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PRELIMINARY ENVIRONMENTAL NOISE AND VIBRATION REPORT

PROPOSED RESIDENTIAL DEVELOPMENT
GREEN GINGER, PHASE 2
DUNDAS STREET EAST AND TRAFALGAR ROAD
TOWN OF OAKVILLE
FILE: 24T-16006/1313.08

JADE ACOUSTICS

PREPARED FOR
Green Ginger Developments Inc.
and
Clear Day Investments Inc.

Revised May 29, 2023
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SUMMARY

The proposed residential development is located north of Dundas Street East, on the west side of Trafalgar Road in the Town of Oakville, Region of Halton. The site is subject to noise from road traffic on Trafalgar Road and Dundas Street East, as well as on the internal collector roads, Street A, Threshing Mill Boulevard and Wheat Boom Drive. The site is not affected by rail traffic, aircraft traffic or industrial noise sources.

The environmental noise guidelines of the Town of Oakville, the Region of Halton and the Ministry of the Environment, Conservation and Parks (MOE) set out sound level limits for both indoor and outdoor space. Sound levels due to the adjacent roads were determined using ORNAMENT, the noise prediction model of the MOE.

Using the road traffic data obtained from the Region of Halton, Town of Oakville Official Plan and GHD Ltd., the sound levels for various locations within the proposed residential development were determined.

It was found that with appropriate noise mitigative measures, all residential blocks/units/buildings in the proposed development will meet the noise guidelines.

All blocks/buildings adjacent to Trafalgar Road require mandatory central air conditioning and a warning clause. This includes all buildings proposed to be constructed within mid-rise Block 77 and high-rise Blocks 78 to 81, inclusive.

Additional blocks/units/buildings require forced air heating systems sized to accommodate central air conditioning at a later date if noise becomes a concern. Table 3 and Figure 2 show the central air conditioning requirements.

A 1.8 m high acoustic fence is required for the townhouse blocks/units flanking Street A and Threshing Mill Boulevard to achieve 55 dBA or less in the rear yards. This includes Block 13 (east unit), Block 43 (south unit) and Block 44 (north unit).

Where minor excesses exist or mitigation is required, future occupants will be advised through the use of warning clauses.

Based on the preliminary analysis, better than standard window, exterior door and exterior wall construction is required for all high-rise buildings proposed to be constructed within Block 78 to Block 81, inclusive. These blocks are located along Trafalgar Road.

Standard window, exterior door and exterior wall construction is acoustically satisfactory for all other blocks/units/buildings.

Prior to issuance of building permits, the acoustical requirements should be reviewed to ensure compliance with the applicable guidelines.

Prior to final occupancy, the blocks/units/buildings requiring mitigation should be inspected by an acoustical consultant to ensure the required mitigative measures have been incorporated.

Existing commercial developments are located in the neighbourhood of the proposed development. Due to the separation distances, orientation and/or type of operations, the existing commercial uses are expected to meet the MOE guidelines at the proposed residential blocks/units/buildings. Therefore, noise mitigation measures are not required.

As there are no acoustically significant sources of ground-borne vibration near the proposed residential development, a vibration assessment is not needed.

1.0 INTRODUCTION

Jade Acoustics Inc. has been retained by Green Ginger Developments Inc. and Clear Day Investments Inc. ("Green Ginger") to revise the Preliminary Environmental Noise and Vibration Report dated February 14, 2022, based on the updated draft plan and updated concept plan for Trafalgar Road Urban Core (TUC).

Comments on the February 14, 2022 noise report provided by the Region of Halton have also been considered in the revised report. A summary of the comments is included in Appendix A. Our responses to some of the comments are outlined below. The other comments are acknowledged.

A 1.8 m high acoustic fence proposed for Block 13 (formerly Block 26) is required due to the road traffic on Street A, which is a municipal roadway. Trafalgar Road will be sufficiently screened by the townhouse blocks and towers within the TUC Block 81. As there is no need to mitigate road traffic associated with the regional roadway, the acoustic fence proposed for the north unit of Block 13 is not subject to the Region of Halton minimum acoustic fence requirement of 2.4 m.

As requested by the Region of Halton, an annual average daily traffic (AADT) of 55,000 was used for both Trafalgar Road and Dundas Street in the preparation of noise calculations included in the revised report. An AADT of 60,000 was accounted for in the noise calculations prepared for the original report.

As in the original report, the revised report investigates the potential impact of noise on the proposed development to the satisfaction of the Town of Oakville and the Region of Halton.

A Preliminary Environmental Noise Report dated April 13, 2013 and a Detailed Environmental Noise Report dated October 28, 2014, were prepared by Jade Acoustics Inc. for the Green Ginger, Phase 1 development located to the west and southwest of the proposed Phase 2 development.

The proposed site is identified as:

Part of Lots 13 and 14
Concession 1
Town of Oakville
Regional Municipality of Halton.

The proposed residential development (Green Ginger Phase 2) is located north of Dundas Street East, on the west side of Trafalgar Road. The surrounding land uses include existing and future residential developments to the north and west, existing/future residential

developments, existing commercial developments and Dundas Street East to the south and Trafalgar Road to the east. Future residential developments, some currently under construction, are located on the east side of Trafalgar Road.

The proposed site is comprised of street townhouse blocks, rear access townhouse blocks, Trafalgar Road Urban Core residential blocks, two (2) urban square blocks, four public accessible walkway blocks, two (2) road widening blocks, one (1) servicing block, one (1) stormwater management facility block, one (1) secondary school block, one (1) natural heritage system block and new internal roads.

A Key Plan is attached as Figure 1. Figure 2 shows the Draft Plan of the proposed Phase 2 residential development. Figure 3 shows the Concept Plan of the proposed Trafalgar Road Urban Core residential blocks, Block 75 to Block 81, with multiple mid-rise/high-rise buildings and two townhouse blocks included in the Phase 2 development.

The analysis was based on the following:

- Draft Plan of Subdivision prepared by Malone Given Parsons dated March 16, 2023;
- Concept Plan and Statistics (Massing Study) for Trafalgar Road Urban Core (TUC) residential blocks prepared by BDP. Quadrangle dated May 12, 2023;
- Road traffic information provided by the Region of Halton and GHD Ltd.; and
- Site visit conducted by Jade Acoustics Inc. staff on December 20, 2021.

Based on information provided by the proponent, the proposed street townhouses and rear access townhouses are expected to be 3-storey residential dwellings. The mid-rise and high-rise buildings proposed to be constructed within the TUC residential blocks will include 6-storey, 8-storey, 15-storey, 20-storey, 25-storey and 30-storey structures.

2.0 NOISE AND VIBRATION SOURCES

2.1 Transportation Sources

The noise source of potential impact on the proposed development is road traffic on Trafalgar Road and Dundas Street East which are arterial roads, as well as on the proposed internal collector roads, Street A, Threshing Mill Boulevard and Wheat Boom Drive.

Marvin Avenue and other proposed internal roadways will be local roads with low road traffic volumes. Therefore, they are expected to be acoustically insignificant and, as such, not further analysed.

Sixth Line and Burnhamthorpe Road East are located approximately 700 m west and 850 m north of the closest proposed residential blocks, respectively. Accounting for the separation distances, the potential noise impact of the road traffic on these two (2) roadways is expected to be acoustically insignificant and, as such, Sixth Line and Burnhamthorpe Road East are not further analysed.

For Trafalgar Road and Dundas Street East, the road traffic volumes for the year 2033, posted speed limits and day/night traffic splits were provided by the Region of Halton on December 20, 2021 and January 5, 2022 and confirmed on March 16, 2023. The Region of Halton also provided traffic counts for the two (2) arterial roads which were used to determine the percentage of commercial vehicles and medium/heavy truck ratio. The information provided by the Region of Halton was used in the updated noise calculations.

For Street A classified as a minor collector road and Threshing Mill Boulevard and Wheat Boom Drive classified as major collector roads, the road traffic volumes for the year 2033 were provided by GHD Ltd. on January 28, 2022 and confirmed on March 29, 2023. These road traffic volumes were compared with the typical maximum road traffic volumes for major and minor collector roads shown in Table 4 of Section C included in the Town of Oakville Official Plan and the higher road traffic volumes were used in the noise calculations. The percentage of commercial vehicles and expected posted speed limit provided by GHD Ltd. were also included in the noise calculations. A day/night traffic split of 90%/10%, which is consistent with the day/night traffic split provided for the two arterial roads, and a medium/heavy truck ratio of 50%/50% were assumed for the internal collector roads and accounted for in the noise calculations.

Road traffic information used in the noise calculations is summarized in Table 1. Correspondence regarding the road traffic information is included in Appendix A.

The proposed development is not impacted by rail or aircraft traffic.

2.2 Stationary Sources

Two gas stations are located at the intersection of Dundas Street East and Trafalgar Road. The Shell gas station is situated at the northwest corner and the Esso gas station at the northeast corner of the intersection. There are no car wash buildings within the two (2) gas station sites. Both gas stations are located approximately 350 m from the closest proposed residential blocks. Due to the separation distances, the existing gas stations are acoustically insignificant at the subject development.

Due to the high ambient sound levels from Dundas Street East and Trafalgar Road, combined with the nature and type of uses, the commercial developments to the south of the proposed site, south of Dundas Street East, are not considered to be acoustically significant at the proposed residential blocks.

There are several commercial uses located along Burnhamthorpe Road East which are acoustically insignificant at the subject development due to separation distances of 700 m or more to the closest proposed residential blocks.

Two (2) communication tower sites are currently located on the west side of Trafalgar Road. Several container type small one-storey buildings with air conditioning units exist within the communication tower sites. Due to the high ambient sound levels generated by the road traffic on Trafalgar Road and type of potential noise sources associated with the communication towers, these facilities are not expected to be acoustically significant at the proposed residential development.

Based on the above, the non-residential uses located in the area of the proposed developments are not analysed further in the report.

2.3 Vibration Sources

Based on our site visit, there are no acoustically significant sources of ground-borne vibration near the proposed development. Therefore, a vibration assessment is not needed and, as such, the potential impact of vibration sources was not considered further in the report.

3.0 ENVIRONMENTAL NOISE CRITERIA

The Ontario Ministry of the Environment, Conservation and Parks (MOE) document "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", dated August, 2013, released October 21, 2013 (updated final version # 22) was used for the analysis. A brief summary of the NPC-300 guidelines is given in Appendix B. The guidelines are also summarized below.

3.1 Transportation Sources

3.1.1 Indoors

If the nighttime (11:00 p.m. to 7:00 a.m.) sound level in terms of Leq at the exterior face of a bedroom or living/dining room window/exterior door is greater than 60 dBA or if the daytime (7:00 a.m. to 11:00 p.m.) sound level in terms of Leq at the exterior face of a bedroom or living/dining room window/exterior door is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required.

For nighttime sound levels (LeqNight) greater than 50 dBA to less than or equal to 60 dBA on the exterior face of a bedroom or living/dining room window/exterior door or daytime sound levels (LeqDay) greater than 55 dBA to less than or equal to 65 dBA on the exterior face of a bedroom or living/dining room window/exterior door, there need only be the provision for adding central air conditioning by the occupant at a later date. This typically involves a ducted heating system sized to accommodate the addition of central air conditioning by the occupant at a later date. A warning clause advising the occupant of the potential interference with some activities is also required.

