

# Noise Impact Study & D6 Compatibility Review

**13030 Lundy's Lane, Thorold, ON**  
SW21382.00

## Prepared For

**Rudanco Hospitality Corporation**  
4728 Dorchester Road, Unit 11B, 2nd Floor  
Niagara Falls, Ontario L2E 7H9

## Prepared By

**Marcus Li, P.Eng.**

**Thornton Tomasetti**  
23-366 Revus Avenue  
Mississauga, Ontario L5G 4S5  
Tel: +1 905.554.6222  
[MLi@ThorntonTomasetti.com](mailto:MLi@ThorntonTomasetti.com)  
[www.ThorntonTomasetti.com](http://www.ThorntonTomasetti.com)

## Reviewed By

**Robert Fuller, P.Eng.**  
Senior Project Engineer

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## 1.0 Introduction

At the request of Rudanco Hospitality Corporation (Client), Thornton Tomasetti (TT) presents this Noise Impact Study (NIS) regarding the proposed development at 13030 Lundy's Lane in Thorold, Ontario (the Project). The Project consists of a planned residential and mixed-use development in the area of the City of Thorold's Neighborhoods of Rolling Meadows Secondary Plan. TT understands that this NIS is required by the City of Thorold for Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA).

This NIS was prepared as an update to the TT NIS, dated December 15, 2023.

The purpose of this study is to assess the noise and vibration impacts on the Project from surrounding sources and the noise impact of the Project on surrounding noise sensitive areas. This report is intended to support the OPA/ZBA application for the Project as a feasibility study.

Where applicable, this report will provide noise control recommendations to meet the requirements of the relevant Land Use Planning Authority (LUPA). LUPAs generally adopt the noise criteria developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP), but may also have unique requirements.

## 2.0 Site and Surrounding Area

### 2.1 Project Location

The Project is located on the northwest corner of the intersection of Lundy's Lane (Highway 20 west of intersection / Regional Road 20 east of intersection) and Thorold Townline Road (Regional Road 70), in Thorold, Ontario. An existing motel is located on the south part of the property, along Lundy's Lane. For the purposes of this report, the direction "north" will be referenced to true North, in alignment with Thorold Townline Road.

The Project site is located along the border between the City of Thorold (west of Thorold Townline Road) and the City of Niagara Falls (east of Thorold Townline Road). The Project is located approximately 115 m north of the Canadian National Railway (CN) Stamford Subdivision Main Track.

The Project is currently bordered on the north, east and west by undeveloped / agricultural land. The Project is bordered on the south by scattered small commercial operations out of converted farmhouses. Lundy's Lane passes in an east/west direction adjacent to the south of the Project, and Thorold Townline Road passes in a north/south direction adjacent to the east of the Project. An aerial view of the Project and surrounding area is provided in Figure 1.

### 2.2 Planned Development

Proposed for the Project are a combination of greenspace, residential homes, townhomes, midrise buildings, and high-rise buildings as well as retail commercial in standalone and mixed-use form. The proposed site plan is provided in Figure 2. A copy of the development drawings are included in Appendix B.

## 2.3 Site Inspection

TT personnel attended the Project site on November 3, 2022, to review the acoustical environment in the area.

Transportation noise at the Project site was observed to be dominated by road traffic on the nearby Lundy's Lane and nearby Thorold Townline Road. Transportation noise from adjacent roadways is discussed in Section 4.0 of this report.

No individual stationary noise sources on surrounding properties were distinguishable from the Project site, and an inspection of publicly accessible areas of the surrounding neighborhood did not identify potentially significant stationary noise sources (roof top HVAC units, etc.). Stationary noise sources are discussed in Section 5.0 of this report.

## 2.4 Topography

Based on the observed and/or reported conditions on and around the Project site, the local topography is approximately flat.

## 3.0 Applicable Guidelines

### 3.1 Ministry of the Environment Conservation and Parks

The MECP does not have direct authority in approving land use planning decisions, but their guidance documents have been widely adopted by LUPAs. The MECP's *Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning* (NPC-300) provides province wide guidance regarding 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 report, TT has referred to *Part A Background* and *Part C Land Use Planning* of NPC-300.

This NIS report has been prepared to support land use planning decisions, and is not intended to support an application for an Environmental Compliance Approval (ECA) in accordance with *Part B Stationary Sources* of NPC-300, and Section 9 of the Environmental Protection Act.

### 3.2 Land Use Planning Authority

In addition to adopting the MECP's recommended standards and criteria, some LUPAs impose additional requirements on applications for development approval. The LUPAs for this Project are the Regional Municipality of Niagara and the City of Thorold. These LUPAs generally defer to the MECP's guidelines as documented in 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) affected by transportation noise are located on all facades of the residential towers and mid-rise buildings, the townhomes, and single family homes.

Private common amenity areas (e.g. rooftop amenity areas) are currently not included with the Project. In addition, private balconies and terraces are assumed to be less than 4 m in depth and do not meet the minimum requirements for inclusions. Therefore, an assessment of private common amenity areas, balconies and terraces was not complete, and only private rear yards for the single family homes and townhouse blocks were included in the assessment as OLAs.

Publicly accessible outdoor amenity areas are considered to be landscaped areas and not for the private use of the occupants. Therefore, these spaces have not been included in this assessment as OLAs.

### 4.2 Transportation Noise Sources

#### 4.2.1 Road Noise Sources

Thorold Townline Road (adjacent to the east) and Lundy’s Lane (adjacent to the south) represent the significant road noise sources for the Project. Roadway traffic data was obtained from the Project’s transportation consultant, Paradigm Transportation Solutions Limited (PTSL), where data was provided as future 2045 volumes. Traffic volumes were further grown to a 2050 future year based on an annual 2% growth rate obtained from the PTSL. Turning Movement Count (TMC) information was provided by PTSL for the intersection of Thorold Townline Road and Lundy’s Lane and applied to determine the Truck percentages. A copy of the traffic data is included in Appendix C.

The future traffic data applied in the assessment is summarized in the following table.

Table 1: Future Traffic Data Summary

Street	AADT	% Med Trucks	% Hvy Trucks	Day/Night	Speed Limit
Thorold Townline Road	17,323	2.7%	9.0%	90/10	80 km/h
Highway 20 / Lundy’s Lane	37,075	1.8%	4.2%	85/15	80 km/h

#### 4.2.2 Rail Noise Sources

Railway traffic data for the Stamford subdivision was obtained directly from CN. A copy of the railway data is included in Appendix C. There is an at-grade crossing near the area (and no anti-whistling by-laws); therefore, train whistling was also modelled. The 2023 train traffic volumes provided were projected to 2040 (15 years after the anticipated completion of the Project) using an annual growth rate of 2.5%.

Table 2: Future Rail Traffic Data Summary

Train Type	Future Train Volumes (day/ngt)	Max Locomotives	Max Cars Per Train	Speed
Freight	3 / 3	4	140	64 km/h
Way Freight	1.5 / 1.5	4	25	64 km/h

### 4.3 Transportation Sound Level Limits

#### 4.3.1 Outdoor Amenity 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 3. Note that **whistle noise is not included** in the assessment of rail noise at an OLA.

Table 3: 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 indoor living areas 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 relevant POW receptors.

Requirements for ventilation and warning clauses to address transportation noise impacts to the project Façades are determined based on the impact of combined road and rail transportation sources. The applicable POW sound level limits and the sliding scale of required ventilation measures and warning clauses are listed in Table 4. Note that **whistle noise is not included** in the assessment of rail noise for this purpose.

Table 4: POW Sound Level Limit: Ventilation & