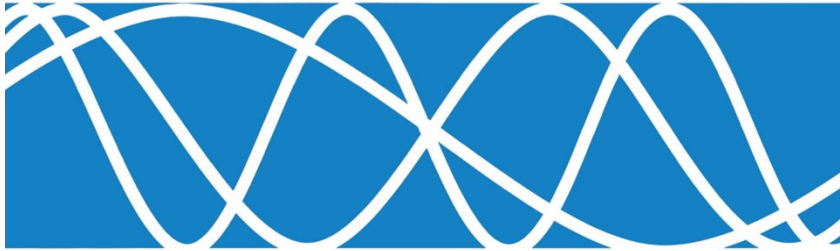


Noise Feasibility Study

**Proposed Residential
Development, Part of Lot 17,
Concession 16
968 St. David Street North
Fergus, Ontario**

March 5, 2025
HGC Project #: 02300434



Prepared for:

Polocorp Inc.
379 Queen Street South
Kitchener, Ontario
N2G 1W6

Version Control
Noise Feasibility Study, Proposed Residential Development, Part of Lot 17, Concession 16, 968 St. David Street North, Fergus, Ontario

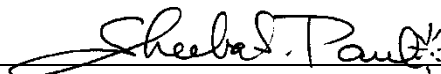
Ver.	Date	Version Description	Prepared By
1.0	March 5, 2025	Noise Feasibility Study prepared to support the planning and approvals process	V. Garcia

Prepared by:


Victor Garcia, P.Eng



Reviewed by:


Sheeba Paul, MEng, P.Eng

Howe Gastmeier Chapnik Limited

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1 INTRODUCTION AND SUMMARY

HGC Noise Vibration Acoustics (HGC) was retained by Polocorp Inc. to conduct a noise feasibility study for a proposed residential development located at 968 St. David Street North, Part of Lot 17, Concession 16 in Fergus, Ontario. The study is required by the Municipality as part of the planning and approvals process.

The primary noise source of noise impacting the site was determined to be road traffic on Highway 6. Relevant road traffic data was obtained from the Ministry of Transportation (MTO) and was used to predict future traffic sound levels at the locations of the proposed residential dwellings. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation and Parks (MECP) and the Municipality.

The proposed development is feasible; sound level predictions indicate there are no specific ventilation requirements due to transportation noise for the proposed development. Any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for all the dwelling units in this development. A detailed noise study for the Medium Density Blocks should be conducted to determine barrier heights, ventilation requirements and the building constructions when lotting and detailed grading information is available.

2 SITE DESCRIPTION AND NOISE SOURCES

The proposed residential development is located at 968 St. David Street North in Fergus, Ontario. Figure 1 shows a key plan of the proposed site. A proposed conceptual subdivision plan prepared by Polocorp Inc. dated December 10, 2024 is included as Figure 2, also showing the sound level prediction locations. The development is proposed to include: single detached dwellings, street townhouses, along with associated roadways, medium density blocks, environmental feature, village green, and a stormwater management facility.

HGC personnel visited the site in January 2024. The acoustical environment surrounding the site is semi-urban in nature. The primary source of sound impacting the site is vehicular traffic on Highway 6. The surrounding lands are primarily existing residential lands, and agricultural lands. New to You, a second-hand store is located directly to the south of the site. A stormwater management pond is proposed between the proposed dwelling and New to You to the south. To the southwest of the site are small commercial uses including Fergus Fireplace, and Little Tree Garden Market, as well as a Little Angels Development daycare facility. There are no significant sources of stationary noise within 500 m of the subject site.

3 ROAD TRAFFIC NOISE ASSESSMENT

3.1 Road Traffic Noise Criteria

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Part C release date October 21, 2013 and are listed in Table 1 below. The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A weighted decibels [dBA].

