, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 17 |
| E - 35 storey 3 - South | Rail Cars, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 20 |
| E - 35 storey 3 - West | Rail Cars, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |
| E - 35 storey 4 - North | Rail Cars, Daytime | 50 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 10 |
| E - 35 storey 4 - East | Rail Cars, Daytime | 58 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | 18 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - South | Rail Cars, Daytime | 60 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 4 - West | Rail Cars, Daytime | 57 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **17** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |
| 0 | Rail Cars, Daytime | 0 | 40 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-40** |

**NIGHT-TIME**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A - 6 storey - North | Rail Cars, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| A - 6 storey - East | Rail Cars, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A - 6 storey - South | Rail Cars, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| A - 6 storey - West | Rail Cars, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| A1 - 17 storey - North | Rail Cars, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A1 - 17 storey - East | Rail Cars, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A1 - 17 storey - South | Rail Cars, Night-time | 56 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| A1 - 17 storey - West | Rail Cars, Night-time | 55 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| A2 - 19 storey - North | Rail Cars, Night-time | 50 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **15** |
| A2 - 19 storey - East | Rail Cars, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| A2 - 19 storey - South | Rail Cars, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| A2 - 19 storey - West | Rail Cars, Night-time | 56 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| B - 6 storey - North | Rail Cars, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| B - 6 storey - East | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| B - 6 storey - South | Rail Cars, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| B - 6 storey - West | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| B - 35 storey 1 - North | Rail Cars, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| B - 35 storey 1 - East | Rail Cars, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| B - 35 storey 1 - South | Rail Cars, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| B - 35 storey 1 - West | Rail Cars, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| B - 33 storey - North | Rail Cars, Night-time | 47 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **12** |
| B - 33 storey - East | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| B - 33 storey - South | Rail Cars, Night-time | 63 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |
| B - 33 storey - West | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| B - 35 storey 2 - North | Rail Cars, Night-time | 47 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **12** |
| B - 35 storey 2 - East | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| B - 35 storey 2 - South | Rail Cars, Night-time | 63 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |
| B - 35 storey 2 - West | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| C - 6 storey - North | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 6 storey - East | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 6 storey - South | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 6 storey - West | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| C - 23 storey - North | Rail Cars, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| C - 23 storey - East | Rail Cars, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| C - 23 storey - South | Rail Cars, Night-time | 59 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **24** |
| C - 23 storey - West | Rail Cars, Night-time | 58 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| C - 21 storey - North | Rail Cars, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| C - 21 storey - East | Rail Cars, Night-time | 47 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **12** |
| C - 21 storey - South | Rail Cars, Night-time | 58 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **23** |
| C - 21 storey - West | Rail Cars, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| D - 3 storey - North | Rail Cars, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| D - 3 storey - East | Rail Cars, Night-time | 51 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **16** |
| D - 3 storey - South | Rail Cars, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| D - 3 storey - West | Rail Cars, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| D - 34 storey - North | Rail Cars, Night-time | 45 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **10** |
| D - 34 storey - East | Rail Cars, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| D - 34 storey - South | Rail Cars, Night-time | 55 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| D - 34 storey - West | Rail Cars, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| D - 35 storey - North | Rail Cars, Night-time | 46 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **11** |
| D - 35 storey - East | Rail Cars, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| D - 35 storey - South | Rail Cars, Night-time | 56 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **21** |
| D - 35 storey - West | Rail Cars, Night-time | 53 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **18** |
| E - 6 storey - North | Rail Cars, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| E - 6 storey - East | Rail Cars, Night-time | 62 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| E - 6 storey - South | Rail Cars, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 6 storey - West | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 33 storey - North | Rail Cars, Night-time | 57 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **22** |
| E - 33 storey - East | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 33 storey - South | Rail Cars, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 33 storey - West | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 35 storey 1 - North | Rail Cars, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| E - 35 storey 1 - East | Rail Cars, Night-time | 55 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **20** |
| E - 35 storey 1 - South | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 1 - West | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 2 - North | Rail Cars, Night-time | 49 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **14** |
| E - 35 storey 2 - East | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 35 storey 2 - South | Rail Cars, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 35 storey 2 - West | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 3 - North | Rail Cars, Night-time | 48 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **13** |
| E - 35 storey 3 - East | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| E - 35 storey 3 - South | Rail Cars, Night-time | 64 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **29** |
| E - 35 storey 3 - West | Rail Cars, Night-time | 62 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **27** |
| E - 35 storey 4 - North | Rail Cars, Night-time | 54 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **19** |
| E - 35 storey 4 - East | Rail Cars, Night-time | 61 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **26** |
| E - 35 storey 4 - South | Rail Cars, Night-time | 63 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **28** |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E - 35 storey 4 - West | Rail Cars, Night-time | 60 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **25** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |
| 0 | Rail Cars, Night-time | 0 | 35 | 50% | 2.9 | 3.0 | 3.0 | Very Absorptive | 0 - 90 | 0 | B. avg aircraft, railway wheel noise | 50 | D. sealed thick window, or exterior wall, or roof/ceiling | C. sealed thin window, or openable thick window | **-35** |

