Thornton Tomasetti

# Noise Impact Study

## Hawkridge Golf Course, Severn ON

**TT Project No: 24010598_01**

**Prepared For**

**Ben Jones**

**LIV Communities**
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**Prepared By**

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**Reviewed By**

**Robert Fuller, P.Eng.**

**October 4, 2024**

## Table of Contents



## List of Tables



## List of Figures

## List of Appendices

# 1.0 Introduction

At the request of LIV Communities (Client), Thornton Tomasetti (TT) presents this Land Use Compatibility Report regarding the conversion request for the Hawkridge Golf Course lands (the Project).

The purpose of this study is to assess the noise impact on the Project from surrounding noise sources.

Where applicable, this report will provide noise control recommendations to meet the requirements applicable to the Township of Severn, Simcoe County and the Ontario Ministry of the Environment, Conservation and Parks (MECP).

# 2.0 Site and Surrounding Area

## 2.1 Planned Development

The proposed development consists of 290 single detached homes, 310 townhouse units, 250 Golf Villa units (stacked townhouses), stormwater management pond, parklands/trails, and a treatment plant. The existing lands are currently a golf course, in which the Project will retain portions of the existing golf course.

The proposed site plan is provided in Figure 1.

## 2.2 Project Location and Surroundings

The Project is located on the between Uhthoff Line and Burnside Line, north of Highway 11 in Severn Ontario and is currently occupied by the Hawk Ridge Golf Club. The sensitive lands will occupy the southwestern portion of the Project Site.

Highway 11 is located approximately 240 m to the south of the Project. The project is bordered on the west by Uhthoff Line, and the Project Site is bordered on the east by Burnside Line, although Burnside Line is approximately 650m from the closest sensitive lands of the Project. No railways are located within 1000 m of the Project.

The surrounding lands include a combination of single family homes, residential neighborhoods and commercial buildings. The Walker Orillia Pit is located on the opposite side of Uhthoff Line, with the Dufferin Aggregates/KJ Beramish Asphalt Plant located further to the west. The lands to the south are currently vacant, and are proposed for a residential development (owned by LIV Communities). Other industrial facilities with a potential to impact the Project include the Kubota Materials Canada Corporation manufacturing facility to the east on the other side of Highway 11 and a solar farm to the west on the opposite side of Uhthoff Line.

The project location and surrounding area is shown in Figure 2.

## 2.3 Topography

The topography is considered to be generally flat for the development lands and surrounding area, with a gradual slope down to the south.

# 3.0 Applicable Guidelines

The MECP's *Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning* (NPC-300) provides province wide assessment standards and criteria for evaluating noise impacts from transportation sources such as roads, railways and aircraft, as well as stationary sources such as mechanical equipment, and industrial facilities. In preparing this NIS report, TT has referred to *Part A Background and Part C Land Use Planning* of NPC-300.

# 4.0 Transportation Noise Assessment

## 4.1 Critical Transportation Noise Receptors

NPC-300 defines a point of reception for the assessment of transportation noise sources as either the Plane of Window (POW) of a noise sensitive indoor space or an Outdoor Living Area (OLA) representing an area of a noise sensitive land use intended for quiet enjoyment of the outdoor environment.

The POW receptor(s) most likely to be affected by transportation noise are the single family homes, townhome blocks and the golf villa residences.

OLAs for the project include yards for each of the above single family homes, townhouse blocks and golf villas. An assessment of noise impacts within the Park Spaces is not considered necessary, as the these are public areas and do not meet the definitions outlined in NPC-300 for OLAs.

## 4.2 Transportation Noise Sources

### 4.2.1 Road Noise Sources

For this assessment, roadways surrounding the Project include Highway 11, Uhthoff Line and Burnside Line/Water Street North.

As the noise sensitive areas of the Project are located approximately 650 m from Burnside Line/Water Street North, noise impacts are expected to be minimal in comparison to Highway 11. In addition, Burnside Line/Water Street North is located outside of the 500 m limit in STAMSON modelling software. Therefore, an assessment of roadway impacts from Burnside Line/Water Street North was excluded from the assessment.

Traffic volumes were applied based on the SLR Consulting (Canada) Limited noise study entitled "Inch Farms Residential Development – Environmental Noise Assessment" with SLR project no. 241.30352.00000, dated December 2021, completed for the adjacent Inch Farms owned by LIV.

Future AADT and SADT Highway 11 traffic volumes and truck percentages were obtained from MTO, with medium/heavy truck percentages and day/night distributions determined from MTO iCorridor website information.

Uhthoff Line traffic volume was forecasted to a future 2041 mature-state-of-development year, based on 2038 future volume and a growth rate of 2% per year provided by the transportation consultant for the Inch Farms development.

The future traffic data applied in the assessment is summarized in Table 1, with a copy of the traffic data included in Appendix A.

Table 1: Future Traffic Data Summary

| Street | AADT | % Trucks | Med/Hvy | Day/Night | Speed Limit |
|---|---|---|---|---|---|
| Highway 11 | 75,200 | 10% | 1.7/8.3 | 94/6 | 100 km/h |
| Uhthoff Line | 2,630 | 0.7% | 0.4/0.3 | 90/10 | 60/80 [1] km/h |

Notes: [1] Uhthoff Line speed limit changes from 60 km/h to 80 km/h, north of the Walker Aggregates Orillia Pit site entrance.

### 4.2.2 Rail Noise Sources

Railways are not located within 1000 m of the Project. Therefore, an assessment of railway impacts is not considered necessary.

## 4.3 Transportation Sound Level Limits

### 4.3.1 Outdoor Living Areas

Impacts to OLAs from combined road and rail traffic are assessed against a 16-hour daytime (07:00 – 23:00) equivalent sound pressure level ($L_{eq}$) reported in dBA. The MECP outdoor sound level limits and the sliding scale of required noise reduction measures for road and rail noise at OLAs are listed in Table 2. Note that whistle noise is not included in the assessment of rail noise at an OLA.

Table 2: MECP Outdoor Sound Level Limit & Mitigation for OLAs – Combined Road & Rail Traffic

| Category | Sound Level $L_{eq,16hr}$ (dBA) | Mitigation Measures | NPC-300 Warning Clause Required |
|---|---|---|---|
| Outdoor Limit | 55 | None | None |
| OLA Mitigation Threshold | 56 - 60 | Optional | Type A unless sound level brought below 55 dBA |
| OLA Mitigation Threshold | >60 | Required to achieve sound level below 60 dBA | Type B unless sound level brought below 55 dBA |

### 4.3.2 Indoor Living Areas

Impacts to POWs from combined road and rail (if applicable) traffic are assessed against a 16-hour daytime (07:00 – 23:00) and 8-hour nighttime (23:00 – 07:00) equivalent sound pressure level ($L_{eq}$) reported in dBA. The combined impact is used to determine the requirement for ventilation and warning clauses. The MECP POW sound level limits and the sliding scale of required noise reduction measures for combined road and rail noise at POWs are listed in Table 3. Note that whistle noise is not included in the assessment of rail noise for this purpose.

Table 3: MECP POW Sound Level Limit: Ventilation & Warning Clauses – Combined Road & Rail Traffic

| Category | Daytime $L_{eq,16hr}$ (dBA) | Nighttime $L_{eq,8hr}$ (dBA) | Mitigation Measures | NPC-300 Warning Clause Required |
|---|---|---|---|---|
| POW Limit | 55 | 50 | None | None |
| POW Mitigation Threshold Living & Bedrooms | 56 - 65 | 51 – 60 | Include forced air heating and provision for central air conditioning | Type C |
| POW Mitigation Threshold Living & Bedrooms | >65 | >60 | Include central air conditioning | Type D |

Impacts to indoor noise levels from road and rail (if applicable) traffic are assessed against a 16-hour daytime (07:00 – 23:00) and 8-hour nighttime (23:00 – 07:00) equivalent sound pressure level ($L_{eq}$) reported in dBA at the POW receptor. The requirements for building construction to address transportation noise impacts to indoor sound levels are determined independently for road and rail noise, with the resulting requirements then being combined logarithmically. The MECP indoor sound level limits and the required noise reduction measures for road and rail noise at POWs are listed in Table 4. Note that whistle noise is included in the assessment of rail noise for this purpose.

Table 4: MECP Indoor Sound Level Limit & Construction Requirements – Road & Rail Traffic

| Category | Daytime $L_{eq,16hr}$ (dBA) | Nighttime $L_{eq,8hr}$ (dBA) | Total $L_{eq,24hr}$ (dBA) | Mitigation Measures |
|---|---|---|---|---|
| Road Indoor Limit Living Rooms / Bedrooms | 45 / 45 | 45 / 40 | - | Not Applicable |
| Road POW Mitigation Threshold Living & Bedrooms | >65 | >60 | - | Design building components to achieve indoor sound level limit |
| Rail Indoor Limit Living Rooms / Bedrooms | 40 / 40 | 40 / 35 | - | Not Applicable |
| Rail POW Mitigation Threshold Living & Bedrooms | >60 | >55 | - | Design building components to achieve indoor sound level limit |
| Rail POW Mitigation Threshold Bedrooms | - | - | >60 | Minimum of brick veneer or masonry equivalent construction from foundation to rafters in first row of dwellings if within 100m of tracks |

## 4.1 Transportation Sound Level Predictions

Road traffic noise modelling was calculated with the ORNAMENT algorithms (the MECP road traffic noise model) within the Cadna/A noise propagation software as line sources. A validation file comparing the Cadna/A and MECP STAMSON 5.04 road traffic noise model is shown in Appendix B. As STAMSON

does not readily address complex road geometries, a simplified condition was applied with only straight roads.

Key modelling parameters are summarized below

- Given the number of lanes, Highway 11 was separated into northbound and southbound roads.
- The grade change along Highway 11 was determined to be less than 2%, therefore the ORNAMENT gradient adjustment was not applied in the noise modelling.
- Absorptive ground was applied in the assessment, as the majority of lands between the development and roads are considered to be grass or covered in vegetation.
- As a conservative assessment of impacts, screening from the surroundings (eg. topography around the overpass) was not included. The Terrain is considered to be essentially flat.
- Screening effect from the existing buildings and proposed Project buildings were not included in the noise modelling.

### 4.1.1 Amenity Area Impacts

Predicted sound levels within the OLAs for the development's noise sensitive areas are shown as noise contours in Figure 3 at a height of 1.5 m.

Roadway noise levels are predicted to range from 45 dBA to 60 dBA for OLAs within the noise sensitive areas of the Project. As the roadway sound levels are at or below 60 dBA within the noise sensitive areas of the Project, physical noise controls are not considered necessary providing a warning clause is included.

### 4.1.2 Façade Impacts

Façade level impacts were assessed at a height of 4.5 m, representative of a 2$^{nd}$ storey window.

Roadway noise levels are predicted to range from 47 dBA to 61 dBA during the daytime within the noise sensitive areas of the Project, and shown in Figures 4a and 4b. During the night-time, roadway noise levels within the noise sensitive areas of the Project are predicted to range from 38 dBA to 52 dBA.

As the predicted levels are below 65 dBA during the daytime and below 60 dBA during the night-time, an assessment of upgraded façade construction is not necessary.

## 4.2 Transportation Noise Control Recommendations

Noise control recommendations for the Project include ventilation and warning clause requirements shown in Figure 5 and discussed in the subsequent sections.

### 4.2.1 Outdoor Living Areas – Barriers

As shown in Section  above, the sound levels within the OLAs are predicted to be 60 dBA or less. Therefore, physical noise controls are not required for the Project OLAs.

### 4.2.2 Indoor Living Areas - Ventilation

The southern portion of the Project is predicted to be between 55 dBA and 65 dBA during the daytime and between 50 dBA and 60 dBA during the night-time, shown in Figure 5. Noise sensitive buildings within this area are required to be constructed with forced air heating system, with an allowance for future installation of central air conditioning.

### 4.2.3 Indoor Living Areas - Building Components

As façade sound levels are predicted to be less than 65 dBA during the daytime and less than 60 dBA during the night-time, façade construction meeting the minimum requirements of the Ontario Building Code (OBC) are considered sufficient. Upgraded façade construction or glazing is not considered necessary for the proposed development.

### 4.2.4 Warning Clauses

The following examples of warning clause wordings are based on applicable guidance documents and TT's experience regarding common requests from stakeholders. Precise wordings may be modified by the Client with input from the relevant LUPA(s), stakeholders, and/or legal counsel if required.

The **Type A** warning clause is required to be included in the development agreements for all units, to inform occupants of predicted transportation sound pressure levels are between 55 dBA and 60 dBA within the OLA. The Type A warning clause is as follows:

> *"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."*

The **Type C** warning clause is required to be included in the development agreements for specific dwelling units if one or more representative POW receptors is predicted to be exposed to transportation sound pressure levels between 55 dBA and 65 dBA during the daytime period or between 50 dBA and 60 dBA during the night-time period. The Type C warning clause is as follows:

> *"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."*

The recommended areas for Type A and Type C warning clauses are shown in Figure 5.

## 5.0 Surrounding Stationary Noise Assessment

A review of the significant stationary noise sources was completed as part of the TT Land Use Compatibility Study for the Project, dated October 4, 2024, submitted under a separate cover.

Several industries within the area were reviewed for potential noise impacts, including various facilities operating under MECP Environmental Compliance (ECA) or Environmental Activity Sector Registry permits. This includes, and is not limited to, the quarries to the west, a solar farm, various Township of Severn facilities, commercial facilities and the Kubota Metals manufacturing facility. On review, the proposed development lands are surrounded by residential homes, where several homes are located between the various industries and the Project noise sensitive areas.

As compliance with the NPC-300 guideline limits are expected at these closer intervening existing homes, stationary noise is not expected to be a concern for the Project. Therefore, a detailed assessment of stationary noise impacts from the surroundings was not completed.

## 6.0 Development Mechanical Equipment Stationary Noise Assessment

The Project currently includes a Treatment Plant and the Well Pump House provide drinking water for the site.

The treatment plant is understood to be a small facility, with an outlet to Silver Creek. As the facility is in early stages of design, a detailed assessment could not be completed. With the appropriate selection of equipment, locating equipment to minimize noise impacts, and including noise controls in the design (barriers, low noise units, silencers/louvres), the applicable guideline limits can be met.

The Well Pump House is anticipated to be a building enclosing the well pump(s). As the pumps are enclosed within the building and the facility can be constructed to control noise (if needed), stationary noise is not expected to be a concern and a detailed assessment was not completed at this stage.

