SLR Consulting (Canada) Ltd.
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October 10, 2024

Attention: Trevor Hawkins
14688210 Canada Inc.
c/o MHBC Planning, Urban Design & Landscape Architecture
540 Bingemans Centre Drive, Suite 200
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SLR Project No.: 241.030998.00001

Revision: 0

RE: 177-179 Albert Street, Waterloo – Environmental Noise Assessment Response to Peer Review Comments

Introduction

SLR Consulting (Canada) Ltd. (SLR) was retained by 14688210 Canada Inc. to complete an environmental noise assessment for their proposed development located at 177-179 Albert Street, Waterloo ("the Project site"). The Environmental Noise Assessment was documented in the following report:

- SLR Report, "Environmental Noise Assessment, 177-179 Albert Street, Waterloo, Ontario, SLR Project No: 241.030998.00000", dated November 22, 2023.

Peer review comments have been provided by RWDI Air Inc. (RWDI) on behalf of the Regional Municipality of Waterloo (RMOW), in a letter report dated February 27, 2024 (refer to **Attachment A**).

The purpose of this letter is to provide responses to the peer review comments. The relevant and highlighted comments from Attachment A are provided in italics and numbered as presented in the RWDI letter report. SLR responses immediately following the comments. Applicable background information related to the proposed development planning application is provided in the following section, prior to peer review comments responses.

The following comments are to be read in conjunction with the Updated Environmental Noise Assessment, -179 Albert Street, Waterloo, Ontario, SLR Project No: 241.030998.00001", dated October 10, 2024. This updated assessment considers revised architectural drawings prepared by Masri O Inc. Architects, provided for reference in Appendix B of the updated report.

Background Information

The Project site currently contains the Delton Glebe Counselling Centre at 179 Albert Street, and a 3-storey residential detached dwelling at 177 Albert Street.

The proposed development planning application requested an Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA). The current Official Plan and Zoning designations are applicable to the Project site are as follows:

- Regional Official Plan – "Delineated Built-Up Area", "Major Transit Station Area".

- City of Waterloo Official Plan – Dual designation, “Mixed-Use High Density Residential” and “Academic”.
- City of Waterloo Zoning By-Law 2018-050 – Residential Mixed-Use 81 (RMU-81) with site-specific exception 179 in Zoning By-Law 2018-050.

The OPA is seeking an increased maximum density per hectare (from current maximum of 750 bedrooms per hectare).

The current Zoning designation permits multi-unit residential buildings with a maximum height of 81 storeys, and a maximum density of 750 bedrooms per hectare. No change in Zone is proposed, and the ZBA is seeking changes in maximum permitted density, reduction in required landscaped open space, reduction in minimum tower separation distances from the northerly and westerly internal lot lines, and changes to permitted residential parking rates.

The current Official Plan and Zoning designations therefore permit high-rise noise sensitive uses on the Project site. The Project site is already noise-sensitive up to a 3rd-storey window height, at which sound levels from surrounding stationary sources must meet applicable sound level limits. The proposed Amendments are not requesting changes to allowable sensitive uses that can already be constructed on the Project site.

Furthermore, Wilfrid Laurier University (municipal address 75 University Avenue West, Waterloo, ON N2L 3C5) has an Environmental Activity and Sector Registry (EASR) permit.

- Registration Number: R-010-5110545220; and
- Date Registration Filed: August 10, 2018, 11:07:52 AM.

The Acoustic Assessment Summary Table (AAST) available through the Ministry of Environment, Conservation and Parks (MECP) Access Environment database indicates that applicable sound level limits are met at off-site and on-site points of reception, including the Project site, residential buildings in all directions surrounding the Project site, and on-site residences associated with Wilfrid Laurier (such as the MacDonald House Residence). No Noise Abatement Action Plan (NAAP) was required to be developed, as noted in the EASR application document.

RWDI Peer Review Comments – February 27, 2024

> *9.b. Based on the zone of influence described in the Waterloo TOR, University Avenue West should be considered for this development or justification should be provided why its contribution is insignificant.*

SLR Response: Road traffic data used in the Environmental Noise Assessment was obtained from the RMOW Transportation department, in accordance with the City of Waterloo Terms of Reference. This process requires that the requester of traffic data identify the Project site, and the RMOW provides traffic data for roadways deemed to require noise assessment.

The RMOW did not provide road traffic data for University Avenue West. The roadway centreline is located more than 180 m north of the proposed development, and there are several intervening multi-storey structures between the roadway and the proposed development that limit exposure to the roadway.