As required by the MOE, indoor noise criteria for road traffic noise are 40 dBA (Leq8hour) for the bedrooms during nighttime hours, 45 dBA (Leq8hour) for living/dining rooms during nighttime hours and 45 dBA (Leq16hour) for the living/dining rooms and bedrooms during daytime hours. These criteria are used to determine the architectural requirements.

Based on the Corporation of the Town of Oakville noise by-law, a residential air conditioning device must not exceed the background sound level and/or a sound level (Leq) of 50 dBA at a point of reception located in a controlled area or a residential area. This does not apply to air conditioning units used in connection with multi-family dwellings sharing a common air conditioning device. The air conditioning units must also be sited in accordance with the zoning by-laws with respect to setbacks as well as location.

3.1.2 Outdoors

The definition of outdoor amenity area as defined by the MOE is given below.

"Outdoor Living Area (OLA) (applies to impact assessments of transportation sources) means that part of a noise sensitive land use that is:

- intended and designed for the quiet enjoyment of the outdoor environment; and
- readily accessible from the building.

The OLA includes:

- backyards, front yards, gardens, terraces or patios;
- balconies and elevated terraces (e.g. rooftops), with a minimum depth of 4.0 meters, that are not enclosed, provided they are the only outdoor living area (OLA) for the occupant; or
- common outdoor living areas (OLAs) associated with mid-rise/high-rise multi-unit buildings."

Based on the MOE guidelines, for the outdoor amenity areas, a design goal of 55 dBA daytime (7:00 a.m. to 11:00 p.m.) sound level is used with an excess not greater than 5 dBA considered acceptable in some cases. Where the unmitigated sound level during the day exceeds 55 dBA (LeqDay) but is less than 60 dBA (LeqDay), a warning clause is required and mitigation should be considered. When the unmitigated sound level exceeds 60 dBA, sound barriers and warning clauses are generally required to achieve as close to 55 dBA as is technically, economically and administratively feasible.

For ground level outdoor amenity areas, where sound barriers are required, the Town of Oakville requires that the height of acoustic fences be minimum 1.8 m and maximum 2.5 m measured with respect to grade at the base of the fence. A berm and acoustic fence combination is not to exceed 3.5 m in height.

Based on the Region of Halton requirements, the height of acoustic fences should not be less than 2.4 m.

For both indoor and outdoor conditions, where the acoustic criteria are exceeded, warning clauses must be placed in offers of purchase and sale or lease agreements and in the development agreement.

3.2 Stationary Sources

The Ontario Ministry of the Environment, Conservation and Parks (MOE) document NPC-300 titled "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning" is to be used for the commercial/institutional/industrial facilities.

The MOE also has vibration guidelines with respect to stationary sources, NPC-207. These guidelines require that the peak vibration velocities not exceed 0.3 mm/s at the point of reception during the day or night.

The MOE recognizes the need for back-up beepers/alarms as safety devices and as such does not have any guidelines or criteria to address these sources.

It should be noted that the MOE guidelines do not require that the source be inaudible, but rather that specific sound level limits be achieved.

With respect to stationary sources of noise in urban areas, the MOE guidelines require that the sound level due to the stationary source at the building façade and outdoor amenity spaces not exceed the sound level due to road traffic and in certain situations due to rail traffic in any hour of source operation, subject to specific exclusions. Tables C-5, C-6, C-7 and C-8 of NPC-300 included in Appendix B provided the exclusion limit values of one-hour equivalent sound level (Leq,dBA) and impulsive sound level (L_{lm},dBAI).

In addition, the MOE guidelines require that most industries have a valid Environmental Compliance Approval (ECA) or its precursor, a Certificate of Approval (C of A) to operate.

In general, if the criteria for a stationary source of noise are exceeded, the MOE recommends that control be implemented at the source rather than at the receiver. Alternatively, if the receiver is set back from the source or if a physical barrier is constructed so that the criteria can be met at the receiver, no additional mitigative measures are required. In addition, a warning clause in offers of purchase and sale and/or lease agreement noting the proximity of houses to such a source should be considered. Treatment of the receptor building by the use of suitable wall and window construction and central air conditioning to keep windows closed is not an acceptable solution to the MOE in Class 1 and 2 areas (urban).

3.3 Town of Oakville Noise By-Law

The Town of Oakville has a by-law to prohibit and regulate noise, a Noise Control By-law Number 2008-098 (Consolidated Version March 28, 2022, amended by By-laws 2009-081, 2011-100, 2013-028, 2016-016, 2021-038 and 2022-031). The by-law does provide specific sound level limits, qualitative information with respect to sources and prohibitions by time and place.

3.4 Region of Halton Guidelines

The Region of Halton document titled “Noise Abatement Guidelines” dated June 18, 2014, outlines requirements for the assessment of proposed residential developments. It includes references to traffic noise predictions, sound level criteria, noise barrier designs control measures for existing residential developments, regional road projects and new developments.

4.0 NOISE IMPACT ASSESSMENT

4.1 Road

For road traffic noise, the sound levels in terms of Leq, the energy equivalent continuous sound level for both day (Leq16) and night (Leq8) were determined using the MOE Traffic Noise Prediction Model (ORNAMENT).

Based on the information provided by the proponent, the proposed street townhouses and rear access townhouses are expected to be 3-storey residential dwellings.

As detailed plans for the townhouse units and mid-rise/high-rise buildings are not available at this stage of the project, the following information, discussed with the proponent, was used in the noise calculations:

- Street townhouse units will be provided with a ground level outdoor amenity area (rear yard);
- Rear access townhouse units will not have a ground level outdoor amenity area;
- All elevated terraces and balconies associated with the street and rear access townhouse units will be less than 4.0 m deep;
- Street and rear access townhouse units will not have a rooftop terrace;
- No ground level and/or elevated outdoor amenity areas that require noise mitigation will be located within the proposed Trafalgar Road Urban Core (TUC) residential blocks and on associated mid-rise/high-rise buildings; and
- All elevated private terraces and/or balconies associated with the mid-rise/high-rise buildings within the TUC residential blocks will be less than 4.0 m deep.

As noted above, it is expected that all balconies and elevated private terraces will be less than 4.0 m deep; therefore, according to the MOE noise guidelines, they are not considered to be noise sensitive receptors that require mitigation measures. As such, the balconies and elevated terraces were not included in the noise calculations.

The rear yard receiver for the street townhouse units was assumed to be 3 m from the centre of the rear wall of the house. As grading plans are not available at this stage of the project, the noise calculations assumed that the base of receptor (rear yard) elevation is 0.5 m higher than

the base of source (roadway centreline) elevation and base of barrier (side property line) elevation.

Table 2 provides a summary of the predicted sound levels outdoors due to road traffic at specific locations without any mitigative measures. Appendix C includes sample calculations. The topography between the source and the receiver has been taken into account.

The highest sound levels are predicted for the mid-rise/high-rise buildings within the TUC blocks along Trafalgar Road. The unmitigated sound levels at the top floor walls/windows are predicted to be up to 72 dBA for the daytime hours between 7:00 a.m. and 11:00 p.m. and up to 66 dBA for the night-time hours between 11:00 p.m. and 7:00 a.m.

For the townhouse blocks flanking the internal collector roads, the unmitigated sound levels in the rear yards are predicted to be up to 58 dBA. The unmitigated sound levels at the side walls are predicted to be up to 61 dBA (daytime) and up to 54 dBA (night-time).

For the townhouse units fronting the internal collector roads, the unmitigated sound levels at the front walls are predicted to be 61 dBA (daytime) and 55 dBA (night-time).

For all high-rise buildings within a distance of 90 m measured from the centreline of Trafalgar Road, the daytime sound levels are predicted to exceed 65 dBA. For all townhouse units and other high-rise and mid-rise buildings within a distance of 200 m measured from the centreline of Trafalgar Road, the daytime sound levels are predicted to be between 55 dBA and 65 dBA.

Where the sound level limits are predicted to exceed the noise guidelines, mitigative measures and warning clauses are required.

4.2 Stationary Sources

As discussed in Section 2.2, the existing commercial developments are not expected to exceed the MOE guidelines at the proposed residential blocks/units/buildings.

5.0 NOISE ABATEMENT REQUIREMENTS

The noise mitigation requirements for both the indoor and outdoor locations are detailed below. Table 3 and Figure 2 provide a summary of the acoustical mitigative requirements for the blocks/units/buildings in the proposed residential development.

5.1 Transportation Sources

5.1.1 Indoors

As required, indoor sound level criteria for road traffic can be achieved in all cases by using appropriate architectural elements for exterior walls, windows, exterior doors, and roof construction. The indoor limit for road traffic noise is 40 dBA (Leq8hour) for the bedrooms during nighttime hours, 45 dBA (Leq8hour) for the living/dining rooms during night-time hours and 45 dBA (Leq16hour) for the living/dining rooms and bedrooms during daytime hours. These criteria have been used in this analysis. The characteristic spectra for road traffic have been accounted for in the determination of the architectural components. Appendix D contains a sample calculation of the architectural component selection.

Since house plans are not yet available, the final architectural choices cannot be made. Therefore, a preliminary analysis using assumed window and exterior wall percentages has been conducted to provide an indication of the architectural requirements. Once house plans are available, the noise control requirements should be re-evaluated.

The day/night traffic split results in more than a 5 dBA difference between the predicted daytime and nighttime sound levels. As this difference exceeds the difference between the MOE indoor criteria for road traffic during daytime and nighttime hours, the most affected rooms with calculated daytime sound level were used in the analysis.

In determining the architectural requirements, it has been assumed that the most affected residential condition would involve a corner bedroom or a corner living/dining room. The exterior walls have been assumed to be 40% of the associated floor area for both the façade perpendicular to the noise source and the façade parallel to the noise source. The windows and/or exterior doors have also been assumed to be 40% of the associated floor area for both the façade perpendicular to the noise source and the façade parallel to the noise source.

For the high-rise buildings along Trafalgar Road, based on the ratios mentioned above, windows and exterior doors need to be up to STC 38 and exterior walls need to be up to STC 43. An STC 38 rating for windows and exterior doors and an STC 43 rating for exterior walls exceeds the minimum structural and safety requirements of standard construction.

Therefore, better than standard window, exterior door and exterior wall construction is required for all high-rise buildings adjacent to Trafalgar Road.

The acoustical performance of windows and exterior doors as a whole depends on glass configuration/thickness, air space, material used for frames and construction details including seals. Therefore, the acoustical performance of the glass configuration alone expressed as a sound transmission class (STC) rating, generally available in the literature, does not address the STC rating of the whole window and exterior door. Same glass configurations with different frame materials and/or construction details often produce different STC ratings. Therefore, it is recommended that prior to installation, STC test results of window and exterior door configurations from an accredited laboratory be provided to ensure that the selected windows and exterior doors meet the required STC ratings.

For all townhouse units and mid-rise buildings, standard window, exterior door and exterior wall construction is acoustically satisfactory.

In general, where the sound level is greater than 60 dBA (night-time) or greater than 65 dBA (daytime) on the outside face of a window/exterior door, the indoor sound level criteria would not be met with open windows and provisions must be met to permit the windows to remain closed. The MOE noise guidelines require central air conditioning. In addition, a warning clause is needed. Due to the calculated sound levels, central air conditioning is required for the TUC Block 77 mid-rise building and all high-rise buildings located within the TUC residential blocks, Blocks 78 to 81, inclusive. See Table 3 and Figure 2 for details. The TUC high-rise buildings are shown on Figure 3.