Table 1: Road Traffic Noise Criteria

Space	Daytime $L_{EQ}(16 \text{ hour})$ Road	Nighttime $L_{EQ}(8 \text{ hour})$ Road
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA	45 dBA
Inside Bedrooms	45 dBA	40 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area

where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The MECP guidelines allow the daytime sound levels in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom or living/dining room windows exceed 65 dBA. If the sound level at the facade is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road traffic noise.

Warning clauses to notify future residents of possible excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the living/dining room window due to road traffic.

3.2 Traffic Sound Level Assessment

3.2.1 Road Traffic Data

Road traffic volumes for Highway 6 was obtained from the MTO in the form of summer average daily traffic (SADT) for the year 2021 and is included in Appendix A. The data was projected to the year 2035 using a 2.5%/year growth rate. A commercial vehicle percentage of 9.0% was provided by the MTO and



split into 3.5% medium trucks and 5.5% heavy trucks. A day/night split of 85%/15% was assumed along with a posted speed limit of 60 km/h was used in the analysis. Table 2 summarizes the traffic volume data used in this study.

Table 2: Future Road Traffic Data

Roadway	AADT	Day / Night Split [%]	Trucks Percentage (%)		Speed Limit [km/h]
			Medium	Heavy	
Highway 6	15 401	85 / 15	3.5	5.5	60

3.2.2 Road Traffic Noise Predictions

To assess the levels of road traffic noise which will impact the site in the future, predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Sample STAMSON output is included in Appendix B.

Future daytime sound levels were predicted at 1.5 m above ground level in outdoor living areas to determine whether noise barriers will be necessary. A 2 m front yard setback, a 6.5 m rear yard setback, a 2.4 m exterior side yard setback for lots flanking major roadways and a 1.5 m setback for interior side yards were used in the analysis. Sound levels were also predicted at the plane of the top storey bedroom/living/dining room windows during daytime and nighttime hours to investigate ventilation requirements.

Prediction locations were chosen around the development site, as shown in Figure 2, to obtain a good representation of the future sound levels at various blocks with exposure to the roadways. The results of these predictions are summarized in Table 3.

Table 3: Future Road Traffic Sound Levels, [dBA], Without Mitigation

Prediction Location	Description	Daytime in OLA L _{EQ} (16 hour)	Daytime at Façade L _{EQ} (16 hour)	Nighttime at Façade L _{EQ} (8 hour)
[A]	Dwellings with some exposure to Hwy 6	<55	55	50

3.3 Traffic Noise Recommendations

The predictions indicate that the future traffic sound levels will be within MECP guidelines at the proposed dwellings.

3.3.1 Outdoor Living Areas

The predicted sound level in the rear yards of the proposed dwellings with flanking exposure to Highway 6 (prediction location [A]) will be less than 55 dBA. No further mitigation is required.

Medium Density Blocks

The siting information and details for the Medium Density Blocks are not known at this time. Any outdoor amenity areas for the units should be placed on the shielded side of the buildings to reduce the need for high noise barriers. When siting, lotting, and grading information is available, detailed noise studies should be conducted for the Urban Core lands to determine the specific barrier requirements, heights and extents, requirements for ventilation and building envelope construction. The development of the Medium Density Blocks and requirements for noise mitigation will be reviewed in a future site plan approval application.

3.3.2 Indoor Living Areas

The predicted future sound levels outside the top storey windows of the proposed residential dwellings (prediction location [A]) will be less than 55 dBA during the day and less than 50 dBA during the night. There are no specific ventilation requirements for the proposed dwellings.

3.3.3 Building Façade Constructions

Since the daytime and nighttime sound levels at the facades of the residential units will be less than 65 dBA during the day and less than 60 dBA during the night, any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for all the dwelling units in this development.

Medium Density Blocks

Since the details of the siting, density and height of the buildings are not known, a detailed noise study will be required for the Medium Density Blocks to determine the acoustic requirements (acoustic barriers, ventilation and building façade construction) when siting, grading, building elevations and floor plans are available.