SLR nonetheless obtained future traffic data information for University Avenue West from the City of Waterloo development applications website, for a proposed development near the Project site. Including road traffic noise from University Avenue West in the acoustic model

(approximately future year AADT of 21,300 vehicles) resulted in sound level prediction changes of less than 1 dB, and no changes to assessment conclusions. No further consideration of traffic noise from University Avenue West is warranted, and additional traffic data for University Avenue West should not need to be purchased for this assessment.

> *10. The traffic data report indicates that the City of Waterloo should verify the forecast. Verification from the City of Waterloo should be performed by the consultant. If the City provides traffic volumes that are 10% or more higher, the results should be updated.*

SLR Response: In SLR experience, the City of Waterloo will not provide 'verification' of RMOW traffic data. They will provide other data sets for comparison.

SLR staff requested data from the City of Waterloo in July 2023, indicating an existing AADT of 3,897 for Seagram Drive, based on a data collection study from September 2018. That data is provided for reference in **Attachment B**. As the AADT volume provided at the time was significantly lower than the data received from the RMOW (current AADT of 4,500), the RMOW data was used.

As part of preparing this peer review response, SLR again contacted the City of Waterloo to request verification of the RMOW data. As indicated above, the City of Waterloo did not provide verification, but did provide a different data set with a higher AADT estimate for Seagram Drive between Albert Street and Lester Street was, with a Total AADT from 2023. An applicable annual growth rate of 1.5% was also provided by the City. Refer to **Attachment B**.

The transportation noise assessment was revised using the 2023 AADT volume of 5,408 vehicles, projected to future year 2034. The updated results are included in the Updated Environmental Noise Assessment report dated October 10, 2024.

There were no changes to the conclusions or recommendations in the report, despite the traffic volume being more than 10% above the previously modelled volume.

> *11.c The Cadna/A modelling should be appropriately documented.*
>
> *i. Since the software includes several sound propagation algorithms, the consultant should clarify what algorithms were used for the transportation sound propagation.*
>
> *iii. The remaining model settings should be provided, such as temperature, relative humidity and order of reflections.*
>
> *iv. Documentation of the Cadna/A portion of the verification should be completed by providing a sample output file for the verification location.*

SLR Response: A site-specific comparison between STAMSON and Cadna/A was provided, in accordance with the City of Waterloo Terms of Reference: Noise Study document (in **Appendix D** of the Environmental Noise Assessment report). SLR has not previously been asked on any other project to provide the additional information requested in this peer review.

The additional information requested as part of the peer review has nonetheless been included in **Appendix D** of the Updated Environmental Noise Assessment report dated October 10, 2024.

> *15. The report summarizes the consequences of the modelled sound levels.*
>
> *b. Results of the modelling are reflected in a ventilation requirement, as is appropriate. However, the report indicates the freedom to select a system other than "provision for central air conditioning", without providing the supplementary requirements associated with alternatives. The report should provide the additional information (i.e., description,*

assurance, certification and feasibility demonstration) required in section 3.3.6 of the RMOW policy.

SLR Response: SLR received confirmation that central air conditioning will be provided for the proposed development. Upon request of additional information related to mechanical cooling, the project architect provided the following response:

- Regarding the potential planned mechanical systems, we cannot provide specifics at this early stage.
- Regarding PTAC units: we do not use PTAC units; instead, we use air pumps on the roof within an enclosure than can be [mitigated] if necessary.

In accordance with section 3.3.6 of the Land Use Implementation Guideline, as an alternative means of mechanical ventilation to central air conditioning is not planned for the proposed development, further details (description, assurance, certification and feasibility) are not required.

16. The Class I description is not universally applicable and should be revised on a per-building basis in consideration of the sources present. The 10-fan air-cooled condenser at Martin Luther University College illustrates this based on the impacts which the report presents at 100+ m distance.

SLR Response: In accordance with the City of Waterloo Terms of Reference: Noise, the potential zone of influence for stationary sources was determined using the potential influence areas described in the D-series guidelines from the Ministry of Environment, Conservation and Parks (MECP).

The Project site already contains noise sensitive points of reception and is zoned to permit noise sensitive uses up to 81 storeys in height.

The presence of an air-cooled chiller itself does not justify detailed stationary noise assessment outside of the Class I 70 m area of influence from the MECP D-series guideline. The 10-fan air cooled chiller was included in the assessment because it was part of a building at Martin Luther University College that is located within the prescribed MECP D-6 guideline 70 m setback distance for Class I facilities.