Where the sound level is exceeded by 1 dBA to 10 dBA (i.e. LeqNight between 51 dBA and 60 dBA inclusive) and/or by 1 dBA to 10 dBA (i.e. LeqDay between 56 dBA and 65 dBA inclusive), the provision for adding central air conditioning by the occupants must be made. See Table 3 and Figure 2 for the blocks/units/buildings that require the provision for adding central air conditioning.

Warning clauses will also be required to be placed in offers of purchase and sale, lease agreements, and included in of the development agreement for all relevant blocks/units/buildings to make future occupants are aware of the potential noise situation. See Table 3 and Notes to Table 3 for details.

5.1.2 Outdoors

The outdoor amenity area is required to be exposed to a sound level of less than 55 dBA during the day. A 5 dBA increase is considered acceptable in certain situations. Typically, if the sound level is above 55 dBA, some form of mitigation and a warning clause is required.

For Block 13 (east unit), Block 43 (south unit) and Block 44 (north unit), a 1.8 m high acoustic fence installed along the side property line is predicted to achieve 55 dBA or less in the rear yard. The 1.8 m high acoustic fence should be returned to the side wall and along the rear property line of the corresponding townhouse units.

It should be noted that the 1.8 m high acoustic fence proposed for Block 13 (east unit) is required due to the road traffic on Street A. The road traffic on Trafalgar Road, which is a regional roadway, will be sufficiently screened by the townhouse blocks and towers within the TUC Block 81. See Table 2 for the predicted unmitigated sound levels due to Street A and Trafalgar Road southbound and northbound lanes.

The location and height of the required acoustic fences are shown on Figure 2.

Sample calculations of the sound barrier analysis are included as Appendix E.

Appendix F includes standard noise wall details from the Town of Oakville.

Generally, if a sound barrier is to be used, the sound barrier may be a fence, made of any one or a combination of various materials, berm, or a berm/fence combination. The sound barrier should be of continuous construction, with no gaps and should have a minimum surface density of 20 kg/m^2 or more. Appropriate treatment of the sound barrier at all discontinuities and points of termination would be required to ensure that the sound barrier is effective. This would involve extending the barrier to the front property line; returning to the side wall of the house or extending the sound barrier for a minimum of three times the distance between the side wall and the sound barrier, past the rear wall of the house. An acoustic gate of 20 kg/m^2 is very heavy. Therefore, if a gate is required, provided that it is of continuous construction with no gaps between the boards, it may have a surface density of between 10 kg/m^2 and 20 kg/m^2. In addition, any gaps at the bottom of the gate should be kept to a minimal height.

Note that any openings under the acoustic fence for drainage must be kept to a minimum. If drainage under the acoustic fence is intended, an acoustical engineer should be consulted.

Where an excess will remain or where mitigation is required, a warning clause should be placed in offers of purchase and sale or lease agreements and included in the development agreements.

5.2 Stationary Sources

As discussed in Sections 2.2 and 4.2, the existing commercial uses are not expected to exceed the applicable sound level limits at the proposed residential development; therefore, noise mitigation measures are not required.

6.0 RECOMMENDATIONS

1. The requirements as stipulated in Table 3 should be incorporated into the proposed residential development.

2. A detailed environmental noise report should be prepared once the final plans, including detailed plans for the proposed Trafalgar Road Urban Core (TUC) residential blocks and associated mid-rise/high-rise buildings, become available to ensure that the appropriate noise criteria are achieved. The report should include detailed reviews of the sound barrier, architectural component and central air conditioning requirements. The report should also investigate the potential noise impact of the TUC mid-rise/high-rise buildings on themselves and on the environment.

7.0 CONCLUSIONS

With the incorporation of the items discussed (see Table 3, Notes to Table 3 and Figure 2), the sound levels will be within the applicable noise criteria. In accordance with the Town of Oakville, the Region of Halton and the Ontario Ministry of the Environment, Conservation and Parks implementation guidelines, where mitigation is required, future occupants will be advised through the use of warning clauses.

Once the final plans become available, a detailed environmental noise report should be prepared to ensure that the applicable noise guidelines can be achieved.

Prior to the issuance of building permits, the block/unit/building plans should be reviewed by an acoustical consultant to ensure compliance with the applicable guidelines.

Prior to final occupancy, the blocks/units/buildings should be inspected by an acoustical consultant to ensure the required mitigative measures have been incorporated.

Respectfully submitted,

JADE ACOUSTICS INC.

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8.0 REFERENCES

1. "Model Municipal Noise Control By-Law" Final Report, Ontario Ministry of the Environment, August, 1978.

2. "ORNAMENT – Ontario Road Noise Analysis Method for Environment and Transportation", Ontario Ministry of the Environment, October, 1989.

3. "Building Practice Note No. 56: Controlling Sound Transmission into Buildings", J.D. Quirt, Division of Building Research, National Research Council of Canada, September, 1985.

4. "Noise Abatement Guidelines, Regional Official Plan Guidelines", Regional Municipality of Halton, June 18, 2014.

5. "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).

6. "Impulse Vibration in Residential Buildings", Ontario Ministry of Environment Publication NPC-207 (Draft), November, 1983.

7. Noise By-law Number 2008-098 (Consolidated Version March 28, 2022, amended by By-laws 2009-081, 2011-100, 2013-028, 2016-016, 2021-038 and 2022-031), Town of Oakville, July 7, 2008.

8. Road Corridor Noise Abatement Procedure for Town Roads, Town of Oakville.

TABLE 1

PROPOSED RESIDENTIAL DEVELOPMENT

GREEN GINGER, PHASE 2

TOWN OF OAKVILLE

FILE: 24T-16006/1313.08

SUMMARY OF ROAD TRAFFIC DATA

ROAD	TRAFALGAR ROAD	DUNDAS STREET EAST	STREET A NORTH OF THRESHING MILL BOULEVARD
AADT*	55,000**	55,000**	6,750
No. of Lanes	6	6	2
Speed (km/hr)	80	80	50
Trucks (%)	3.5***	3.8***	2
Medium/Heavy Split (%)	43/57***	45/55***	50/50#
Day/Night Split (%)	90/10	90/10	90/10#
R.O.W. (m)	50	50	24

* AADT: Annual Average Daily Traffic.

** Provided by the Region of Halton for year 2033.

*** Based on traffic counts data provided by the Region of Halton.

Assumed.

Typical maximum volume for minor collectors as per Table 4 in Part C of Town Official Plan. GHD provided 1,252 for year 2033.

Typical maximum volume for major collectors as per Table 4 in Part C of Town Official Plan. GHD provided 9,792 for Threshing Mill Boulevard and 5,301 for Wheat Boom Drive for year 2033.

TABLE 1 – Continued

PROPOSED RESIDENTIAL DEVELOPMENT

GREEN GINGER, PHASE 2

TOWN OF OAKVILLE

FILE: 24T-16006/1313.08

SUMMARY OF ROAD TRAFFIC DATA

ROAD	STREET A NORTH OF WHEAT BOOM DRIVE	THRESHING MILL BOULEVARD	WHEAT BOOM DRIVE
AADT*	5,000##	10,000###	10,000###
No. of Lanes	2	2	2
Speed (km/hr)	50	50	50
Trucks (%)	2	2	2
Medium/Heavy Split (%)	50/50#	50/50#	50/50#
Day/Night Split (%)	90/10#	90/10#	90/10#
R.O.W. (m)	24	26/24	24

* AADT: Annual Average Daily Traffic.

** Provided by the Region of Halton for year 2033.

*** Based on traffic counts data provided by the Region of Halton.

Assumed.

Typical maximum volume for minor collectors as per Table 4 in Part C of Town Official Plan. GHD provided 1,252 for year 2033.

Typical maximum volume for major collectors as per Table 4 in Part C of Town Official Plan. GHD provided 9,792 for Threshing Mill Boulevard and 5,301 for Wheat Boom Drive for year 2033.

TABLE 2

PROPOSED RESIDENTIAL DEVELOPMENT

GREEN GINGER, PHASE 2

TOWN OF OAKVILLE

FILE: 24T-16006/1313.08

SAMPLE OF PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS DUE TO ROAD TRAFFIC

Blocks/ Buildings/ Units*	Location**	Source	Distance (m)	Leq (dBA)			
				Day		Night	
				Separate	Combined	Separate	Combined
Block 13/ East Unit	Rear Yard	Street A	18.0	57	58	--	--
		Trafalgar Road SB	184.5	50		--	
		Trafalgar Road NB	195.5	49		--	
	Side Wall	Street A	16.0	59	61	53	54
		Trafalgar Road SB	181.5	52		46	
		Trafalgar Road NB	192.5	52		45	
Block 44/ North Unit	Rear Yard	Threshing Mill Blvd.	20.5	58	--	--	--
	Side Wall	Threshing Mill Blvd.	16.5	61	--	54	--
Block 63/ All Units	Front Wall	Threshing Mill Blvd.	15.0	61	--	55	--
Block 70/ All Units	Front Wall	Street A	15.0	60	--	53	--
Block 77/ Building F	South Wall	Trafalgar Road SB	227.5	58	65	51	58
		Trafalgar Road NB	238.5	58		51	
		Wheat Boom Drive	19.5	61		55	
		Dundas Street WB	444.0	55		49	
		Dundas Street EB	455.0	55		48	

* See Figures 2 and 3.

** Rear yard location taken 3 m from the centre of the rear wall and 1.5 m above grade. Wall location taken at 7.5 m above grade for 3rd floor of Blocks 13, 44, 63 and 70, 18.0 m above ground for 6th floor of Block 77, 24.0 m above ground for 8th floor of Block 79, 60.0 m for 20th floor of Block 78 and 90.0 m above ground for 30th floor of Block 80.

TABLE 2 – Continued

PROPOSED RESIDENTIAL DEVELOPMENT

GREEN GINGER, PHASE 2

TOWN OF OAKVILLE

FILE: 24T-16006/1313.08

SAMPLE OF PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS DUE TO ROAD TRAFFIC

Blocks/ Buildings/ Units*	Location**	Source	Distance (m)	Leq (dBA)			
				Day		Night	
				Separate	Combined	Separate	Combined
Block 78/ Building A1	South Wall	Trafalgar Road SB	27.0	67	71	61	64
		Trafalgar Road NB	38.0	66		59	
		Wheat Boom Drive	16.5	62		55	
		Dundas Street WB	432.5	58		52	
		Dundas Street EB	443.5	58		52	
Block 79/ Building C2	West Wall	Trafalgar Road NB	38.0	66	62	59	56
		Wheat Boom Drive	16.5	62		55	
Block 80/ Building D2	East Wall	Dundas Street WB	432.5	58	72	52	66
		Dundas Street EB	443.5	58		52	
	South Wall	Trafalgar Road SB	27.0	67	70	61	64
		Trafalgar Road NB	38.0	66		59	
		Threshing Mill Blvd.	20.5	61		55	

* See Figures 2 and 3.

** Rear yard location taken 3 m from the centre of the rear wall and 1.5 m above grade. Wall location taken at 7.5 m above grade for 3rd floor of Blocks 13, 44, 63 and 70, 18.0 m above ground for 6th floor of Block 77, 24.0 m above ground for 8th floor of Block 79, 60.0 m for 20th floor of Block 78 and 90.0 m above ground for 30th floor of Block 80.

TABLE 3

PROPOSED RESIDENTIAL DEVELOPMENT

GREEN GINGER, PHASE 2

TOWN OF OAKVILLE

FILE: 24T-16006/1313.08

SUMMARY OF MINIMUM NOISE MITIGATION MEASURES

Blocks/Buildings/Units	Air Conditioning(1)	Exterior Wall(2)	Window(3)	Acoustic Barrier(4)	Warning Clause(5)
Block 77 (mid-rise building) and Blocks 78 to 81 (all high-rise buildings)	Mandatory	Up to STC 43*	Up to STC 38*	No	A, B
Blocks 13 (east unit), 43 (south unit) and 44 (north unit)	Provision for Adding	N/R	N/R	1.8 m**	A, C, D
Blocks 13 (2nd and 3rd east units), 18 (east unit), 19 (east unit), 31 (two east units), 32 (two east units), 59 (all units), 60 (all units), 61 (all units), 62 (all units), 63 (all units), 69 (all units), 70 (all units), 75 (all mid-rise buildings), 76 (all mid-rise buildings), and 81 (two townhouse blocks)	Provision for Adding	N/R	N/R	No	A, C
All other blocks/ buildings/units	No Special Requirements				

* See Section 5.1.1 for details.

** 1.8 m high acoustic fence. See Section 5.1.2 and Figure 2 for details.

N/R Denotes no special construction techniques above typical construction practices are required.

See Notes to Table 3 on following pages.

NOTES TO TABLE 3

1. Means must be provided to allow windows to remain closed for noise control purposes. For air cooled condenser units, the AHRI sound rating must not exceed 7.6 bels. The air-cooled condenser units should be placed in a noise insensitive location which complies with municipal by-laws.

   Provision for adding central air conditioning would involve a ducted heating system sized to accommodate the addition of central air conditioning by the occupant at a later date. The air-cooled condenser unit should be placed in a noise insensitive location which complies with municipal by-laws. It is recommended that the air-cooled condenser unit AHRI sound rating does not exceed 7.6 bels.

   The air conditioning system for high-rise buildings should be designed to meet the MOE NPC-300 noise guideline limits.

2. STC – Sound Transmission Class Rating (Reference ASTM-E413). Values shown are based on an assumed wall area of 40% of the associated floor area for the exterior wall facing the noise source and for the exterior wall perpendicular to the noise source.

3. STC – Sound Transmission Class Rating (Reference ASTM-E413). Values shown are based on an assumed glazed area of 40% of the associated floor area for the exterior wall facing the noise source and for the exterior wall perpendicular to the noise source. A sliding glass walkout door should be considered as a window and be included in the percentage of glazing. Requirements are to be finalized once building plans are available.

4. Sound barriers must be of a solid construction with no gaps and have a minimum surface density of 20 kg/m^2. Earthen berms, solid walls/fences of adequate density or combinations of berms and walls/fences may be used.

5. Suggested warning clauses to be included in the subdivision agreement and to be included in offers of purchase and sale or lease agreements on designated blocks/units/buildings:

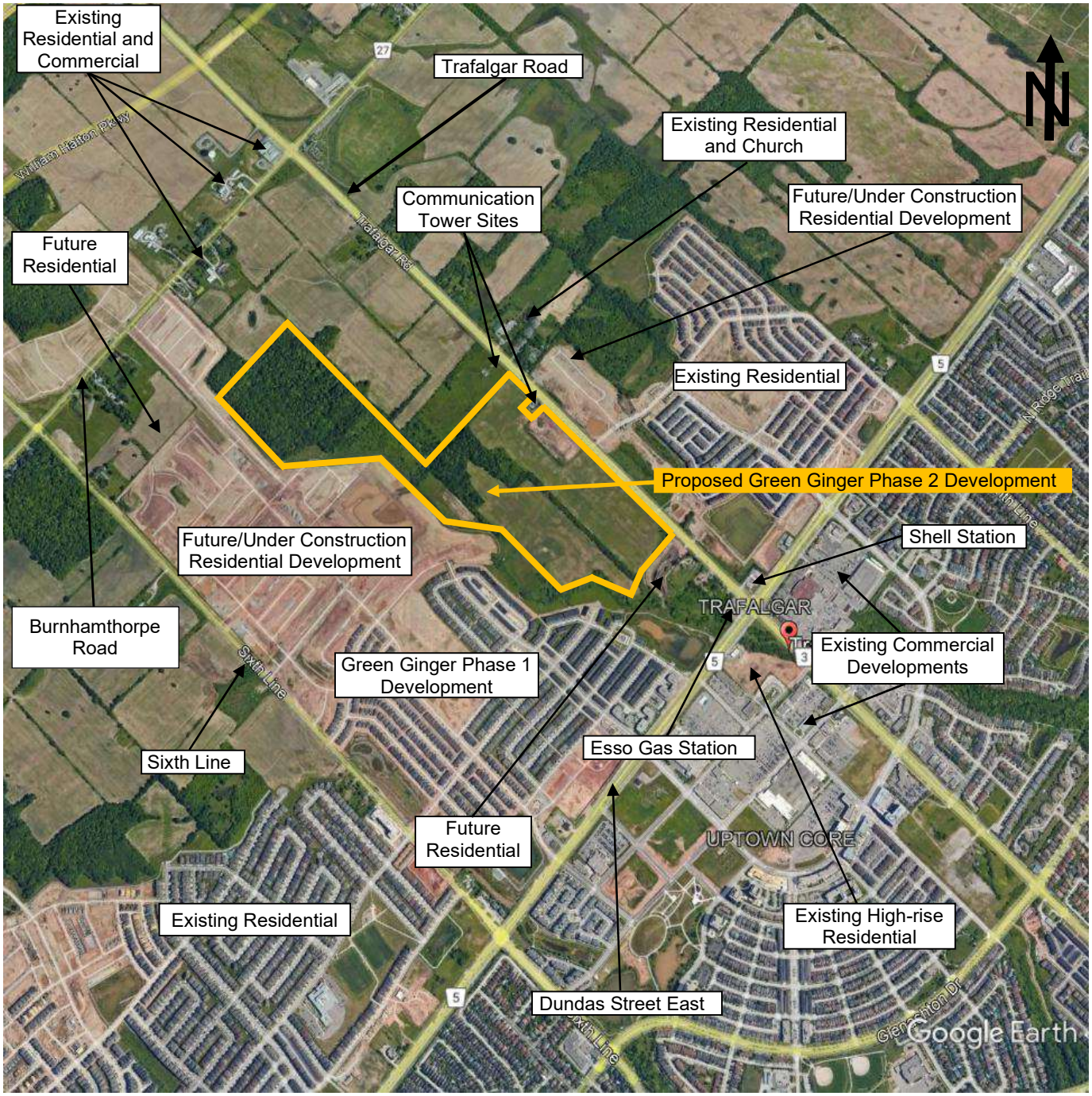
   A. "Purchasers are advised that despite the inclusion of noise control features in this development area and within the dwelling units, noise due to increasing road traffic may continue to be of concern, occasionally interfering with the activities of the occupants as the sound levels may exceed the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks."

B. “Purchasers are advised that this dwelling unit has been or will be fitted with a central air conditioning system which will enable occupants to keep windows closed if road traffic noise interferes with their indoor activities.”

C. "Purchasers are advised that the dwelling unit can be fitted with a central air conditioning system at the owner’s option and expense which will enable occupants to keep windows closed if road traffic noise interferes with the indoor activities."

D. "Purchasers are advised that the acoustic fence as installed shall be maintained, repaired or replaced by the owner. Any maintenance repair or replacement shall be with the same material, to the same standards, and having the same colour and appearance of the original."

6. Conventional ventilated attic roof construction meeting typical construction practices is satisfactory in all cases.



N.T.S.

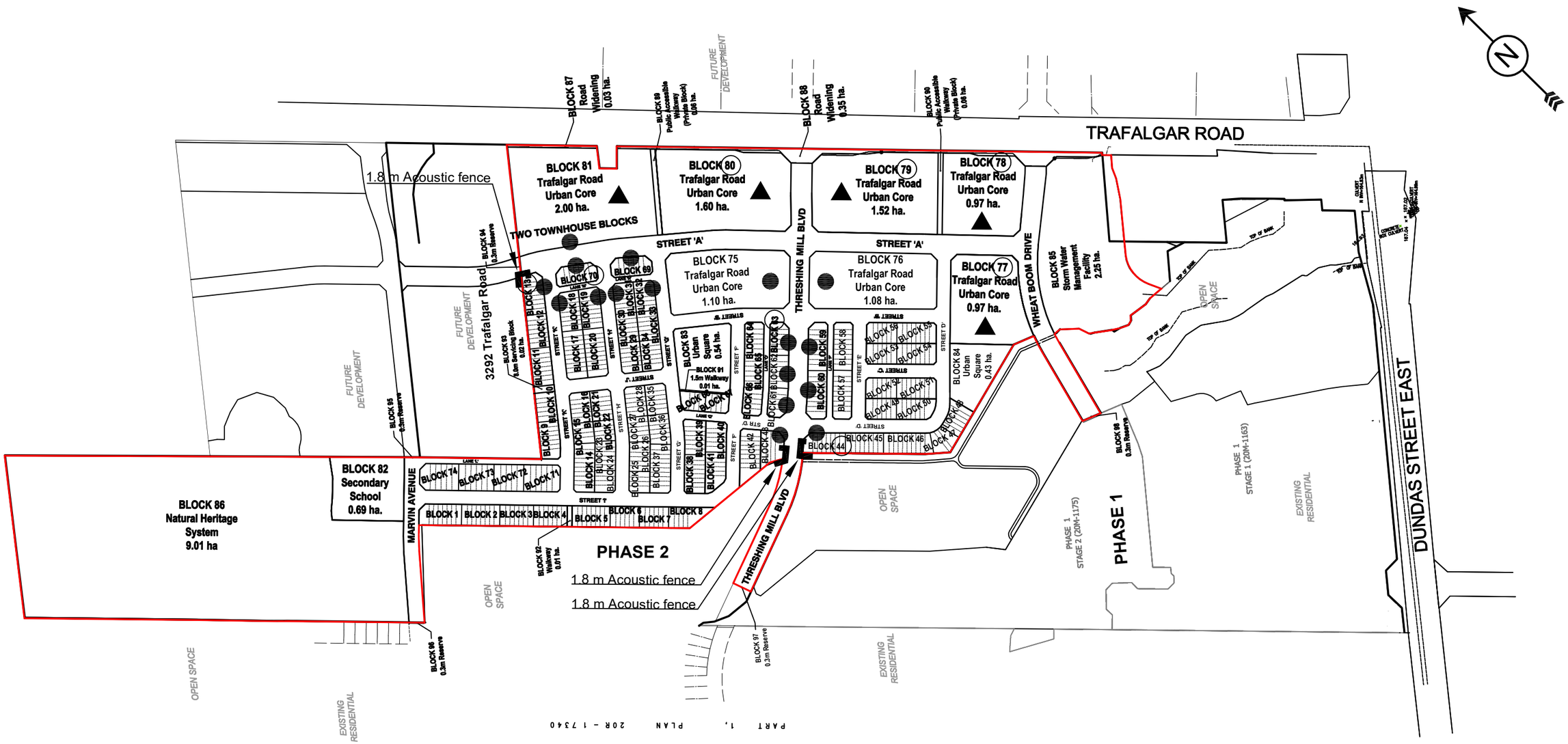
Proposed Residential Development
Green Ginger, Phase 2
Dundas St. E. and Trafalgar Rd.
Town of Oakville
File: 24T-16006/1313.08

Date: May 2023 **File: 11-019-07**

KEY PLAN

FIGURE 1

JADE ACOUSTICS



N.T.S.