4 SUMMARY AND RECOMMENDATIONS

Analysis indicates that the predicted sound level will be within MECP guidelines limits at the proposed building. The following recommendations are provided .

1. There are no specific ventilation requirements or noise warning clauses for the proposed dwellings.
2. Any exterior wall, and double-glazed window construction meeting the minimum requirements of the OBC will provide adequate sound insulation for the proposed dwellings.
3. A detailed noise study should be performed when lotting information is available, and when siting information is available for the Medium Density Blocks.

The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.



4.1 Implementation

To ensure that the noise control recommendations outlined above are properly implemented, it is recommended that:

1. A detailed noise study should be conducted when lotting and detailed grading information is available to determine barrier heights, ventilation requirements and the building construction for the Medium Density Blocks.



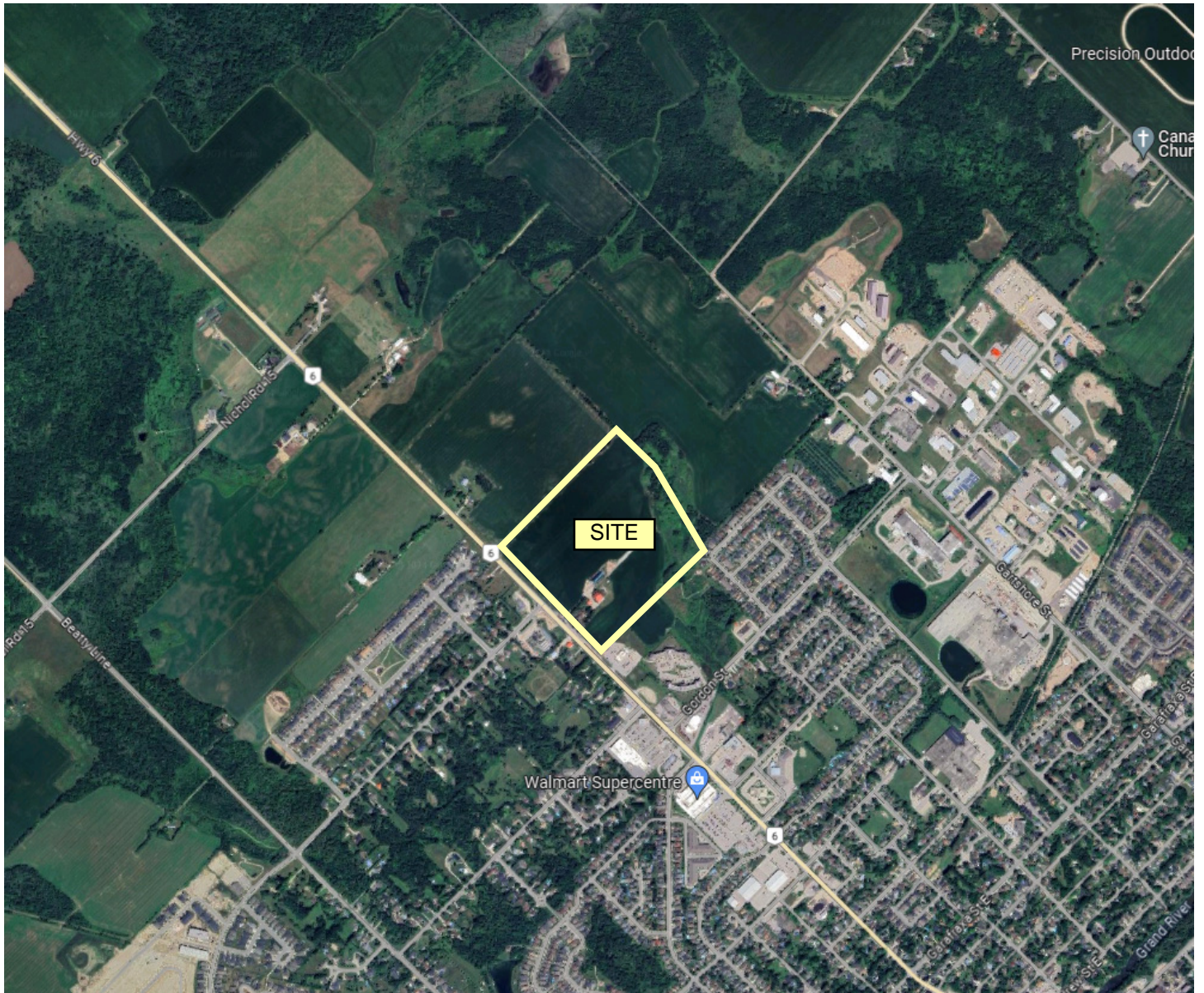


Figure 1 - Key Plan



NOISE



VIBRATION



ACOUSTICS



Figure 2 - Proposed Draft Plan Showing Prediction Locations

Appendix A

Road Traffic Information



NOISE



VIBRATION



ACOUSTICS

www.hgcacoustics.com

Year	Highway	Location Description	Dist (KM)	Pattern Type	AADT	SADT	SWADT	WADT	Truck AADT	Total Collisions	Total CR	Trucks Collisions	Truck CR
2016	6			IC	15,600	17,300	17,200	13,800	1,000	24	0.4	0	0.0
2017	6			IC	15,800	17,300	17,400	14,300	1,050	33	0.5	2	0.0
2018	6			IC	16,000	17,600	17,700	14,500	1,050	37	0.6	2	0.0
2019	6			IR	16,200	20,000	19,900	13,800	970	28	0.4	2	0.0
2021	6			IR	16,600	20,000	20,000	14,300	1,000	26	0.4	3	0.0
2021	6	FORMER FERGUS S LTS C1 2 START OF NA	3.0										
1988	6	FORMER FERGUS N LTS END OF NA	16.8	IC	5,400	6,250	6,100	4,750	540	35	1.1	1	0.0
1989	6			IR	5,700	7,350	6,350	4,650	570	27	0.8	2	0.1
1990	6			IR	6,100	7,750	6,750	5,000	610	34	0.9	4	0.1
1991	6			IR	6,000	7,550	6,650	5,000	600	30	0.8	3	0.1
1992	6			IR	5,500	6,750	6,050	4,700	550	26	0.8	1	0.0
1993	6			IR	5,700	7,000	5,900	4,650	570	25	0.7	4	0.1
1994	6			IR	6,150	7,600	6,750	5,150	620	28	0.7	6	0.2
1995	6			IR	6,150	7,550	6,800	5,250	620	25	0.7	1	0.0
1996	6			IR	6,450	8,000	7,200	5,500	580	34	0.9	3	0.1
1997	6			IR	6,600	8,250	7,400	5,600	590	26	0.6	1	0.0
1998	6			IR	6,800	8,450	7,600	5,700	610	24	0.6	4	0.1
1999	6			IR	6,900	8,550	7,650	5,800	690	24	0.6	1	0.0
2000	6			IR	6,950	8,500	7,700	5,850	700	26	0.6	3	0.1
2001	6			IR	7,100	8,750	7,850	6,000	710	31	0.7	3	0.1
2002	6			IR	7,450	9,200	8,250	6,350	740	31	0.7	2	0.0
2003	6			IR	7,600	9,200	8,350	6,450	760	36	0.8	5	0.1
2004	6			IR	7,550	9,350	8,350	6,400	910	30	0.6	1	0.0
2005	6			IR	7,500	9,050	8,200	6,400	680	37	0.8	2	0.0
2006	6			IR	7,400	8,950	8,100	6,300	670	27	0.6	1	0.0
2007	6			IR	7,800	9,450	9,400	6,600	700	44	0.9	6	0.1
2008	6			IR	7,900	9,550	9,400	6,750	710	23	0.5	2	0.0
2009	6			IR	8,000	9,600	8,700	6,800	720	26	0.5	3	0.1
2010	6			IR	7,950	9,450	8,650	6,750	800	17	0.3	3	0.1
2011	6			IR	7,950	9,500	9,300	6,800	800	30	0.6	4	0.1
2012	6			IC	7,600	8,400	8,150	6,750	720	23	0.5	3	0.1
2013	6			IC	7,600	8,400	8,350	6,750	720	24	0.5	2	0.0
2014	6			CTR	7,350	8,950	9,050	6,250	680	25	0.6	0	0.0
2015	6			CTR	7,400	9,050	9,100	6,300	690	26	0.6	5	0.1
2016	6			CTR	7,500	9,150	9,200	6,400	700	17	0.4	2	0.0
2017	6			CTR	8,050	10,800	10,700	6,550	750	21	0.4	1	0.0
2018	6			CTR	8,150	10,900	10,800	6,650	760	14	0.3	2	0.0
2019	6			CTR	8,200	10,900	10,900	6,650	740	21	0.4	4	0.1
2021	6			CTR	8,350	10,900	10,800	6,800	750	14	0.3	0	0.0
1988	6	WELLINGTON RD 109 ARTHUR S LTS	0.2	IR	7,450	9,700	8,200	5,950	740	0	0.0	0	0.0
1989	6			IR	7,700	9,950	8,550	6,300	770	0	0.0	0	0.0

Victor Garcia

From: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Sent: January 19, 2024 10:04 AM
To: Victor Garcia
Cc: Bee, Christopher (MTO)
Subject: RE: Commercial Vehicle % for Hwy 6 in Fergus, Ontario

To Victor Garcia, HGC Engineering

H6 and Fergus is near LHRS 13630/1.95

The % commercial includes all heavy vehicles, trucks, vans, ...etc except for regular cars

This is official MTO data to yr 2019 (just before COVID lockdown)

Yrs 2014-2019 (6 years) , % commercial = steady at 9%

Thanks

Christopher Bee
MTO WR London Office
Operational Traffic Engineering Section

From: Victor Garcia <vgarcia@hgcengineering.com>
Sent: January 15, 2024 2:43 PM
To: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Subject: Commercial Vehicle % for Hwy 6 in Fergus, Ontario

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Chris,

HGC Engineering is preparing a noise feasibility study for a proposed development located at 6581 Hwy 6 in Fergus, Ontario. A google link is included for your reference below:

<https://maps.app.goo.gl/U8LDMvKhgjBSNM2H7>

I am not sure if you are the correct person to request this from, but we are looking for commercial vehicle percentages in the vicinity of this site. Please let me know if you have this information available.

Regards,

Victor Garcia, P.Eng
Associate

HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044 e: vgarcia@hgcengineering.com
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Appendix B

Sample STAMSON 5.04 Output



NOISE



VIBRATION



ACOUSTICS

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Filename: a.te Time Period: Day/Night 16/8 hours

Description: Dwellings with some exposure to Hwy 6

Road data, segment # 1: Hwy 6 (day/night)

Car traffic volume : 11913/2102 veh/TimePeriod *
Medium truck volume : 458/81 veh/TimePeriod *
Heavy truck volume : 720/127 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 10900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 14.00
Medium Truck % of Total Volume : 3.50
Heavy Truck % of Total Volume : 5.50
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Hwy 6 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 109.00 / 109.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hwy 6 (day)

Source height = 1.53 m

ROAD (0.00 + 54.74 + 0.00) = 54.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	69.56	0.00	-13.51	-1.30	0.00	0.00	0.00	54.74

Segment Leq : 54.74 dBA

Total Leq All Segments: 54.74 dBA



Results segment # 1: Hwy 6 (night)

Source height = 1.53 m

ROAD (0.00 + 50.22 + 0.00) = 50.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	65.03	0.00	-13.51	-1.30	0.00	0.00	0.00	50.22

Segment Leq : 50.22 dBA

Total Leq All Segments: 50.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.74 dBA
(NIGHT): 50.22 dBA