17. The evaluation is limited to an exhaust louvre at the Wilfrid Laurier University Library and three air cooled chillers at the Martin Luther University College.

a. The pair of cooling towers, large generator and 12-fan air cooled condenser located further to the northeast of the proposed development, on our south of the Dr. Alvin Wood Building should be considered.

SLR Response: The cooling towers, generator and 12-fan air-cooled condenser are sources located outside the zone of influence determined using the D-series guidelines stipulated in the City of Waterloo Terms of Reference: Noise. Detailed stationary noise assessment of these sources is therefore not warranted.

The Project site already contains noise sensitive points of reception and is zoned to permit noise sensitive uses up to 81 storeys in height.

Furthermore, as shown in the AAST included with the EASR permit held by Wilfrid Laurier University, applicable sound level limits from the campus facilities are met at all on-site and surrounding points of reception, including the current Project site, without the need for additional mitigation.

The pair of cooling towers and generator are located approximately 57 m from the 'Little House' campus residence (noise sensitive during daytime, evening and night-time hours). They are also overlooked by the Dr. Alvin Woods Building (noise sensitive during daytime, evening hours). As sound level limits must be met at these closer and more exposed locations (that have operable windows), in accordance with the EASR permit, the limits will by extension be met at the proposed development located more than 130 m away. Further assessment is not required.

Similarly, the 12-fan air-cooled condenser atop the Dr. Alvin Woods Building is shielded from the proposed development by a mechanical penthouse, which acts as a barrier. Sound levels from the condenser must also meet sound level limits at the Dr. Alvin Woods Building windows themselves, the windows of the Wilfrid Laurier University Library (both noise sensitive during daytime/evening hours), and at the east façades of the high-rise residential building located at 203 Albert Street and the mid-rise residential building at 197 Albert Street (both of which have a direct line of site to the source). As sound level limits must be met at these closer and more exposed locations in accordance with the EASR permit, the limits will by extension be met at the proposed development located more than 130 m away. Further assessment is not required.

> *17.b. The 8-fan air-cooled condenser to the west of the proposed development, at 88 Seagram Drive, should also be considered.*

SLR Response: This source is located outside the zone of influence determined using the D-series guidelines stipulated in the City of Waterloo Terms of Reference: Noise. Detailed stationary noise assessment of these sources is therefore not warranted.

The Project site already contains noise sensitive points of reception and is zoned to permit noise sensitive uses up to 81 storeys in height.

Furthermore, the air-cooled condenser services a 4-storey residential (student housing) building itself at 88 Seagram Drive. A 6-storey mid-rise residential building at 85 Seagram Drive and a high-rise residential (student housing) building at 185 Lester Street also overlook the 8-fan air-cooled condenser distances of approximately 60 m and 80 m, respectively.

As sound level limits must be met at these closer and more exposed locations, including the building at 88 Seagram Drive itself, the limits will by extension be met at the proposed development located more than 80 m away. Further assessment is not required.

> *17.c. One near-grade exhaust louvre at the Wilfrid Laurier University Library is considered.*
>
> *i. It should be clarified which of the four similar louvres on the building was considered.*
>
> *ii. The library has a mechanical penthouse with louvres and ventilation that have not been considered, but could have impact on the proposed development, and should therefore be addressed.*
>
> *iii. Supporting information should be provided that the remaining louvres were considered under their predictable worst-case operating condition.*

SLR Response: The 2nd louvre from the north edge of the library was audible during the site visit conducted by SLR staff on July 10, 2023. A source sound level measurement was obtained and considered in the assessment. It should be noted that this source was not audible at the Project site above background sound levels but was included as it was within 70 m of the proposed development.

Possible sources associated with the rooftop mechanical penthouse were not audible from the Project site or during a walk-around of the Wilfrid Laurier campus during the site visit. The

northmost and two southmost louvres along the west side of the Library building were not generating any noise during the site visit.

The louvres face west towards existing noise sensitive points of reception on the west side of Albert Street. They are also exposed to the existing noise sensitive point of reception at 177 Albert Street. By meeting applicable limits at these points of reception as required for the EASR permit held by Wilfrid Laurier University, even if the other three louvres are noise generating during other periods of time, sound level limits must by extension be met at the Project site. Further assessment is not required.