Legend:

- 1.8 m High Acoustic Fence (See Text, Table 3 and Notes to Table 3 for Details)
- ▲ Mandatory Central Air Conditioning and Warning Clause (See Text, Table 3 and Notes to Table 3 for Details)
- ● Provision for Adding Central Air Conditioning and Warning Clause (See Text, Table 3 and Notes to Table 3 for Details)
- ○ Analyzed Noise Sensitive Receptors

Note:

Figure 3 shows Concept plan for Trafalgar Road Urban Core (TUC) Blocks 75 to 81.

Proposed Residential Development
Green Ginger, Phase 2
Dundas Street East and Trafalgar Road
Town of Oakville
File: 24T-16006/1313.08

Date: May 2023 | Our File: 11-019-07

JADE ACOUSTICS

PLAN OF SUBDIVISION SHOWING NOISE MITIGATION MEASURES

FIGURE 2

Proposed Residential Development
Green Ginger, Phase 2
Dundas St. E. and Trafalgar Rd.
Town of Oakville
File: 24T-16006/1313.08

Date: May 2023 **File: 11-019-07**

TRAFALGAR URBAN CORE (TUC) CONCEPT PLAN

FIGURE 3

JADE ACOUSTICS

APPENDIX A

COMMENTS PROVIDED BY REGION OF HALTON AND CORRESPONDENCE REGARDING ROAD TRAFFIC

COMMENTS PROVIDED BY REGION OF HALTON

3. Region of Halton, Development Engineering

Richard Renaud ext. 3631 – July 6, 2022

3.8 Preliminary Environmental Noise and Vibration study

Blocks 26, 53, & 54 have a 1.8m acoustic fence.

- Provide a cross section to indicate the location. This may require a 1.0m easement on the private property side.
- Is the noise source coming from Threshing Mill Blvd.? This would be a town owned fence.
- Is the noise source coming from Trafalgar Road for the fence on Block 26? This would be a Region owned fence.

15. Region of Halton, Planning & Public Works Dept

Bernie Steiger tel. 905-825-6000 ext. 7060 – October 24, 2022

15.27 Noise Study:

A noise study was completed by JADE Acoustics Inc. dated February 2022. The Study is generally acceptable, with the additional comments below required either now (due to other resubmissions) or at site plan. Additionally, updated noise studies may be required at site plan, should substantial/major changes occur to the subdivision plan and to address site-specific developments. If there are no substantial/major changes occurring to the Subdivision plan, then a letter from the acoustic consultant will be required confirming the original noise study is accurate and acceptable.

Additional comments on the Noise Study and required clauses are attached as Appendix C. Conditions of draft approval related to noise impacts and required warning clauses will be provided once the Region is in a position to release conditions of draft approval.

15.28 Noise Barriers:

The closest noise barrier to Trafalgar Road is for Block 26, with a recommended noise barrier of 1.8m in height to achieve less than 55 dBA in the rear yard. While it does not appear from the report that this barrier is to mitigate Trafalgar Road noise, as the towers along the Trafalgar Road Urban Core block for Block 82 will shield the majority of Trafalgar Road noise for Block 26, it should be noted Halton's minimum noise barrier height is 2.4m.

If the proposed noise barrier for Block 26 is to mitigate Trafalgar Road noise, the minimum height must be adjusted to 2.4m. We request confirmation in this regard.

15.52 Confirmation whether the noise barrier on Block 26 is required to mitigate road noise from Trafalgar Road (and if this is the case, that the report be updated to recommend a 2.4 metre barrier height).

Appendix C: Additional Comments on Noise Study

Additional Comments on Study:

The noise study traffic data used for Trafalgar Road and for Dundas Street, stated in the report as “60,000 AADT” does not match what was provided as part of the terms of reference from Halton Region, that being “55,000”.

The study findings state:

“The Study recommends that all blocks/buildings adjacent to Trafalgar Road require mandatory central air conditioning and a warning clause. This includes all high-rise buildings proposed to be constructed within Block 78 to 82, inclusive.”

“Additional blocks/units/buildings require forced air heating systems sized to accommodate central air conditioning at a later date if noise becomes a concern. Table 3 and Figure 2 show the central air conditioning requirements.”

“Based on the preliminary analysis, better than standard window, exterior door and exterior wall construction is required for all high rise buildings proposed to be constructed within Block 79 to Block 82, inclusive. These blocks are located along Trafalgar Road.”

Warning Clauses:

The Study is recommending for all units where the guideline sound level limits are exceeded, Purchase, Rental, and Lease agreements include the following warning clause:

Warning Clause A: "Purchasers are advised that despite the inclusion of noise control features in this development area and within the dwelling units, noise due to increasing road traffic may continue to be of concern, occasionally interfering with the activities of the occupants as the sound levels may exceed the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks."

Warning Clause B: “Purchasers are advised that this dwelling unit has been or will be fitted with a central air conditioning system which will enable occupants to keep windows closed if road traffic noise interferes with their indoor activities.”

Warning Clause C: “Purchasers are advised that this dwelling unit can be fitted with a central air conditioning system at the owner’s option and expense which will enable occupants to keep windows closed if road traffic noise interferes with their indoor activities.”

Warning Clause D: “Purchasers are advised that the acoustical fence as installed shall be maintained, repaired or replaced by the owner. Any maintenance repair or replacement shall be with the same material, to the same standards, and having the same color and appearance as the original.”

The proposed Warning Clauses in the report appear to be acceptable and must be reviewed and approved by the Town of Oakville. All applicable warning clauses shall be listed in the Town’s Site Plan Agreement and also be inserted in the Agreements of Purchase and Sale or Lease.

Additional Warning Clauses:

The following additional Warning Clauses and Conditions apply to the development site:

Purchasers are advised that ground floor units with balconies with direct unobstructed access to the Regional road system and/or the Active Transportation Network will not be eligible under the retrofit provisions of the Region's Noise Attenuation Policy/Noise Abatement Guidelines in the future.

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 may on occasion interfere with some activities of the dwelling occupants, including any raised patio and/or balcony, as sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

Purchasers/tenants are advised that this development and associated blocks/units are directly adjacent/in close proximity to a Regional road. Halton's Regional roads are classified as major arterial roadways and as such: Serve mainly inter-regional and regional travel demands; May serve an Intensification Corridor; Accommodate all truck traffic; Accommodate higher order transit services and high occupancy vehicle lanes; Connect Urban Areas in different municipalities; Carry high volumes of traffic; Distribute traffic to and from Provincial Freeways and Highways; Accommodate active transportation. Truck traffic is permitted on all Regional roads, and is one of the functions of the Regional road network. Therefore, despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic will interfere with some activities of the dwelling occupants, including any raised patio and/or balcony, as sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

CORRESPONDENCE FROM REGION OF HALTON REGARDING ROAD TRAFFIC

Davor Sikic

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: March 16, 2023 10:09 AM
To: Davor Sikic
Subject: RE: Green Ginger Phase 2, Town of Oakville (Jade File: 11-019-07)

Yes confirmed, thanks for checking.

Matt

From: Davor Sikic <davor@jadeacoustics.com>
Sent: March 16, 2023 10:08 AM
To: Krusto, Matt <Matt.Krusto@halton.ca>
Subject: RE: Green Ginger Phase 2, Town of Oakville (Jade File: 11-019-07)

Good morning Matt,

We are in the process of revising our noise report based on the updated plans. The noise report is being prepared for the Green Ginger Phase 2 development.

I would kindly ask you to advise if the road traffic data for Trafalgar Road and Dundas Street confirmed in the January 5, 2022 email below is still applicable and can be used for the year 2033.

Thank you.

Davor Sikic, P.Eng.
Jade Acoustics Inc.
411 Confederation Parkway Unit 19
Concord, On L4K 0A8
Office: 905-660-2444 x 235
Cell: 647-968-7743
F: 905-660-4110
E: davor@jadeacoustics.com
W: www.jadeacoustics.com

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: January 5, 2022 1:11 PM
To: Davor Sikic <davor@jadeacoustics.com>
Subject: RE: Green Ginger Phase 1 Z.1313.06, 24T-12001 - Zoning & Plan of Subdivision (Jade File: 11-019-07)

Hi Davor,

Happy new year.

Yes the 2031 AADT of 55,000 for both Trafalgar and for Dundas Street still remain valid and can be used for year 2032.

Matt

From: Davor Sikic <davor@jadeacoustics.com>
Sent: January 5, 2022 1:07 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>
Subject: RE: Green Ginger Phase 1 Z.1313.06, 24T-12001 - Zoning & Plan of Subdivision (Jade File: 11-019-07)

Hi Matt,

The projected AADT information confirmed in your email below is for 2031. I assume that the same information is applicable to 2032 which is the minimum 10 year projection time frame recommended to be used in noise calculations by the MOE and, I believe, the Region of Halton and the Town of Oakville. Please confirm.

Thank you.

Davor Sikic, P.Eng.
Jade Acoustics Inc.
411 Confederation Parkway Unit 19
Concord, On L4K 0A8
Office: 905-660-2444 x 235
Cell: 647-968-7743
F: 905-660-4110
E: davor@jadeacoustics.com
W: www.jadeacoustics.com

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: December 20, 2021 9:26 AM
To: Davor Sikic <davor@jadeacoustics.com>
Subject: Re: Green Ginger Phase 1 Z.1313.06, 24T-12001 - Zoning & Plan of Subdivision (Jade File: 11-019-07)

Hi Davor,

For Trafalgar Road and for Dundas Street yes, except for the truck percentages. We use existing truck percentages now. These can be obtained through a request to our Road Operations group at trafficdatarequests@halton.ca.

We also have many new warning clauses, that we will include in our comments as part of the study review.

Thanks,

Matt

From: davor@jadeacoustics.com
Sent: December 20, 2021 9:14 a.m.
To: Matt.Krusto@halton.ca
Subject: FW: Green Ginger Phase 1 Z.1313.06, 24T-12001 - Zoning & Plan of Subdivision (Jade File: 11-019-07)

Good morning Matt,

I would kindly ask you to advise if the road traffic data provided in the chain of emails below is still valid and can be used for the preparation of an environmental noise report.

Thank you.

Davor Sikic, P.Eng.
Jade Acoustics Inc.
411 Confederation Parkway Unit 19
Concord, On L4K 0A8
Office: 905-660-2444 x 235
Cell: 647-968-7743
F: 905-660-4110
E: davor@jadeacoustics.com
W: www.jadeacoustics.com

Please note that our office will be closed for the Holiday Season from Wednesday December 22, 2021 and will reopen on Monday January 3, 2022. All the best of the holiday season!

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: October 1, 2014 4:45 PM
To: Davor Sikic (davor@jadeacoustics.com) <davor@jadeacoustics.com>
Subject: FW: Green Ginger Phase 1 Z.1313.06, 24T-12001 - Zoning & Plan of Subdivision

Hi Davor,

Thanks for your phone message. Yes the below traffic data for both Trafalgar Road and for Dundas Street is still valid to use.