Once sufficient information is available, an assessment of stationary noise impacts from the treatment plant and well pump house should be completed to confirm the applicable guideline limits are met.

## 7.0 Concluding Comments

A noise impact assessment was completed for the Project, taking into consideration the surrounding transportation sources, the surrounding stationary sources and the development stationary sources. The following is a summary of our assessment:

- Transportation noise impacts are expected to meet all applicable MECP noise limits without upgraded façade construction, without upgraded window glazing requirements, without acoustic barriers, inclusion of forced air heating systems, and inclusion of warning clauses as presented in Section 4.2 of this report.
- Surrounding stationary noise is not anticipated to be a concern for the Project and no additional noise control measures are considered necessary for addressing surrounding facilities, as summarized in Section 0 of this report.

- The development stationary sources include a small wastewater treatment plant and well pump house. The applicable guideline limits are expected to be met with the appropriate selection of equipment, locating equipment to minimize noise impacts, and including noise controls in the design (barriers, low noise units, enclosures, silencers/louvres), as outlined Section 6.0 of this report. Once sufficient information is available, an assessment of stationary noise impacts from should be completed to confirm the applicable guideline limits are met.

Based on the above, the Project is considered feasible regarding noise.

Please do not hesitate to contact us if there are any questions.

Yours Truly,

Thornton Tomasetti


Marcus Li, P.Eng.
Vice President

Reviewed by:

Robert Fuller, P.Eng.
Project Engineer

## Disclaimer

This report is provided in accordance with the contractual agreement between TT and the Client. In addition to our contractual obligations TT notes the following general disclaimers and qualifications regarding the content of this report.

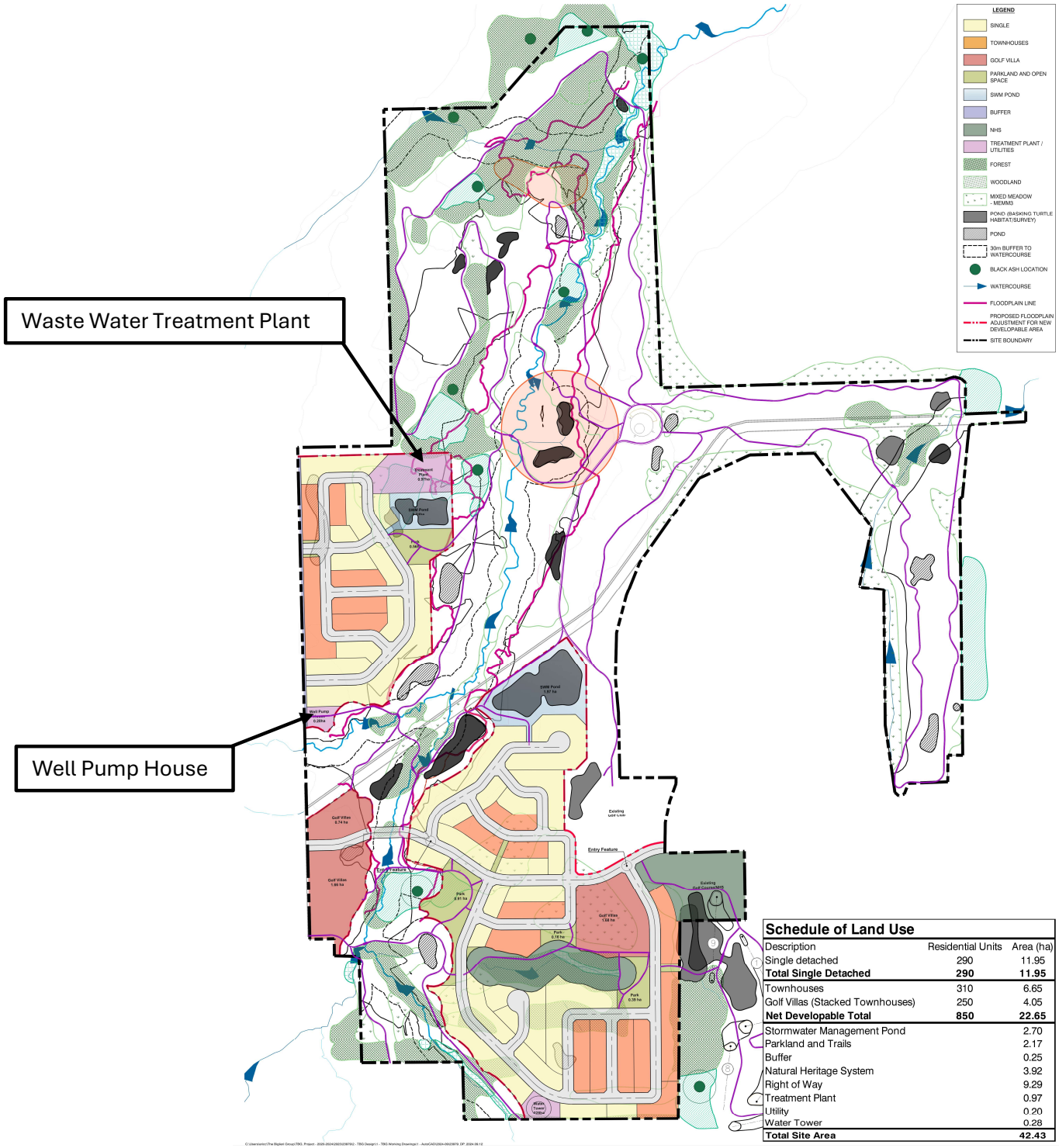
In preparing this report, TT has relied upon the accuracy and completeness of information provided by the Client and other third parties (manufacturers, other consultants, etc.) and accepts no responsibility for errors or omissions by other parties in the information provided to TT.

This report has been prepared solely for the benefit of the Client and the content of this report is intended for informational purposes only. This report shall not be relied upon by any other parties, including but not limited to other consultants retained by the Client, or utilized for any other purposes.

Ultimate responsibility for the design and construction remains solely with the architect/engineer of record and/or the contractor(s). Achieving the required mitigation requirements relies on correct incorporation of mitigation recommendations into Architectural and Mechanical drawings and specifications, as well as correct installation during construction. It is recommended that the implementation of mitigation measures be reviewed by a qualified consultant.

On request, TT will provide a proposal for additional work such as to peer review mitigation measures or observe on-site conditions as appropriate; however, notwithstanding the foregoing, it is expressly understood and agreed that TT shall not have control or charge of, and shall not be responsible for the acts or omissions, including but not limited to means, methods, techniques, sequences and procedures, of the Design Professionals and/or Contractors performing design and/or construction on the Project. Accordingly, TT shall not be held responsible for the failure of any party to properly incorporate the mitigation measures stated in this report.