# Appendix E Stationary Modelling Inputs

## 1101, 1105, 1163 Kingston Road

Environmental Noise Assessment Pickering, ON

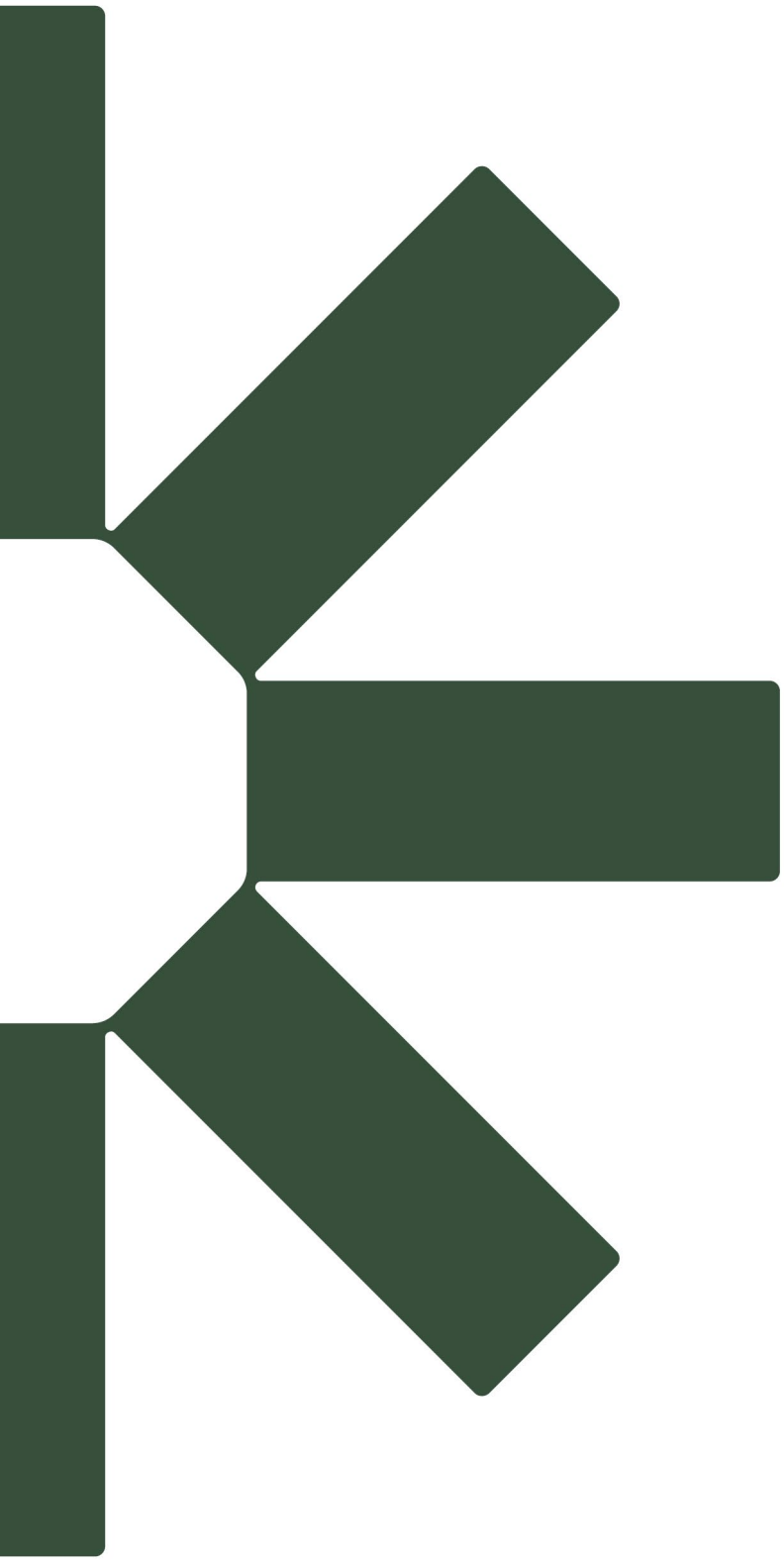
**Tribute (Brookdale) Limited**

SLR Project No.: 241.013026.00001

December 19, 2024

# Table E.1: Summary of Noise Source Sound Power Levels

| Source Description | Maximum Sound Power Levels (1/1 Octave Band Levels) | | | | | | | | | Total PWL (dBA) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 32 (dBA) | 63 (dBA) | 125 (dBA) | 250 (dBA) | 500 (dBA) | 1000 (dBA) | 2000 (dBA) | 4000 (dBA) | 8000 (dBA) | | |
| Mr Lube - Impact Wrench | 86 | 81 | 85 | 79 | 82 | 81 | 89 | 88 | 88 | 94 | - based on SLR historical data<br>- assessed based on 1 minute operations during the day/eve per bay door<br>- +10 tonality penalty for quasi-steady |
| Mr Lube - Compressed Air | 99 | 99 | 94 | 87 | 84 | 84 | 82 | 83 | 79 | 90 | - based on SLR historical data<br>- assessed based on 10 minute operations during the day/eve per bay door<br>- +5 tonality penalty |
| Car Star - Impact Wrench | 87 | 82 | 86 | 80 | 83 | 82 | 90 | 89 | 89 | 95 | - based on SLR historical data<br>- assessed based on 1 minute operations during the day/eve per bay door<br>- +10 tonality penalty for quasi-steady |
| Car Star - Compressed Air | 105 | 105 | 100 | 93 | 90 | 90 | 88 | 89 | 85 | 96 | - based on SLR historical data<br>- assessed based on 10 minute operations during the day/eve per bay door<br>- +5 tonality penalty |
| Paint Spray Booth Exhaust - Car Star | 98 | 101 | 101 | 101 | 97 | 96 | 96 | 92 | 78 | 100 | - based on SLR historical data<br>- assessed based on operations during all periods of the day.<br>- Assumed continuous operation during the daytime and evening |
| General Exhaust - Car Star | 83 | 83 | 93 | 88 | 82 | 77 | 75 | 69 | 66 | 85 | - based on SLR historical data<br>- assessed based on operations during all periods of the day.<br>- Assumed continuous operation during the daytime |



Making Sustainability Happen