Matt Krusto | Transportation Co-ordinator
Transportation Services
Public Works Department, Region of Halton
E: matt.krusto@halton.ca | T: 905-825-6000 x 7225

From: Krusto, Matt
Sent: Thursday, December 06, 2012 3:01 PM
To: Corbett, Doug
Cc: Gariscsak, Anne
Subject: RE: Green Ginger Phase 1 Z.1313.06, 24T-12001 - Zoning & Plan of Subdivision

Doug,

I have reviewed the Green Ginger Zoning & Plan of Subdivision application, including the traffic impact study, noise study and stormwater management report and have the following comments.

As a quick summary – the traffic, noise and stormwater reports have to be resubmitted.

Let me know if you have any question or require any re-wording.

Thanks,

Matt

Traffic Impact Study "Green Ginger" Phase 1 by Transtech June 2012:

The traffic impact study must be resubmitted based on the following comments:

-The transit model split assumptions used in the report must be 5% for 2016 (other phasing must use 10% for 2021 and 20% for 2031).

-Dundas Street from Oak Park to Ninth Line is scheduled for start of construction in 2012 (operational in 2014), opening day lane configurations will be 2 general purpose lanes (GPL) in each direction and 1 curb lane HOV lane (2+) in each direction. The study must be resubmitted with this assumption.

-Phase 1 and **Phase 2** development build-out must be included in the study.

Noise Study "Green Ginger" Phase 1 by Jade Acoustics May 2012:

The Noise Study must be resubmitted based on the following comments:

Traffic assumptions for the report must be as follows:

Trafalgar Road (north of Dundas Street):

Existing AADT = 24,000
2031 AADT = 55,000
Lanes = 6
ROW – 50m
Medium Trucks = 5%
Heavy Trucks = 5%
Posted Speed Limit = 80 km/h (or 60 km/h if existing now)
Day/night split, 90%/10%

Dundas Street:

Existing AADT = 40,000
2031 AADT = 55,000
Lanes = 6
ROW = 50m
Medium Trucks = 8%
Heavy Trucks = 5%
Number of Lanes = 6
Posted Speed Limit = 80 km/h (or 60 km/h if existing now)
Day/Night split = 90%/10%

A separate Summary Table must be submitted showing barrier heights to achieve 55, 56, 57, 58 & 59 dBA **for all units/blocks** affected/impacted by Dundas Street &/or Trafalgar Road and require noise barriers. Halton Transportation staff will determine the appropriate barrier height to achieve an acceptable future noise level.

All other areas (non Dundas Street or Trafalgar Road related) where noise barriers are proposed must be reviewed and approved by the Town of Oakville.

For noise studies to be reviewed and approved by Halton, every effort must be made to mitigate noise levels to as close to 55dBA as technically, economically and administratively feasible.

Halton's minimum recommended barrier height is **2.4m**.

All noise barriers shall be constructed of Western Red Cedar or Concrete and can be a combination of an acoustic wall and earth berm.

Purchasers must be advised that the construction of elevated decks within their yards may compromise the effectiveness of the noise mitigation measures and controls which have been established within the subdivision for their lots.

The ownership and future maintenance of the noise barrier will be the responsibility of the home owner (they will not be owned/maintained by Halton in the future).

A detailed noise study should be conducted when grading information is available to refine barrier heights.

Prior to the issuance of occupancy permits, the Town's building inspector or a Professional Engineer qualified to perform acoustical engineering services in Ontario shall certify that the noise control measures have been properly installed and constructed as per the recommendations of Halton Region.

The Warning Clauses appear to be acceptable (report resubmission may warrant changes) and must be reviewed and approved by the Town of Oakville. All applicable warning clauses shall be listed in the Town of Oakville Site Plan Agreement and also be inserted in the Agreements of Purchase and Sale or Lease.

A condition should be included in the site plan/subdivision agreement whereby **confirmation** is received from the noise consultant that the recommendations from the **final** noise study have been implemented prior to the release of securities held under the Agreement.

General Transportation Comments:

- Any lands that are part of the subject property as identified as required for the future widening and/or realignment of **Dundas Street**, in the Dundas Street Class EA Study, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening, realignment and future road improvements; these lands shall be dedicated with clear title, (free and clear of encumbrances) and a Certificate of Title shall be provided, in a form satisfactory to the Director of Legal Services or his designate.

- Daylight triangles measuring 15m along Dundas Street (Regional Road 5) and 15m along Street "A" (Oak Park north leg) and at Street "X" (right-in/right/out) shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements; these lands shall be dedicated with clear title, (free and clear of encumbrances) and a Certificate of Title shall be provided, in a form satisfactory to the Director of Legal Services or his designate.

-Any lands that are part of the subject property within **50m x 5m** along the north side of **Dundas Street (Regional Road 5)** from Street "A" (Oak Park north leg) to the westerly limits are required for a transit station/transit stop and have been identified as required for the future widening and/or realignment of Dundas Street, as identified in the Dundas Street Class EA Study, that are part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening, realignment and future road improvements; these lands shall be dedicated with clear title, (free and clear of encumbrances) and a Certificate of Title shall be provided, in a form satisfactory to the Director of Legal Services or his designate.

The 5m x 50m station area (present HOV/future BRT) is for:
- general transit station area
- patron benches
- transit user ticket machine/info boards, etc.,
- bus shelter/covered area, landscaping, plantings, etc.,

- Street "A" (northerly of Dundas Street for 100m) must be satisfactorily aligned (straight alignment) with existing Oak Park Drive on the south side of Dundas Street. The Dundas Street Urban Core blocks will have to be adjusted accordingly to accommodate this alignment.

IF there will be any frontage along Trafalgar Road (plan does not currently show any for Phase 1, only for Phase 2)), then the following applies:

- Any lands that are part of the subject property as identified as required for the future widening and/or realignment of **Trafalgar Road**, in the Trafalgar Road Class EA Study, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening, realignment and future road improvements; these lands shall be dedicated with clear title, (free and clear of encumbrances) and a Certificate of Title shall be provided, in a form satisfactory to the Director of Legal Services or his designate.

Stormwater Management - Environmental Implementation Report Functional Servicing Study (EIR/FSS) North Oakville Main-East Morrison Creek', dated May 2012, prepared by Sernas Associates:

Peer Review Comments:

As requested, we have reviewed the 'Environmental Implementation Report Functional Servicing Study (EIR/FSS) North Oakville Main-East Morrison Creek', dated May 2012, prepared by Sernas Associates et al. for the development of lands owned by Green Ginger Developments Inc. (Great Gulf), 404072 Ontario Limited (Mattamy) and Argo Developments (North Oakville) Limited. The subject lands are proposed to be developed as a range of residential, mixed residential – commercial, institutional and open space uses consistent with North Oakville East Secondary Plan (NOESP), Master Plan and Ontario Municipal Board (OMB) minutes of settlement.

The EIR/FSS subject lands are bounded partly by Burnhamthorpe Road to the North, Trafalgar Road to the East, Sixth Line to the West and Dundas Road to the South, and are within parts of East Morrison Creek (Main Tributary), East Morrison Creek (East Tributary) and West Morrison Creek sub-catchments. The EIR and FSS have been prepared to assist in development of Draft Plan conditions. It is noted that the EIR/FSS does not address the adjacent properties to Green Ginger at the same level of detail due to their different ownership.

1. The frontage of the property owned by Mattamy along Burnhamthorpe Road is approximately 200 m in length. Drawing 7.1, *Conceptual Storm Servicing*, indicates that this road drainage as well as external drainage from areas north of Burnhamthorpe Road will be managed by stormwater management (SWM) facilities SWM 17A and SWM 29. These two SWM facilities are outside the Green Ginger plan. No portions of Burnhamthorpe Road are indicated to be directed to a stormwater management facility being proposed within Green Ginger lands (i.e. no runoff from Burnhamthorpe Rd to SWM Pond 27).

2. SWM Pond 30 and future SWM Pond 29 should be reviewed in light of the ongoing EA for Trafalgar Road. The EIR/FSS should address the potential for these SWM facilities to accommodate storm runoff from the Trafalgar Road right-of-way (ROW).

3. SWM Pond 29 is not within the Green Ginger property, but information contained within the EIR/FSS is relevant as Drawing 7.1, *Conceptual Storm Servicing* (based on *EM4 Land Grading and Servicing Concept* by Rand Engineering Corporation dated September 2010) includes indication of the following:

   a. A SWM outlet feature located north of SWM Pond 29 which discharges to SWM Pond 29 and to the existing creek located approximately 120 m east of Trafalgar Road; and

   b. Significant storm sewer infrastructure located within Trafalgar Road.

   The EIR/FSS does not appear to include sufficient detail regarding SWM Pond 29 to allow an assessment of Region interests in this location.

4. The 'Reconstruction of Dundas Street from Oak Park Boulevard to Highway 403' project currently undertaken by Halton Region (note: this is an MRC Project) includes provision of storm sewers on Dundas Street from Oak Park Boulevard to future Taunton Road (Area 2 - West Section). Storm sewers have been constructed to allow them to drain to Future SWM Pond 31. However, the EIR/FSS for Green Ginger does not include accommodating external drainage from Dundas Street.

   It should be noted that an interim design condition has been provided in the Region's recent Dundas Street work such that storm runoff from this portion of Dundas Street is discharged to an interim ditch located on the north side of Dundas Street and east of future Taunton Road. The interim ditch discharges to a proposed 450mm diameter storm sewer on Dundas Street, which ultimately discharges to East Morrison Creek. Runoff had been anticipated at some point in the future to proceed into a SWM pond located within the EIR/FSS lands such that the interim ditch (and associated easement) could be abandoned. However, the Region's SWM plan for this area would also allow the current drainage scenario to continue in perpetuity - although this is not preferred technically to sending runoff to a SWM facility.

5. Based on the current EA Study for Dundas Street and recognition of existing drainage patterns (i.e. west of Oak Park Boulevard), we note that runoff from Dundas Street proceeds westerly from Oak Park Drive towards Sixth Line. Clarification is required in the Green Ginger EIR/FSS regarding the feasibility of accommodating storm runoff from Dundas Street (from Sixth Line to Oak Park Boulevard) into SWM Pond 22A.

6. Given the feasibility of future runoff accommodation is established, the Region may also want to consider potential access to SWM Pond 22A for their use in advance of future development in that location.

7. West Morrison Creek (a medium constraint or ‘Blue’ stream) is located in the southwest corner of the EIR/FSS subject lands (outside the Green Ginger property). The EIR/FSS does not contain details regarding the future condition of the creek such as any enhancement or realignments.