## Figures




**Schedule of Land Use**

| Description | Residential Units | Area (ha) |
|---|---|---|
| Single detached | 290 | 11.95 |
| **Total Single Detached** | **290** | **11.95** |
| Townhouses | 310 | 6.65 |
| Golf Villas (Stacked Townhouses) | 250 | 4.05 |
| **Net Developable Total** | **850** | **22.65** |
| Stormwater Management Pond | | 2.70 |
| Parkland and Trails | | 2.17 |
| Buffer | | 0.25 |
| Natural Heritage System | | 3.92 |
| Right of Way | | 9.29 |
| Treatment Plant | | 0.97 |
| Utility | | 0.20 |
| Water Tower | | 0.28 |
| **Total Site Area** | | **42.43** |

Thornton Tomasetti

**Client Name**
LIV (Hawkridge) LP

**Project Name**
Hawkridge Golf Course

**Notes:**
1) Not to Scale

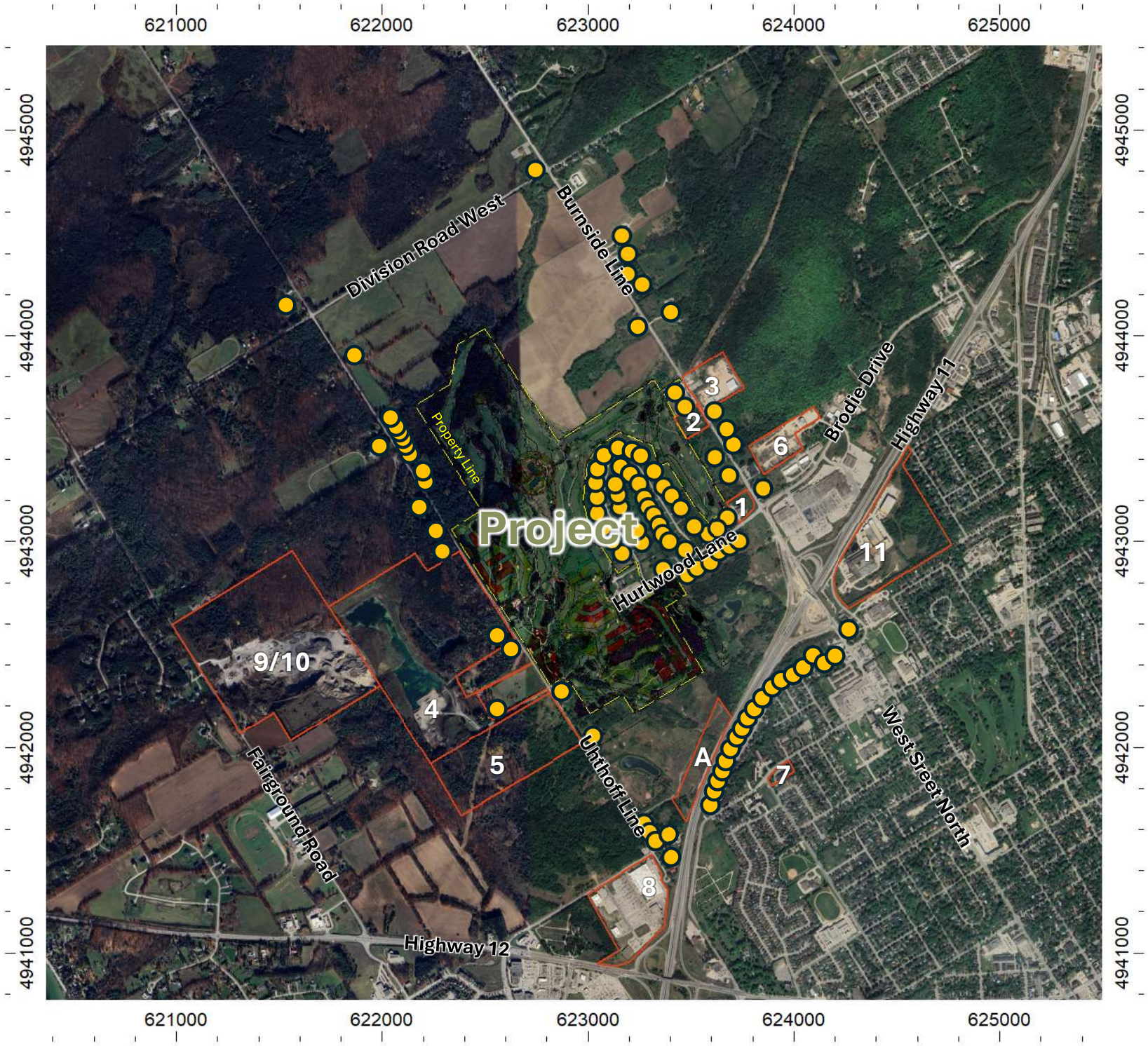
**Figure Title**
Project Site Plan

**Produced By**
MTL

**TT Project #**
24010598

**Date**
Oct 3, 2024

1




Thornton Tomasetti

**Client Name**
LIV (Hawkridge) LP

**Project Name**
Hawkridge Golf Course

**Notes:**

Industry IDs
1 - Twp of Severn Public Works and Utilities Office
2 - Cavana Ridge Spa/Welleness/ Salon
3 - Twp of Severn Public Works Yard
4 - Walker Agregates Orillia Pit 48
5 - Charter Construction Ltd. Solar Facility
6 - JG Stewart Construction
7 - Champlain Manor Retirement Residence
8- Walmart
9 - KJ Beamish Hot Mix Asphalt Plant
10 - Dufferin Aggregates Orillia
11 - Kubota Materials Canada Corporation
A – Vacant Lands – Future Industrial Lands

Existing Sensitive Buildings Surrounding Project

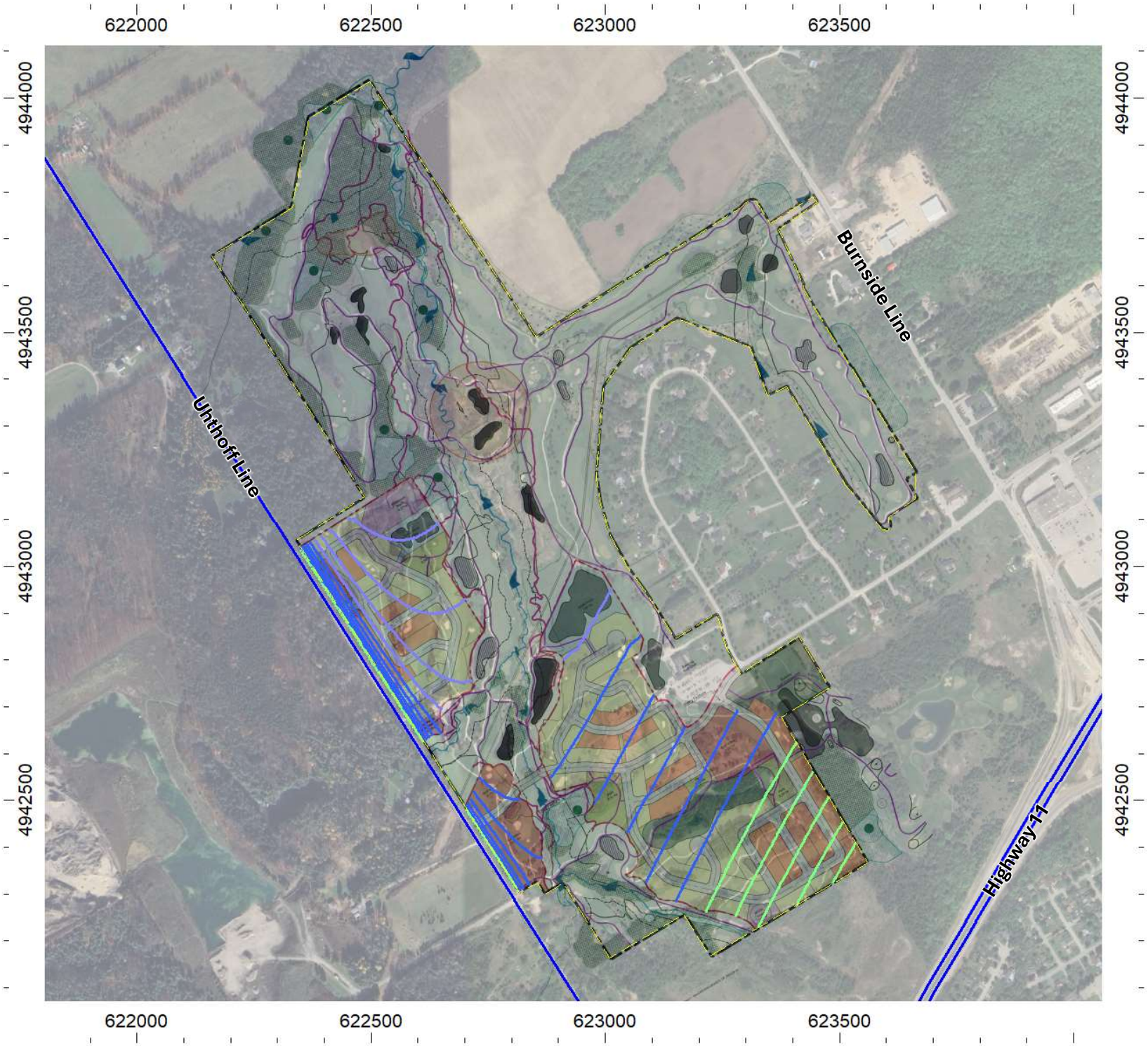
**Figure Title**
Site and Surrounding Area

**Produced By**
MTL

**TT Project #**
24010598

**Date**
Oct 3, 2024

2




**Thornton Tomasetti**

**Client Name**
LIV (Hawkridge) LP

**Project Name**
Hawkridge Golf Course

**Notes:**

**Sound Pressure Levels**

- 0 <= ... < 30 (A)
- 30 <= ... < 40 (A)
- 40 <= ... < 45 (A)
- 45 <= ... < 50 (A)
- 50 <= ... < 55 (A)
- 55 <= ... < 60 (A)
- 60 <= ... < 65 (A)
- 65 <= ... < 70 (A)
- 70 <= ... < 75 (A)
- 75 <= ... (A)

Grid Height = 1.5 m

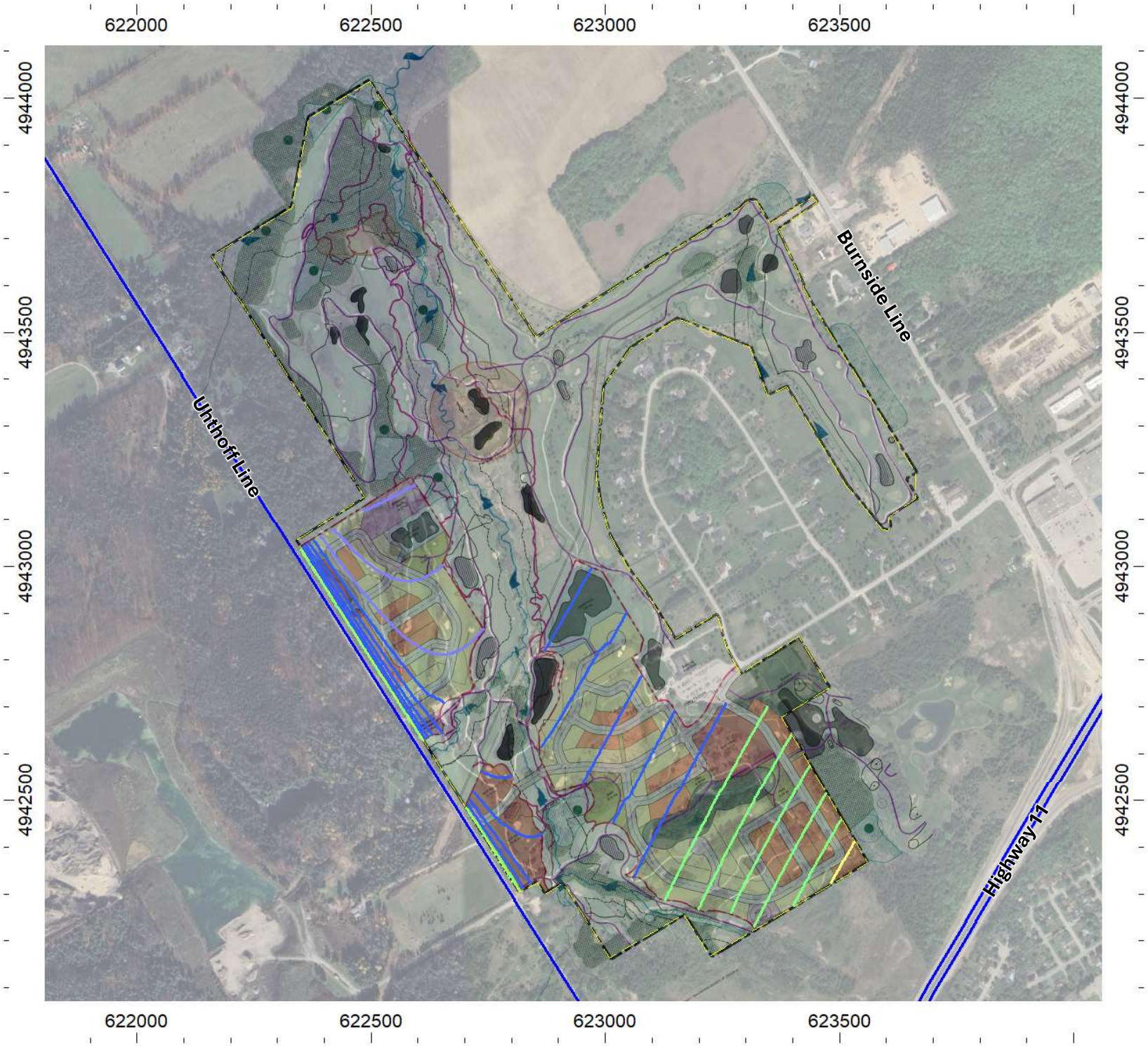
**Figure Title**
Predicted OLA Levels

**Produced By**
MTL

**TT Project #**
24010598

**Date**
Oct 3, 2024

3




Thornton Tomasetti

**Client Name**
LIV (Hawkridge) LP

**Project Name**
Hawkridge Golf Course

**Notes:**

**Sound Pressure Levels**

- 0 <= ... < 30 (A)
- 30 <= ... < 40 (A)
- 40 <= ... < 45 (A)
- 45 <= ... < 50 (A)
- 50 <= ... < 55 (A)
- 55 <= ... < 60 (A)
- 60 <= ... < 65 (A)
- 65 <= ... < 70 (A)
- 70 <= ... < 75 (A)
- 75 <= ... (A)

Grid Height = 4.5 m

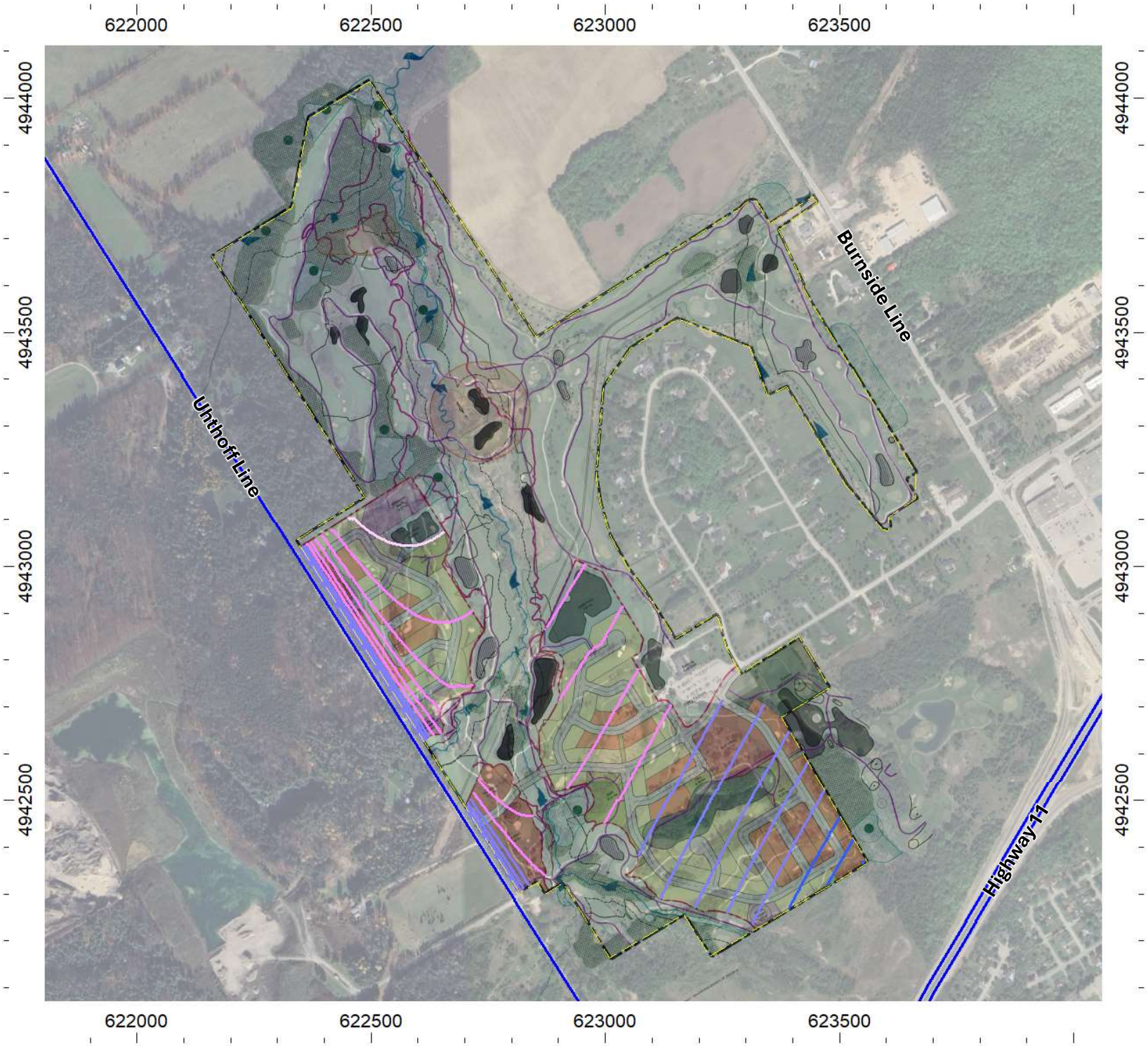
**Figure Title**
Predicted Façade Levels – Roadway, Daytime

**Produced By**
MTL

**TT Project #**
24010598

**Date**
Oct 3, 2024

4a




Thornton Tomasetti

**Client Name**
LIV (Hawkridge) LP

**Project Name**
Hawkridge Golf Course

**Notes:**

**Sound Pressure Levels**

- 0 <= ... < 30 (A)
- 30 <= ... < 40 (A)
- 40 <= ... < 45 (A)
- 45 <= ... < 50 (A)
- 50 <= ... < 55 (A)
- 55 <= ... < 60 (A)
- 60 <= ... < 65 (A)
- 65 <= ... < 70 (A)
- 70 <= ... < 75 (A)
- 75 <= ... (A)

Grid Height = 4.5 m

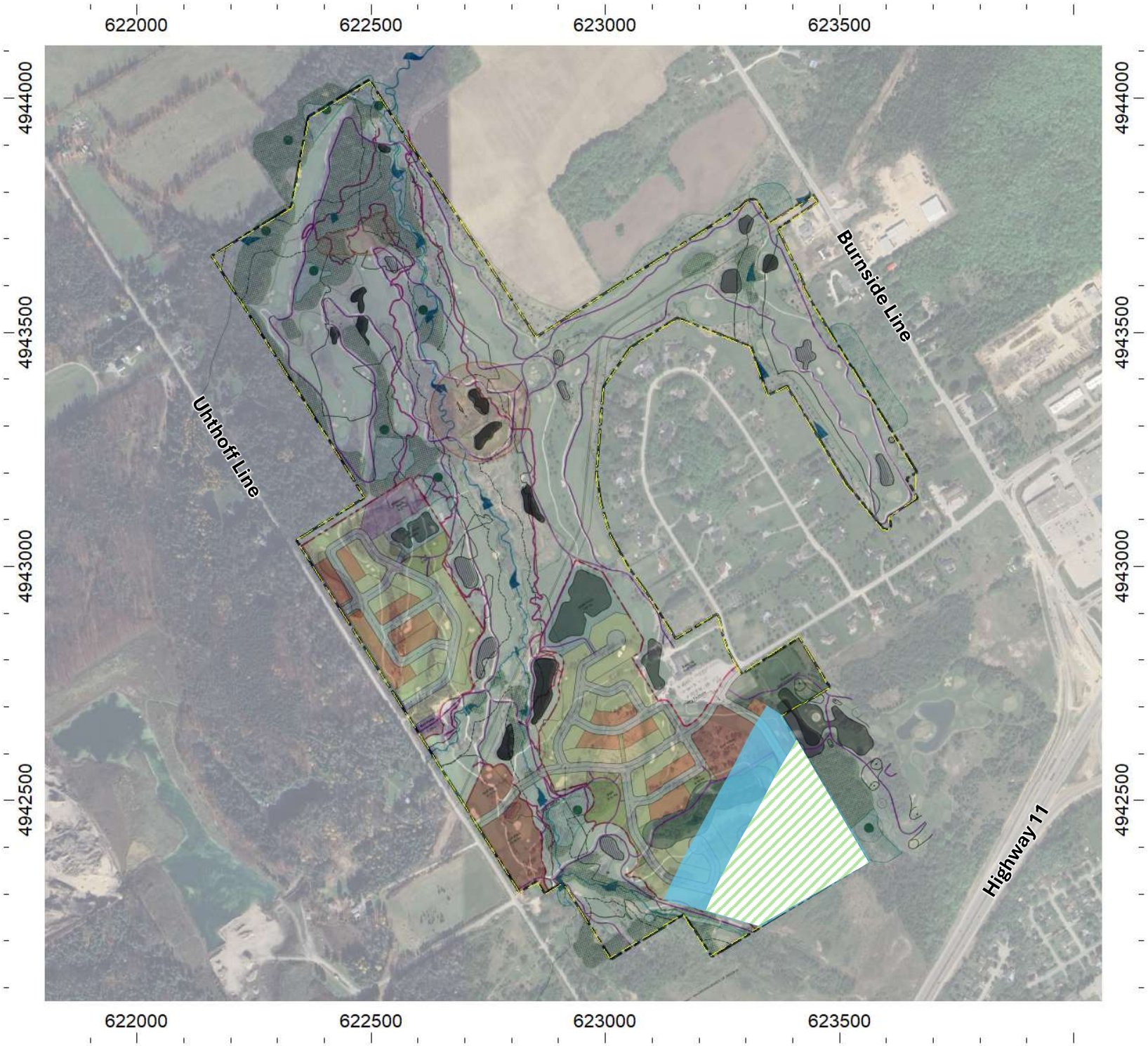
**Figure Title**
Predicted Facade Levels – Roadway, Night-time

**Produced By**
MTL

**TT Project #**
24010598

**Date**
Oct 3, 2024

4b




Thornton Tomasetti

**Client Name**
LIV (Hawkridge) LP

**Project Name**
Hawkridge Golf Course

**Notes:**

Forced Air Heating + Type A and C Warning Clauses

Forced Air Heating + Type C Warning Clause

**Figure Title**
Summary of Transportation Mitigation Measures

**Produced By**
MTL

**TT Project #**
24010598

**Date**
Oct 3, 2024

5

# Appendix A: Traffic Data

# Inch Farms Residential Development

**Environmental Noise Assessment**

**Orillia, ON**

**SLR Project No: 241.30352.00000**

December 2021

SLR

## Marcus Li

**From:** Du, Shuming (MTO) <Shuming.Du@ontario.ca>
**Sent:** October 29, 2021 5:32 PM
**To:** Marcus Li
**Cc:** Tai, Arthur (MTO); Wells, Kara (MTO)
**Subject:** RE: Highway 11 Traffic Data Requests

Hi Marcus,

In response to your request please find below the information available from this office for Highway 11 near Eastside Dr and Menoke Beach Rd:

2016 AADT: 26600
2016 SADT: 33500
Number of Lanes: 4
Ultimate AADT: 40500
Ultimate SADT: 50900
Ultimate Number of Lanes: 4
Posted Speed: 90 km/h
Percentage of Trucks: 9%

and for Highway 11 near West St N and Coldwater Rd W:

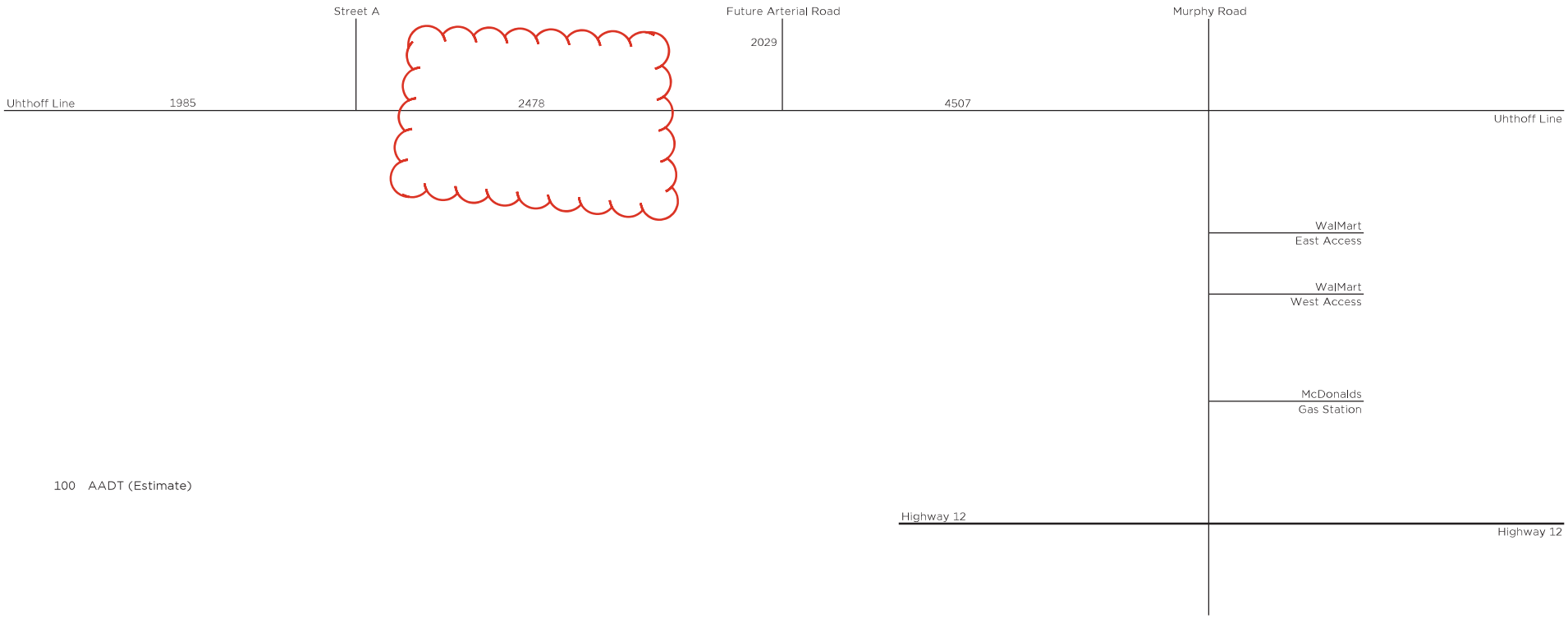
2016 AADT: 30500
2016 SADT: 44100
Number of Lanes: 4
Ultimate AADT: 59800
Ultimate SADT: 75200
Ultimate Number of Lanes: 4
Posted Speed: 100 km/h
Percentage of Trucks: 10%

Please note that the above information is estimated based upon our current knowledge of the area, which may be subject to change in the future.

If you require further information, please don't hesitate to contact me.
Thank you
Regards
Shuming

---

**From:** Marcus Li <mli@slrconsulting.com>
**Sent:** October 27, 2021 10:28 AM
**To:** Du, Shuming (MTO) <Shuming.Du@ontario.ca>
**Cc:** Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>
**Subject:** RE: Highway 11 Traffic Data Requests




**2038 AADT - Total**

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

# Accu-Traffic Inc.

## Total Count Diagram

**Municipality:** Orillia
**Site #:** 1725600002
**Intersection:** Murphy St & Uhthoff Ln
**TFR File #:** 1
**Count date:** 30-Nov-17

**Weather conditions:**

**Person counted:**
**Person prepared:**
**Person checked:**

**** Non-Signalized Intersection ****

**Major Road:** Murphy St runs N/S

| | |
|---|---|
| North Leg Total: | 64 |
| North Entering: | 32 |
| North Peds: | 0 |
| Peds Cross: | ⋈ |

| | | | | |
|---|---|---|---|---|
| Heavys | 0 | 7 | 0 | 7 |
| Trucks | 0 | 0 | 0 | 0 |
| Cars | 2 | 23 | 0 | 25 |
| Totals | 2 | 30 | 0 | |

| | |
|---|---|
| Heavys | 7 |
| Trucks | 0 |
| Cars | 25 |
| Totals | 32 |

| | |
|---|---|
| East Leg Total: | 7 |
| East Entering: | 3 |
| East Peds: | 4 |
| Peds Cross: | ⧗ |

Murphy St

| Heavys | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 1 | 222 | 223 |

| Cars | Trucks | Heavys | Totals |
|---|---|---|---|
| 2 | 0 | 0 | 2 |
| 1 | 0 | 0 | 1 |
| 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | |

Uhthoff Ln

N
W E
S

| Heavys | Trucks | Cars | Totals |
|---|---|---|---|
| 1 | 0 | 1 | 2 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 104 | 104 |
| 1 | 0 | 105 | |

Uhthoff Ln

| Cars | Trucks | Heavys | Totals |
|---|---|---|---|
| 4 | 0 | 0 | 4 |

Murphy St

| | |
|---|---|
| Peds Cross: | ⧗ |
| West Peds: | 0 |
| West Entering: | 106 |
| West Leg Total: | 329 |

| | |
|---|---|
| Cars | 127 |
| Trucks | 0 |
| Heavys | 7 |
| Totals | 134 |

| | | | | |
|---|---|---|---|---|
| Cars | 219 | 22 | 4 | 245 |
| Trucks | 1 | 0 | 0 | 1 |
| Heavys | 0 | 6 | 0 | 6 |
| Totals | 220 | 28 | 4 | |

| | |
|---|---|
| Peds Cross: | ⋈ |
| South Peds: | 0 |
| South Entering: | 252 |
| South Leg Total: | 386 |

**Comments**

## Appendix B: STAMSON Validation File


**Thornton Tomasetti**

**Client Name**
LIV (Hawkridge) LP

**Project Name**
Hawkridge Golf Course

**Notes:**

Type A Warning Clause

Forced Air Heating + Type C Warning Clause

**Figure Title**
Comparison of CadnaA to STAMSON

**Produced By**
MTL

**TT Project #**
24010598

**Date**
Oct 3, 2024

B.1

```
STAMSON 5.0        NORMAL REPORT        Date: 02-10-2024 20:51:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: sw_2nd.te            Time Period: 16 hours
Description: SW location, 2nd floor


Road data, segment # 1: Hwy11_SB
--------------------------------
Car traffic volume  : 31810 veh/TimePeriod
Medium truck volume :   884 veh/TimePeriod
Heavy truck volume  :  2651 veh/TimePeriod
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Hwy11_SB
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 480.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Hwy11_NB
--------------------------------
Car traffic volume  : 31810 veh/TimePeriod
Medium truck volume :   884 veh/TimePeriod
Heavy truck volume  :  2651 veh/TimePeriod
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Hwy11_NB
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Uhthoff_60
----------------------------------
Car traffic volume  :  2350 veh/TimePeriod
Medium truck volume :     9 veh/TimePeriod
Heavy truck volume  :     7 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 3: Uhthoff_60
--------------------------------
Angle1   Angle2           : -62.00 deg   33.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: Uhthoff_80
----------------------------------
Car traffic volume  :  2350 veh/TimePeriod
Medium truck volume :     9 veh/TimePeriod
Heavy truck volume  :     7 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Uhthoff_80
--------------------------------
Angle1   Angle2           :  33.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hwy11_SB
-----------------------------

Source height = 1.65 m

ROAD (0.00 + 53.94 + 0.00) = 53.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.57  78.80   0.00 -23.56  -1.29   0.00   0.00   0.00  53.94
--------------------------------------------------------------------------------

Segment Leq : 53.94 dBA

Results segment # 2: Hwy11_NB
-----------------------------

Source height = 1.65 m

ROAD (0.00 + 53.66 + 0.00) = 53.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.57  78.80   0.00 -23.84  -1.29   0.00   0.00   0.00  53.66
--------------------------------------------------------------------------------

Segment Leq : 53.66 dBA
```

Results segment # 3: Uhthoff_60
---

Source height = 0.74 m

ROAD (0.00 + 31.66 + 0.00) = 31.66 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -62 | 33 | 0.59 | 56.78 | 0.00 | -21.95 | -3.18 | 0.00 | 0.00 | 0.00 | 31.66 |

Segment Leq : 31.66 dBA

Results segment # 4: Uhthoff_80
---

Source height = 0.74 m

ROAD (0.00 + 30.93 + 0.00) = 30.93 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 90 | 0.59 | 60.10 | 0.00 | -21.95 | -7.22 | 0.00 | 0.00 | 0.00 | 30.93 |

Segment Leq : 30.93 dBA

Total Leq All Segments: 56.84 dBA

TOTAL Leq FROM ALL SOURCES: 56.84

```
STAMSON 5.0        NORMAL REPORT        Date: 02-10-2024 20:51:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: sw_ola.te            Time Period: 16 hours
Description: SW location, OLA


Road data, segment # 1: Hwy11_SB
--------------------------------
Car traffic volume  : 31810 veh/TimePeriod
Medium truck volume :   884 veh/TimePeriod
Heavy truck volume  :  2651 veh/TimePeriod
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Hwy11_SB
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 480.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Hwy11_NB
--------------------------------
Car traffic volume  : 31810 veh/TimePeriod
Medium truck volume :   884 veh/TimePeriod
Heavy truck volume  :  2651 veh/TimePeriod
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Hwy11_NB
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Uhthoff_60
----------------------------------
Car traffic volume  :  2350 veh/TimePeriod
Medium truck volume :     9 veh/TimePeriod
Heavy truck volume  :     7 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 3: Uhthoff_60
--------------------------------
Angle1   Angle2           : -62.00 deg   33.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: Uhthoff_80
----------------------------------
Car traffic volume  :  2350 veh/TimePeriod
Medium truck volume :     9 veh/TimePeriod
Heavy truck volume  :     7 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Uhthoff_80
--------------------------------
Angle1   Angle2           :  33.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hwy11_SB
-----------------------------

Source height = 1.65 m

ROAD (0.00 + 52.43 + 0.00) = 52.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.66  78.80   0.00 -24.92  -1.45   0.00   0.00   0.00  52.43
--------------------------------------------------------------------------------

Segment Leq : 52.43 dBA

Results segment # 2: Hwy11_NB
-----------------------------

Source height = 1.65 m

ROAD (0.00 + 52.14 + 0.00) = 52.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.66  78.80   0.00 -25.21  -1.45   0.00   0.00   0.00  52.14
--------------------------------------------------------------------------------

Segment Leq : 52.14 dBA
```

Results segment # 3: Uhthoff_60
---

Source height = 0.74 m

ROAD (0.00 + 30.69 + 0.00) = 30.69 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -62 | 33 | 0.66 | 56.78 | 0.00 | -22.87 | -3.22 | 0.00 | 0.00 | 0.00 | 30.69 |

Segment Leq : 30.69 dBA

Results segment # 4: Uhthoff_80
---

Source height = 0.74 m

ROAD (0.00 + 29.80 + 0.00) = 29.80 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 90 | 0.66 | 60.10 | 0.00 | -22.87 | -7.43 | 0.00 | 0.00 | 0.00 | 29.80 |

Segment Leq : 29.80 dBA

Total Leq All Segments: 55.32 dBA

TOTAL Leq FROM ALL SOURCES: 55.32