Although the mechanical penthouse was not audible during the site visit, SLR included the possible impact of the south-facing louvred mechanical penthouse wall. Applying a sound level approximately equivalent to a 10-ton HVAC (i.e., sound power level of 86 dBA) unit across the louvre resulted in predicted sound levels on the top floor library windows of up to 51 dBA, and did not result in changes to worst-case predicted sound levels at the proposed development. Further assessment is not required.

> *17.d. One 10-fan air cooled chiller on Martin Luther University College was considered.*
>
> *i. SLR historical data was applied for the sound level. The sound power level is uncharacteristically quiet. Supporting sound level information for the predictable worst-case operation should be provided.*
>
> *iii. The night-time duty cycle of 25% or 15 minutes per hour is much lower than typical and must be supported by evidence from the University or sign-off from the designer of the system. As an alternative, a 50% night-time duty cycle is acceptable.*
>
> *e. Two 2-fan air cooled chillers on Martin Luther University College are modelled.*
>
> *iii. The night-time duty cycle of 25% or 15 minutes per hour is much lower than typical and must be supported by evidence from the University or sign-off from the designer of the system. As an alternative, a 50% night-time duty cycle is acceptable.*

SLR Response: The applied sound power levels for 10-fan and 2-fan air-cooled chillers have been used in multiple assessments, and the suitability of the sound levels for this assessment are further supported by agreement with an at-grade spot-check measurement conducted by SLR staff during the site visit on July 10, 2023 to the east of the Martin Luther University College building.

As the Wilfrid Laurier University holds an EASR permit, it is obligated to meet sound level limits at existing points of reception, including a 3rd-storey window on the east façade of the existing residential dwelling at 177 Albert Street. Using the sound level data from the SLR assessment for these sources, predicted sound levels on the north and west facades of 53 Bricker Avenue (4.5-storey residential building) and the west façade of 44 Bricker Avenue (Bricker Residence) exceed daytime Class 1 limits by up to 5 dBA and 2 dBA, respectively. This suggests that sound levels from the air-cooled condenser should in fact be lower than the levels used in the assessment (for existing compliance purposes), and the SLR assessment is conservative.

With respect to the night-time duty cycle applied to the air-cooled chiller units, the Martin Luther University College building is open from 8:30am through 4:30pm and is therefore not open during evening or night-time hours. It is unreasonable to suggest that three air-cooled rooftop chiller units will run for 50% of a worst-case hour during periods when the building is unoccupied, particularly as it would result in night-time excesses of up to 7 dBA at nearby existing points of reception along Bricker Avenue, and an excess of up to 2 dBA at the existing Project site itself.

Considering the above-noted points, the air-cooled chillers atop Martin Luther University College have been appropriately modelled, and further assessment is not warranted.

20. The modelling was done using the Cadna/A software package.

f. It should be clarified if local areas of non-reflective or less reflective ground are applied, and if so, where.

SLR Response: As stipulated in the City of Waterloo Terms of Reference: Noise document, sample calculations from Cadna/A were provided. Refer to **Appendix F** Sample Calculations, which provide sufficient information to address this comment.

Globally reflective ground (G = 0.0) was applied in the Cadna/A model. No localized areas of absorptive ground have been applied in the Cadna/A model.

25. The report defers the consideration of both the noise impact from the development on itself and noise impact of the development on the surroundings until the mechanical systems have been designed.

c. The acoustic specification for a mechanical system should be provided to the mechanical designer at the beginning of the design process to ensure that a type of system is selected that is capable of meeting the acoustic requirements.

SLR Response: SLR understands that central air conditioning will be provided. It is understood from the Project team that it is not feasible to provide acoustic specifications outside of general design guidance at this early stage in the process, as the details associated with the central air conditioning system are not available (e.g., mechanical penthouse configuration, capacity requirements, etc.). The Updated Environmental Noise Assessment report states that the systems should be designed to meet applicable sound level limits. It is expected a holding provision will be placed on the Project site, as part of the Site Plan Application, until such a time that the acoustic specifications and design of mechanical systems is completed.

25.d. A condition should be included in the application that, prior to Building Plan approval, the mechanical equipment noise impact be reviewed and signed-off that the sound level criteria will be met upon construction. The review and sign-off are to be completed by an individual on the Region's Pre-qualified Consultants for Noise Studies list.

SLR Response: SLR has recommended mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment. Imposing the requested condition would be at the discretion of the RMOW, and not SLR.

25.e. A condition should be included in the application that sound impact on the development be verified to comply with the sound level criteria and signed-off prior to occupancy permits. The verification and sign-off are to be completed by an individual on the Region's Pre-Qualified Consultants for Noise Studies list.

SLR Response: SLR has recommended mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment. Imposing the requested condition would be at the discretion of the RMOW, and not SLR.

26. The Transportation noise conclusions reflect the building façade, ventilation and warning clause details of this report. The barrier requirements or the appropriate warning clause should be listed in this section.

SLR Response: The conclusions section has been updated. Based on the updated development drawings and outdoor amenity space configuration, OLA barrier and warning clause requirements are not applicable.

> *27. The Stationary Source Noise conclusions regarding surrounding sources correctly reflect the analysis of the report.*
>
> *a. The barrier requirements for the outdoor amenity space are missing from this section and should be added, together with statements concerning review, verification and sign-off.*
>
> *b. If response to this review changes the analysis, the conclusions should be amended.*

SLR Response: The conclusions section has been updated. Based on the updated development drawings and outdoor amenity space configuration, barrier requirements for outdoor points of reception are not applicable.

Conditions for review, verification and sign-off requirements related to the proposed parapet wall/barrier are at the discretion of the RMOW, and not SLR.

> *29. The reviews, verifications and sign-offs that are required to address the impact of the development on itself and the impact of the development on its surroundings must be added to the conclusions and recommendations.*

SLR Response: SLR has already recommended mechanical systems be reviewed by an acoustical consultant prior to final selection of equipment, in Part 2, Part 3, and the Overall Assessment portion of the Conclusions and Recommendations. Imposing the requested conditions would be at the discretion of the RMOW, and not SLR.

Statement of Limitations

This report has been prepared by SLR Consulting (Canada) Ltd. (SLR) for 14688210 Canada Inc. (Client) in accordance with the scope of work and all other terms and conditions of the agreement between such parties. SLR acknowledges and agrees that the Client may provide this report to government agencies, interest holders, and/or Indigenous communities as part of project planning or regulatory approval processes. Copying or distribution of this report, in whole or in part, for any other purpose other than as aforementioned is not permitted without the prior written consent of SLR.

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Closure

A Revised Environmental Noise Assessment report dated October 10, 2024 has been prepared to support this peer review response letter, and should be read in conjunction with the above noted responses.

Regards,

SLR Consulting (Canada) Ltd.



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Attachments RWDI Peer Review Comments
Revised Environmental Noise Assessment report

cc Trevor Hawkins, MHBC Planning

Attachment A – RWDI Peer Review Comments

177-179 Albert Street, Waterloo – Environmental Noise Assessment

Response to Peer Review Comments

14688210 Canada Inc.
c/o MHBC Planning, Urban Design & Landscape Architecture

SLR Project No.: 241.030998.00001

October 9, 2024

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February 27, 2024

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Re: Peer Review – Noise
177-179 Albert Street, Waterloo
RWDI Reference No. 2300540

Dear Susanna,

The Region of Waterloo has retained RWDI to conduct a peer review of a noise impact study for a proposed 24 storey residential development at 177-179 Albert Street in Waterloo. The applicant is making this submission relating to an Official Plan and Zoning By-law Amendment application. The following report was reviewed:

> "Environmental Noise Assessment 177-179 Albert Street, Waterloo", SLR Consulting (Canada) Ltd. Project No. 241.030998.00001 and dated November 22, 2023, revision 0.

This review reflects best practices for land-use planning, as well as guidelines and policies mandated by the Regional Municipality of Waterloo (RMOW), the City of Waterloo and, where applicable, the Province of Ontario. Where differences in guidance may exist, the City of Waterloo and RMOW have provided direct guidance to this peer reviewer on their expectations. In all cases, the direction and policies of the RMOW take precedence. Comments requiring action by the applicant are highlighted throughout this document for ease of identification.

Submission Documentation

1. The consultant's report includes the prescribed Consultant Declaration Statement, signed and notarized as is appropriate.
2. The report includes the signed Owner's Declaration Statement as is appropriate.

Assessment Approach

3. The report considers the proposed development under the headings of impact of the environment on the proposed development, the impact of the proposed development on the environment, and the impact of the proposed development on itself. These headings cover the appropriate subject areas.
4. It is appropriate that the report considers road traffic noise.