Matt Krusto
Supervisor, Transportation Development Review
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 7225 | 1-866-442-5866

Master Stations	Description	Count date	total vol	ampk end	ampk vol	off pk end	offpk vol	pm pk end
100511	Dundas Street - between Oak Park Boulevard and Trafalgar Road	17-Sep-19	45,964	8:45	3,543	13:30	2,321	18:00
100307	Trafalgar Road - between Dundas Street and Burnhamthorpe Road	10-Dec-19	26,735	8:45	2,498	13:00	1,326	17:30

pkhr vol	8hr vol	13hr vol	posted speed (km)	50%speed (km)	avg (km)	85percent.	Variance	exceeding (%)	#cars	# sml trk	# med trk/bus	# hvy trk	%cars
3,845	23,797	36,405	60	60	63	75.95	15.95	58.40%	43,455	593	769	946	95.0%
2,530	15,329	22,258	80	80	82	94.49	14.49	54.40%	25,330	264	402	537	95.5%

%smal trk	% med trk/bus	% hvy trk	headway max (sec)	headway min (sec)	temp min (C)	Temp max (C)	surface
1.3%	1.7%	2.1%	0.87	45.00	16	38	Dry
1.0%	1.5%	2.0%	1.34	81.82	0	7	Dry

EXCERPTS FROM TOWN OF OAKVILLE OFFICIAL PLAN

Table 4: Functional Classification of Roads

Facility Type	Function	Criteria[1]
Provincial Highways	▪ accommodate high speed, high volume, longer distance traffic ▪ accommodate rapid transit services and high occupancy vehicles	▪ grade separated intersections ▪ access restricted to properly designated interchanges ▪ direct local access will not be permitted ▪ rights-of-way determined by Province
Major Arterials / Transit Corridors	▪ accommodate high volumes of traffic moving between communities traveling to activity centres and traffic en route to or from the Provincial Highway system ▪ act as major transit corridors ▪ accommodate rapid transit services and high occupancy vehicles ▪ distribute traffic to or from all other classes of roads ▪ 4 or 6 lanes ▪ 40,000 or 60,000 vehicles per day[2]	▪ high degree of access control and turning movement control ▪ access will generally be limited to road intersections ▪ direct access from abutting properties will be discouraged in the *development* of new communities and districts ▪ *transit-supportive* land uses to be encouraged along right-of-way ▪ 35 to 50 metres
Multi-purpose Arterials	▪ serve a mix of functions of major arterials and minor arterials ▪ act as major transit corridors ▪ accommodates high volumes of traffic ▪ 4 or 6 lanes ▪ 40,000 or 60,000 vehicles per day[2]	▪ intermediate degree of access control ▪ *transit-supportive* land uses to be encouraged along right-of-way ▪ 35 metres
Minor Arterials / Transit Corridors	▪ accommodate intermediate volumes of inter-community and inter-neighbourhood traffic ▪ distribute traffic to or from all other classes of roads, except Provincial Highways ▪ may act as local transit corridors ▪ 2 or 4 lanes ▪ 20,000 or 40,000 vehicles per day[2]	▪ direct access from abutting residential properties will generally be discouraged in the *development* of new communities and districts unless suitable provisions are incorporated into subdivision plans ▪ *transit-supportive* land uses to be encouraged along right-of-way ▪ 26 metres

Facility Type	Function	Criteria[1]
Industrial Arterials / Commercial Collectors	▪ accommodate moderate volumes of employment/ commercial traffic moving within and through employment/commercial districts ▪ 2 lanes ▪ 15,000 vehicles per day[2]	▪ direct access will be provided ▪ 26 metres (Industrial) ▪ 20 metres (Commercial)
Major Collectors	▪ accommodate intermediate volumes of intra-community traffic ▪ may act as local transit corridors ▪ 2 lanes ▪ 10,000 vehicles per day[2]	▪ direct access from abutting properties will be permitted ▪ 26 metres
Minor Collectors	▪ accommodate moderate volumes of intra-community traffic ▪ 2 lanes ▪ 5,000 vehicles per day[2]	▪ direct access from abutting properties will be permitted ▪ 20 metres
Local Roads	▪ not to accommodate through traffic ▪ roads shall be designed to service only the properties that abut the roadway ▪ 2 lanes ▪ 1,500 vehicles per day[2]	▪ access to individual properties ▪ 18 metres ▪ 16 metres right-of-way where pedestrian mobility plan demonstrates that a single sidewalk is sufficient for the area

Notes:

1 Roads already meeting the right-of-way width may require additional widening if identified through an environmental assessment study, the planning application process or detailed design.

2 This is the typical maximum volume.

8.4 Rights-of-Way

8.4.1 The required right-of-way widths shown in Table 4, Functional Classification of Roads, in conjunction with Schedule C, denote the requirement for the section of the road. Additional rights-of-way may be required at intersections to provide for exclusive queue jump and/or turning lanes and other special treatments to accommodate the optimum road/intersection geometric design.

8.4.2 Additional rights-of-way may be required to provide lands for environmental considerations in the construction of bridges, overpasses, grade separations, pedestrian and cycling facilities, and transit priority measures. Any such additional right-of-way requirements shall be determined at the time of the design of the road facilities.

8.4.3 Rights-of-way in accordance with Table 4 shall be conveyed as required as a condition of *development*.

CORRESPONDENCE FROM GHD
REGARDING ROAD TRAFFIC

Davor Sikic

From: Raf Andrenacci <Raf.Andrenacci@ghd.com>
Sent: March 29, 2023 9:21 AM
To: Davor Sikic
Subject: Re: Green Ginger Phase 2 - Traffic Data for Noise Consultant (Jade File: 11-019-07)

Hi Davor,

Based on discussion with the client, the unit count is expected to remain the same and the anticipated traffic volumes along those roadways will remain the same as well. In any case that a drastic change does occur to the traffic volumes along those roadways I will let you know as soon as possible.

Regards,
Raf

From: Davor Sikic <davor@jadeacoustics.com>
Sent: Tuesday, March 28, 2023 12:09 PM
To: Raf Andrenacci <Raf.Andrenacci@ghd.com>
Subject: FW: Green Ginger Phase 2 - Traffic Data for Noise Consultant (Jade File: 11-019-07)

Good morning Raf,

I would kindly ask you to advise if you have had a chance to review your file with respect to the information mentioned in my March 16, 2023 email. Please see below.

Thank you.

Davor Sikic, P.Eng.
Jade Acoustics Inc.
411 Confederation Parkway Unit 19
Concord, On L4K 0A8
Office: 905-660-2444 x 235
Cell: 647-968-7743
F: 905-660-4110
E: davor@jadeacoustics.com
W: www.jadeacoustics.com

From: Davor Sikic
Sent: March 20, 2023 10:52 AM
To: Raf Andrenacci <Raf.Andrenacci@ghd.com>
Subject: RE: Green Ginger Phase 2 - Traffic Data for Noise Consultant (Jade File: 11-019-07)

Thank you very much Raf.

Regards,

Davor Sikic, P.Eng.
Jade Acoustics Inc.
411 Confederation Parkway Unit 19

Projected AADT – 2032

Location	AADT
Wheat Boom Drive, West of Street A	5301
Threshing Mill, West of Street A	9792
Street A, North of Wheat Boom	1252
Street A, North of Threshing Mill	6750

Threshing Mill Boulevard and Wheat Boom Drive can be classified as major collectors, while Street A can be classified as a minor collector road

The assumed posted speed along Threshing Mill, Wheat Boom and Street A will be 50 km/h

In terms of the truck traffic, with the classification of these roads as collector roads, it is assumed that a 2% truck percentage is appropriate as there will not be many large trucks accessing these roads.

APPENDIX B

ENVIRONMENTAL NOISE CRITERIA

ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MOE)

Reference: "Environmental Noise Guidelines Stationary and Transportation Sources – Approval and Planning", Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).

SOUND LEVEL CRITERIA FOR ROAD AND RAIL NOISE

TABLE C-1

Sound Level Limit for Outdoor Living Areas

Road and Rail

Time Period	Leq (16) (dBA)
16 hr, 07:00 - 23:00	55

TABLE C-2

Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	Leq (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping quarters	07:00 – 23:00	45	40
	23:00 – 07:00	40	35

SOUND LEVEL CRITERIA FOR AIRCRAFT NOISE

TABLE C-3

Outdoor Aircraft Noise Limit

Time Period	NEF/NEP
24-hour	30

TABLE C-4

Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
Living/dining/den areas of residences, hospitals, nursing/retirement homes, schools, daycare centres, etc.	5
Sleeping Quarters	0

* The indoor NEF/NEP values in Table C-4 are used to determine acoustical insulation requirements based on the NEF/NEP contour maps.

SOUND LEVEL CRITERIA FOR STATIONARY SOURCES

TABLE C-5

Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

TABLE C-6

Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

TABLE C-7

Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

TABLE C-8

Exclusion Limit Values of Impulsive Sound Level (L_{LM}, dBAI)
Plane of Window - Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One Hour	Class 1 Area (07:00-23:00)/ (23:00-07:00)	Class 2 Area (07:00-23:00)/ (23:00-07:00)	Class 3 Area (07:00-19:00)/ (19:00-07:00)	Class 4 Area (07:00-23:00)/ (23:00-07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

SUPPLEMENTARY SOUND LEVEL LIMITS

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-4. Table C-9 and Table C-10 are expanded versions of Table C-2 and Table C-4, and present guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed. The sound level limits in Table C-9 and Table C-10 are presented as information, for good-practice design objectives.

TABLE C-9

Supplementary Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	Leq (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

TABLE C-10

Supplementary Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

APPENDIX C

SAMPLE CALCULATION OF PREDICTED UMITIGATED SOUND LEVELS DUE TO ROAD TRAFFIC

APPENDIX C-1
SAMPLE CALCULATION OF PREDICTED SOUND LEVELS

FILE: 11-019-07
NAME: Green Ginger, Phase 2
REFERENCE DRAWINGS: Draft Plan of Subdivision and TUC Concept Plan
LOCATION: Block 80, Building D2, 30th floor, east wall

Noise Source:	Trafalgar Road SB	Trafalgar Road NB
Time Period:	16 hr. (day)	16 hr. (day)
Segment Angle:	-90 to 90	-90 to 90
Distance (m):	27.0	38.0

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	72.69	72.69
Height and/or Distance Correction (dBA):	-2.55	-4.04
Finite Element Correction (dBA):	0.00	0.00
Allowance for Screening (dBA):	0.00	0.00
Allowance for Future Growth (dBA):	incl.	incl.
LeqDay (dBA):	70.14	68.65
Combined LeqDay (dBA):	72.47	

* Leq determined using the computerized model of the Ontario Ministry of the Environment and Climate Change Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

APPENDIX C-2
SAMPLE CALCULATION OF PREDICTED SOUND LEVELS

FILE: 11-019-07
NAME: Green Ginger, Phase 2
REFERENCE DRAWINGS: Draft Plan of Subdivision and TUC Concept Plan
LOCATION: Block 80, Building D2, 30th floor, east wall

Noise Source:	Trafalgar Road SB	Trafalgar Road NB
Time Period:	8 hr. (night)	8 hr. (night)
Segment Angle:	-90 to 90	-90 to 90
Distance (m):	27.0	38.0

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	66.15	66.15
Height and/or Distance Correction (dBA):	-2.55	-4.04
Finite Element Correction (dBA):	0.00	0.00
Allowance for Screening (dBA):	0.00	0.00
Allowance for Future Growth (dBA):	incl.	incl.
LeqNight (dBA):	63.60	62.12
Combined LeqNight (dBA):	65.93	

* Leq determined using the computerized model of the Ontario Ministry of the Environment and Climate Change Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

```
STAMSON 5.0        NORMAL REPORT        Date: 29-03-2023 15:42:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
```

