

December 7, 2020

Via email: mmidgley@cowiecapital.com

Matthew Midgley
Director of Operations and Construction
Cowie Capital
161 Bay Street, Suite 3930
Toronto, ON M5J 2S1

Re: Assessment of Environmental Noise Impact
264 Crawley Road, Guelph, Ontario
HGC Engineering Project Number 02000882

Dear Mr. Midgely,

As requested, HGC Engineering has conducted a study of environmental noise impacting the property located at 264 Crawley Road in the City of Guelph. The purpose of our study is to assess the implications of the existing dwelling on the property being used for residential uses. The property is impacted by both provincial highway road traffic noise and stationary (industrial) noise. Through a review of relevant noise guidelines, site observations, acoustical measurements, and modelling, it is concluded that the use of the property for residential purposes would not comply with the guidelines for separation distances between noise sensitive uses and industries, would require significant noise mitigation measures, and would still impose risks for the continued operation of the neighbouring industrial uses.

Additional explanation of our findings is outlined below.

Description of Property and Surrounding Area

The property is a 2-storey single detached building and is located on the northeast side of Crawley Road and Highway 6. Figure 1 shows the aerial imagery of the property and the surrounding area. We understand that the building is of heritage interest and is currently on industrially zoned lands. HGC Engineering visited the property on December 2, 2020. The area around the site is surrounded by designated and zoned industrial lands. To the southwest of the property is a provincial highway (Highway 6) located approximately 85 m away from the closest façade to the northbound road centreline. To the immediate northeast, and surrounding the property on two sides, is a distribution and warehousing facility (Medline Industries Inc.) along with its associated outdoor truck parking and loading area. Based on information from Medline personnel, the facility operates 24 hours a day and has frequent trucking activities during daytime and nighttime hours. Sound emissions from the highway and loading activities at the Medline facility were audible at the site property during our site visit.

Transportation Noise Impact

Guidelines for acceptable levels of road traffic noise impacting residential land uses are provided in the Ontario Ministry of Environment, Conservation, and Parks (MECP) publication NPC-300, “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, and is also referenced in

City of Guelph’s guideline for compatibility of land uses and noise generating sources, titled ‘Guelph Noise Control Guidelines’. The NPC-300 guideline provides indoor sound level limits for noise sensitive indoor spaces, namely 45 dBA during the daytime and 40 dBA during the nighttime, and outdoor limits for outdoor living areas, namely 55 dBA during the daytime with an allowable exceedance range of 5 dBA.

To assess the levels of road traffic noise which will impact the site in the future, sound level predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Road traffic noise data for Highway 6, obtained from published traffic volumes by the Ontario Ministry of Transportation (MTO), was projected 10 years into the future with an annual growth rate of 2.5% and was used to predict sound levels at prediction locations shown in Figure 2.

Table 1: Future Road Traffic Sound Levels and MECP Road Traffic Noise Criteria

Prediction Location	Description	Daytime Predicted L _{EQ-16 hr}	Nighttime Predicted L _{EQ-8 hr}
[A]	Southwest façade facing Highway 6	66 dBA	61 dBA
[B]	Northwest façade flanking Highway 6	63 dBA	58 dBA
[C]	Southeast façade flanking Highway 6	63 dBA	59 dBA
[OLA]	Backyard outdoor amenity area	57 dBA	--

During the site visit, we measured a sound level of 64 dBA at the southwest façade at daytime, with the highway noted to be clearly audible. To meet the indoor noise limits in this case, MECP guidelines would require that noise control measures in the form of central air conditioning and upgraded window glazing construction should be provided, along with applicable warning clauses in the property and tenancy agreements.

Stationary (Industrial) Noise Impact

MECP Guidelines D-1, ‘Land Use Compatibility’ and D-6 ‘Compatibility Between Industrial Facilities and Sensitive Land Uses’ were prepared to address the potential incompatibility of industrial land uses and noise sensitive land uses in relation to land use approvals under the Planning Act. Guideline D-6 suggests certain potential zones of influence of industries for which adverse effects may be experienced, depending on the characterization of that industry as either Class I, II or III. Furthermore, in order to minimize the potential for land use conflicts, the MECP recommends that certain minimum separation distances be respected.

Table 2: D-6 Guideline Zone of Influence and Minimum Separation Distances

Industry Class	Zone of Influence Distance	Minimum Separation Distance
Class I	70 m	20 m
Class II	300 m	70 m
Class III	1000 m	300 m

As the adjacent Medline facility has frequent trucking and loading activities during both daytime and nighttime hours, it is suitable to be characterized as either a Class II, which can feature shift operations and frequent trucking movement with the majority during daytime hours, or a Class III industry, which can feature continuous movement of products throughout the day and night. The common property line is immediately adjacent to the vehicle tarmac of Medline facility and is 45 m away from the loading bays at the facility façade, which does not meet the recommended minimum separation distances.

The feasibility of using the property for residential purposes is also based on the anticipated adverse effects from the industrial uses, subject to site specific noise studies performed in accordance with guideline

NPC-300. A preliminary analysis of stationary noise impact from the Medline facility was conducted using a computational model made on acoustical modelling software (CADNA/A Version 2021) and based on site operation information obtained from Medline personnel, measured sound levels of various activities at the site, and previously measured sound levels of trucking activities by HGC Engineering personnel in similar past projects.

MECP guidelines categorize sounds from industry into non-impulsive sounds, which are steady and slowly varying in nature, such as those generated from an idling truck, and impulsive sounds, which are instantaneous or short-duration pressure pulses, such as those generated by coupling of trailers, forklifts driving in and out of trailers, and metal garbage/recycling bin drop-offs. Based on site observations and experience with similar facilities, impulsive sounds are expected to be frequent with more than 9 impulses in an hour.

NPC-300 provides exclusionary minimum sound level limits which are used to establish compliance with the operation of stationary sources and to settle noise-related incidents reported to the MECP through the Ontario Environmental Protection Act. The applicable exclusionary minimum limits are shown in Table 3 below along with modelling results taken at the façade facing the Medline facility.

Table 3: Preliminary Stationary Noise Modelling Results and Exclusion Minimum Limits

Prediction Location	Non-Impulsive Sound Levels L_{EQ}	Non-Impulsive Exclusion Limits L_{EQ} (Day/Evening/Night)	Impulsive Sound Level L_{LM}	Impulsive Exclusion Limits L_{LM} (Day/Evening/Night)
[D]	58 dBA	50 / 50 / 45 dBA	56 dBAI	50 / 50 / 45 dBAI

The results show sound levels exceeding the MECP exclusion limits by up to 13 dBA.

Conclusions and Recommendations

The property does not meet the recommended minimum separation distances for noise sensitive land uses next to industrial facilities, and a preliminary analysis of sound emission from stationary sources demonstrates sound levels exceeding the MECP exclusion limits. The use of the property for residential purposes is not recommended as it would require significant noise mitigation measures and, even then, would impose risks for the continued operation of neighbouring industrial uses under MECP noise guidelines.

We trust that this is sufficient information for your present needs. Please do not hesitate to call if you have any further questions or require additional information.

Yours truly,
HOWE GASTMEIER CHAPNIK LIMITED


Harry Cai, BEng, EIT


Brian Howe, MEng, MBA, LLM, PEng

Encl: Figure 1: Aerial Imagery Showing Property and Surrounding Area
Figure 2: Aerial Imagery Showing Prediction Locations



Figure 1: Aerial Imagery Showing Property and Surrounding Area