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5. The report notes that the ION Rapid Transit rail activity is not considered because it is outside the minimum noise influence area. These same tracks are used by heavy rail traffic during nighttime. Based on the separation distance provided in the City of Waterloo Terms of Reference, it is appropriate that rail activity is not considered in this situation.
6. Aircraft noise is not considered for this development, as would be expected based on the relevant guidance.
7. It is appropriate that the report considers stationary source noise.

Road Transportation Noise

8. The assessment of road traffic considers Ministry of Environment, Conservation and Parks (MECP) publication NPC-300 and the Regional Municipality of Waterloo Noise Policy Implementation Guideline. We note the following:
    a. The City of Waterloo Terms of Reference for a Noise Study (Waterloo TOR) provide additional guidance that may be of value.
    b. Where the Region's and City's guidance vary from NPC-300, the published local guidance (i.e., City and Region) would be applicable in preference to the MECP guidance.
    c. The RMOW guidance for OLA sound levels of 56 through 60 dBA specifies a warning clause and does not provide the option of using a noise barrier.
9. Traffic noise is evaluated for Albert Street and Seagram Drive.
    a. It is appropriate that Albert Street and Seagram Drive are included in the evaluation of traffic noise.
    b. Based on the zone of influence described in the Waterloo TOR, University Avenue West should be considered for this development or justification should be provided why its contribution is insignificant.
    c. It is reasonable that Lester Street is not considered.
10. Traffic data was obtained from the Region of Waterloo data portal.
    a. The traffic volumes were calculated to 2033, which is a 10-year future date from the date of the report. The data was valid at the time the report was prepared.
    b. The traffic data report indicates that the City of Waterloo should verify the forecast. Verification from the City of Waterloo should be confirmed by the consultant. If the City provides traffic volumes that are 10% or more higher, the results should be updated.
11. The report describes modelling of road traffic using a hybrid of ORNAMENT source sound emissions, with Cadna/A for the sound propagation. A comparison point of this method with an ORNAMENT-based STAMSON calculation is provided for validation.
    a. The use of this modelling method, supported by a STAMSON validation, is suitable in this situation.

b. Source sound emissions from ORNAMENT are provided in an appendix table.
    i. The input traffic volumes suitably reflect the data provided by the RMOW.
    ii. The road gradient for Seagram Drive is shown as 0%, while the slope calculated from publicly-available information is greater. Since the percentage of trucks on Seagram Drive is low, the influence will be small and no change to the modelling is required.
    iii. The road gradient for Albert Street is suitable.
c. The Cadna/A modelling should be appropriately documented.
    i. Since the software includes several sound propagation algorithms, the consultant should clarify what algorithms were used for the transportation sound propagation.
    ii. Use of reflective ground is suitable.
    iii. The remaining model settings should be provided, such as temperature, relative humidity and order of reflections.
    iv. Documentation of the Cadna/A portion of the verification should be completed by providing a sample output file for the verification location.
d. The STAMSON file for comparison is documented in the report.
    i. The traffic volumes used are appropriate.
    ii. The angles of exposure are as expected.
    iii. The use of reflective ground is suitable.
    iv. The source-receiver distances are reasonable.
e. The results of the two methods are shown to be comparable. The modelling approach is reasonable for this application.

12. Points of reception are evaluated over the façades of the building and on the rooftop patio.
    a. The use of a building evaluation suitably illustrates the locations of maximum sound level on each façade.
    b. The rooftop patio on the south and west corner of the roof is modelled as the Outdoor Living Area (OLA).
        i. The selected modelling locations are acceptable in this situation.
        ii. If the design changes in the future so that the OLA location moves towards or includes the east side, higher sound levels are expected and the OLA must be re-evaluated.
13. Modelling of the OLA makes use of the perimeter parapet wall as a barrier. The report does not show sound levels in the absence of the parapet wall. If sound levels without the parapet are at or below 60 dBA, a warning clause is sufficient and inclusion of acoustic specifications and their verification is not necessary.
14. Report Table 6 summarizes the highest sound levels on each façade during day and night times. The results are reasonable and consistent with Figures 2 and 3 of the report.

15. The report summarizes the consequences of the modelled sound levels.
    a. The conclusion that façades do not need to be upgraded for sound level management is consistent with modelled results.
    b. Results of the modelling are reflected in a ventilation requirement, as is appropriate. However, the report indicates the freedom to select a system other than "provision for central air conditioning", without providing the supplementary requirements associated with alternatives. The report should provide the additional information (i.e., description, assurance, certification and feasibility demonstration) required in section 3.3.6 of the RMOW policy.
    c. The need for warning clauses is appropriately noted and should be refined or confirmed when the site plan is finalized.

Stationary Source

16. The report describes the selection of stationary sources for evaluation using the D-series guidelines. All buildings at Wilfred Laurier University are described as Class I industries, having a zone of influence not greater than 70 m. Aerial photography for the university campus shows sources that are associated with zones of influence greater than 70 m. These include large air-cooled condensers, cooling towers, and emergency generators. The Class I description is not universally applicable and should be revised on a per-building basis in consideration of the sources present. The 10-fan air-cooled condenser at Martin Luther University College illustrates this based on the impacts which the report presents at 100+ m distance.
17. The evaluation is limited to an exhaust louvre at the Wilfred Laurier University Library and three air cooled chillers at Martin Luther University College.
    a. The pair of cooling towers, large generator and 12-fan air-cooled condenser located further to the northeast of the proposed development, on or south of the Dr. Alvin Woods Building should be considered.
    b. The 8-fan air-cooled condenser to the west of the proposed development, at 88 Seagram Drive, should also be considered.
    c. One near-grade exhaust louvre at the Wilfred Laurier University Library is considered.
        i. It should be clarified which of the four similar louvres on the building was considered.
        ii. The library has a mechanical penthouse with louvres and ventilation that have not been considered, but could have impact on the proposed development, and should therefore be addressed.
        iii. Supporting information should be provided that the remaining louvres were considered under their predictable worst-case operating condition.
        iv. The duty cycle that was applied is acceptable.

d. One 10-fan air cooled chiller on Martin Luther University College was considered.
    i. SLR historical data was applied for the sound level. The sound power level is uncharacteristically quiet. Supporting sound level information for the predictable worst-case operation, such as manufacturer data, should be provided.
    ii. The duty cycle of 100% during a predictable worst-case daytime hour is acceptable.
    iii. The nighttime duty cycle of 25% or 15 minutes per hour is much lower than typical and must be supported by evidence from the University or sign-off from the designer of the system. As an alternative, a 50% nighttime duty cycle is acceptable.
e. Two 2-fan air cooled chillers on Martin Luther University College are modelled.
    i. The sound power level data is reasonable.
    ii. The duty cycle of 100% during a predictable worst-case daytime hour is acceptable.
    iii. The nighttime duty cycle of 25% or 15 minutes per hour is much lower than typical and must be supported by evidence from the University or sign-off from the designer of the system. As an alternative, a 50% nighttime duty cycle is acceptable.

18. The NPC-300 guideline is used for assessment of stationary sources by the consultant. We concur that this is the current practice in the Region.
19. The report describes the area as having a Class 1 urban acoustic environment dominated by road traffic. Description of this acoustic environment as Class 1 is appropriate.
20. The modelling was done using the Cadna/A software package.
    a. The ISO 9613 sound propagation algorithms are a suitable model.
    b. The temperature and relative humidity information provided describe standard settings.
    c. The use of 1 order of reflection is reasonable here.
    d. The wall absorption coefficients are acceptable in this situation.
    e. A global ground absorption of G=0 for reflective ground is acceptable.
    f. It should be clarified if local areas of non-reflective or less reflective ground are applied, and if so, where.
21. The sample calculation provides suitable clarity to the analysis.
22. Points of reception were evaluated on building façades and in the rooftop terrace outdoors.
    a. The use of a building evaluation suitably illustrates the sound levels across the façades.
    b. The modelled locations for the rooftop terrace on the south and west corner of the roof are acceptable in this situation.

c. If the design changes in the future so that the terrace location moves towards or includes the east side, higher sound levels are expected, and the terrace must be re-evaluated.

23. Comparison of the results in Table 10 with the sample calculation suggests that the sources are evaluated cumulatively. Cumulative evaluation is appropriate, as it is the RMOW expectation and consistent with MECP direction.
24. A Warning Clause is provided in Appendix E of the report concerning the potential for sound from the stationary sources, as is appropriate.