Filename: d2ew.te Time Period: Day/Night 16/8 hours
Description: Block 80, Building D2, 30th floor, east wall

```
Road data, segment # 1: Trafalgar SB (day/night)
------------------------------------------------
Car traffic volume  : 23884/2654  veh/TimePeriod  *
Medium truck volume :   371/41    veh/TimePeriod  *
Heavy truck volume  :   495/55    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  27500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Trafalgar SB (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  90.00 / 90.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Trafalgar NB (day/night)
------------------------------------------------
Car traffic volume  : 23884/2654  veh/TimePeriod  *
Medium truck volume :   371/41    veh/TimePeriod  *
Heavy truck volume  :   495/55    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  27500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Trafalgar NB (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :  90.00 / 90.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Trafalgar SB (day)
----------------------------------------

Source height = 1.19 m

ROAD (0.00 + 70.14 + 0.00) = 70.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  72.69   0.00  -2.55   0.00   0.00   0.00   0.00  70.14
--------------------------------------------------------------------------------

Segment Leq : 70.14 dBA

Results segment # 2: Trafalgar NB (day)
----------------------------------------

Source height = 1.19 m

ROAD (0.00 + 68.65 + 0.00) = 68.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  72.69   0.00  -4.04   0.00   0.00   0.00   0.00  68.65
--------------------------------------------------------------------------------

Segment Leq : 68.65 dBA

Total Leq All Segments: 72.47 dBA

Results segment # 1: Trafalgar SB (night)
-----------------------------------------

Source height = 1.19 m

ROAD (0.00 + 63.60 + 0.00) = 63.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  66.15   0.00  -2.55   0.00   0.00   0.00   0.00  63.60
--------------------------------------------------------------------------------

Segment Leq : 63.60 dBA

Results segment # 2: Trafalgar NB (night)
-----------------------------------------

Source height = 1.19 m

ROAD (0.00 + 62.12 + 0.00) = 62.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  66.15   0.00  -4.04   0.00   0.00   0.00   0.00  62.12
--------------------------------------------------------------------------------

Segment Leq : 62.12 dBA

Total Leq All Segments: 65.93 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 72.47
                         (NIGHT): 65.93
```

APPENDIX C-3
SAMPLE CALCULATION OF PREDICTED SOUND LEVELS

FILE: 11-019-07
NAME: Green Ginger, Phase 2
REFERENCE DRAWINGS: Draft Plan of Subdivision
LOCATION: Block 44, north unit, 1.5 m above grade, rear yard

Noise Source:	Threshing Mill Boulevard
Time Period:	16 hr. (day)
Segment Angle:	-90 to 35
Distance (m):	20.5

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	62.41
Height and/or Distance Correction (dBA):	-2.55
Finite Element Correction (dBA):	-2.64
Allowance for Screening (dBA):	0.00
Allowance for Future Growth (dBA):	incl.
LeqDay (dBA):	57.51

* Leq determined using the computerized model of the Ontario Ministry of the Environment and Climate Change Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

```
STAMSON 5.0        NORMAL REPORT        Date: 29-03-2023 14:48:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
```

Filename: 44ola.te Time Period: Day/Night 16/8 hours
Description: Block 44, north unit, rear yard

```
Road data, segment # 1: Threshing (day/night)
---------------------------------------------
Car traffic volume  :  8820/980   veh/TimePeriod  *
Medium truck volume :    90/10    veh/TimePeriod  *
Heavy truck volume  :    90/10    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Threshing (day)
-------------------------------------
Angle1   Angle2           : -90.00 deg   35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  20.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Threshing (day)
------------------------------------

Source height = 1.00 m

ROAD (0.00 + 57.51 + 0.00) = 57.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -90     35   0.66  62.41   0.00  -2.25  -2.64   0.00   0.00   0.00  57.51
--------------------------------------------------------------------------

Segment Leq : 57.51 dBA


Total Leq All Segments: 57.51 dBA
```

APPENDIX D

SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION

APPENDIX D-1
SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION*

FILE: 11-019-07
NAME: Green Ginger, Phase 2
REFERENCE DRAWINGS: Draft Plan of Subdivision and TUC Concept Plan
LOCATION: Block 80, Building D2, 30th floor southeast corner bedroom, daytime

ROAD

Exterior Wall area as a percentage of floor area:	East:	40%
	South:	40%
Window/Exterior Door area as a percentage of floor area:	East:	40%
	South:	40%

Number of components:	4	
Outdoor (Daytime) Leq:	East:	72 (+3 for reflections) = 75 dBA
	South:	70 (+3 for reflections) = 73 dBA
Indoor Leq Limit (dBA):	45 (daytime)	
Noise Reduction (dBA):	East:	33 (including angle correction)
	South:	31 (including angle correction)
Noise Spectrum:	Mixed Road Traffic	Angle Correction: 3
Absorption:	Medium	

APPROPRIATE ELEMENTS

		STC Rating
Exterior Wall	East	STC 43
	South	STC 41
Window/Exterior Door	East	STC 38
	South	STC 36

* Based upon "Controlling Sound Transmission into Buildings", Building Practice Note 56 by National Research Council of Canada, September, 1985.

APPENDIX E

SAMPLE CALCULATION OF SOUND BARRIER ANALYSES

```
STAMSON 5.0        NORMAL REPORT        Date: 30-03-2023 14:30:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
```

Filename: 44olabar.te Time Period: Day/Night 16/8 hours
Description: Block 44, north unit, rear yard, sound barrier requirements

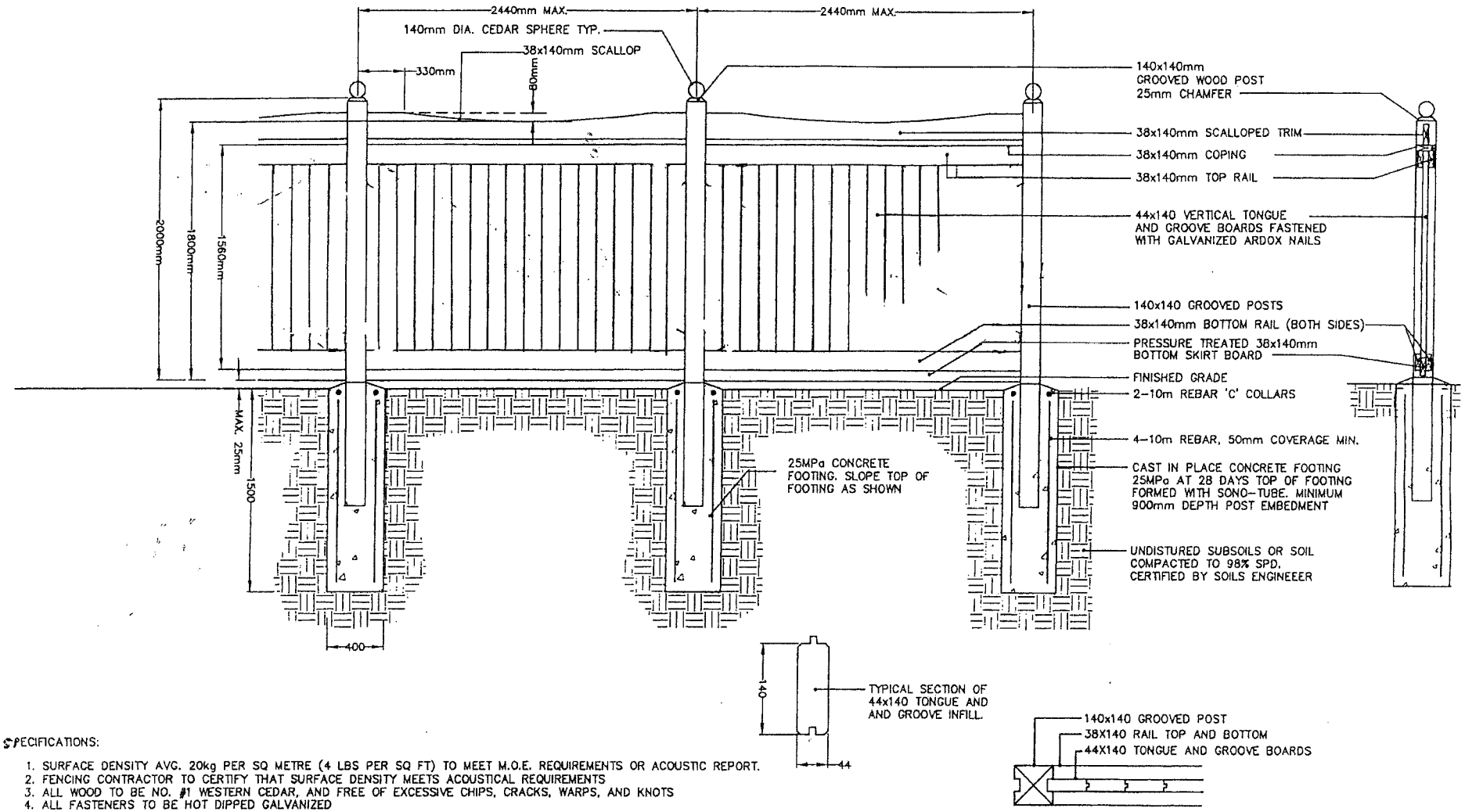
```
Road data, segment # 1: Threshing (day/night)
---------------------------------------------
Car traffic volume  :  8820/980   veh/TimePeriod  *
Medium truck volume :    90/10    veh/TimePeriod  *
Heavy truck volume  :    90/10    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Threshing (day)
-------------------------------------
Angle1   Angle2           : -90.00 deg   35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  20.50 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 35.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   8.50 m
Source elevation          :   0.00 m
Receiver elevation        :   0.50 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Threshing (day)
------------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.59 !         1.59

ROAD (0.00 + 57.51 + 0.00) = 57.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -90     35   0.66  62.41   0.00  -2.25  -2.64   0.00   0.00  -0.24  57.27*
   -90     35   0.66  62.41   0.00  -2.25  -2.64   0.00   0.00   0.00  57.51
--------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.51 dBA


Total Leq All Segments: 57.51 dBA
```

Barrier table for segment # 1: Threshing (day)

Barrier Height	Elev of Barr Top	Road dBA	Tot Leq dBA
1.50	1.50	57.51	57.51
1.60	1.60	52.72	52.72
1.70	1.70	52.69	52.69
1.80	1.80	52.58	52.58
1.90	1.90	52.41	52.41
2.00	2.00	52.17	52.17
2.10	2.10	51.89	51.89
2.20	2.20	51.57	51.57
2.30	2.30	51.22	51.22
2.40	2.40	50.85	50.85

APPENDIX F

TOWN OF OAKVILLE STANDARD NOISE WALL DETAILS



SPECIFICATIONS:

1. SURFACE DENSITY AVG. 20kg PER SQ METRE (4 LBS PER SQ FT) TO MEET M.O.E. REQUIREMENTS OR ACOUSTIC REPORT.
2. FENCING CONTRACTOR TO CERTIFY THAT SURFACE DENSITY MEETS ACOUSTICAL REQUIREMENTS
3. ALL WOOD TO BE NO. #1 WESTERN CEDAR, AND FREE OF EXCESSIVE CHIPS, CRACKS, WARPS, AND KNOTS
4. ALL FASTENERS TO BE HOT DIPPED GALVANIZED
5. ALL WOOD TO BE COATED WITH TWO COATS OF CLEAR OIL BASED WOOD STAIN. MANUFACTURER TO BE APPROVED BY LANDSCAPE ARCHITECT

Appendix II Standard Wooden Noise Wall