Impact of the Development

25. The report defers the consideration of both noise impact from the development on itself and noise impact of the development on the surroundings until the mechanical systems have been designed.
    a. In this situation it is reasonable to defer the assessment since the necessary information is not yet available.
    b. The use of NPC-300 and/or NPC-216 for these assessments is appropriate.
    c. The acoustic specifications for a mechanical system should be provided to the mechanical designer at the beginning of the design process to ensure that a type of system is selected that is capable of meeting the acoustic requirements.
    d. A condition should be included in the application that, prior to Building Plan approval, the mechanical equipment noise impact be reviewed and signed-off that the sound level criteria will be met upon construction. The review and sign-off are to be completed by an individual on the Region's Pre-Qualified Consultants for Noise Studies List.
    e. A condition should be included in the application that sound impact on the development be verified to comply with the sound level criteria and signed-off prior to occupancy permits. The verification and sign-off are to be completed by an individual on the Region's Pre-Qualified Consultants for Noise Studies List.

Conclusions and Recommendations

26. The Transportation Noise conclusions reflect the building façade, ventilation and warning clause details of the report. The barrier requirements or the appropriate warning clause should be listed in this section.
27. The Stationary Source Noise conclusions regarding surrounding sources correctly reflect the analysis of the report.

a. The barrier requirements for the outdoor amenity space are missing from this section and should be added. together with statements concerning review, verification and sign-off.
b. If response to this review changes the analysis, the conclusions should be amended.

28. The Overall Assessment conclusions and recommendations make statements about the impact of the develop on itself and the impact of the development on its surroundings. The statements that these are "not expected to be of concern" and are "expected to meet the guideline limits" are not substantiated at this time and must be reviewed, verified and signed-off at later parts of the process. It is reasonable to expect that with appropriate acoustical guidance, incorporated early in the mechanical design, that these conclusions can be reached.
29. The reviews, verification and sign-offs that are required to address the impact of the development on itself and the impact of the development on its surroundings must be added to the conclusion and recommendations.
30. The report provides concluding statements concerning feasibility of the development, as is appropriate.

Summary

The environmental noise study provided for 177-179 Albert Street, Waterloo presents an assessment for road traffic and on-site stationary source noise sources. The Region of Waterloo seeks assurance that the sound levels and impacts are accurate and complete. Comments provided in this review have the potential to change the outcomes and conclusions of the study. Revised analysis, additional information, clarification and supporting justification is required. Key items are:

- Confirmation of road traffic volumes with the City of Waterloo should be provided; and
- Additional offsite stationary source information is required and updated analysis as necessary.

Without addressing these it is not possible to provide assurance that the values, results and conclusions are reasonable. Since a barrier is proposed, the following review, verification and sign-off are recommended:

- Prior to Building Plan Approval, the barrier construction should be reviewed and confirmed to meet the barrier requirements specified. The review and sign-off are to be completed by an individual on the Region's Pre-Qualified Consultants for Noise Studies List.
- Prior to Occupancy Permits, the barrier construction must be verified and signed-off as complying with the barrier requirements specified. The verification and sign-off are to be completed by an individual on the Region's Pre-Qualified Consultants for Noise Studies List.

Since the impact of the develop on itself and the impact of the development on its surroundings are deferred, we recommend that the application be provided with the following conditions:

- Prior to Building Plan Approval, the mechanical equipment noise impact must be reviewed and signed-off showing that the sound level criteria will be met upon construction. The review and sign-off are to be completed by an individual on the Region's Pre-Qualified Consultants for Noise Studies List.
- Prior to Occupancy Permits, the mechanical equipment noise impact on the development and surroundings be verified and signed-off as complying with the sound level criteria. The verification and sign-off are to be completed by an individual on the Region's Pre-Qualified Consultants for Noise Studies List.

A letter response would be sufficient if the results and conclusions of the Noise Study do not change. Should the results and conclusions of the Noise Study change, a revised report is required.

Yours truly,

RWDI

Peter VanDelden, P.Phys, INCE, COHC
Technical Director, Noise & Vibration

PV/klm

Statement of Limitations

This report entitled Peer Review – Noise 177-179 Albert Street, Waterloo and dated February 27, 2024 was prepared by RWDI AIR Inc. ("RWDI") for the Region of Waterloo ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the peer review described herein ("Project"). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

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

Attachment B – Supplemental Information – Seagram Drive

177-179 Albert Street, Waterloo – Environmental Noise Assessment

Response to Peer Review Comments

14688210 Canada Inc.
c/o MHBC Planning, Urban Design & Landscape Architecture

SLR Project No.: 241.030998.00001

October 9, 2024

Date	Type	Total	AADT	Hours
2018-09-27	Full Study	4,508	3,897	24
2018-09-27	AM Period	1,192		4
2018-09-27	MD Period	1,026		4
2018-09-27	PM Period	1,080		3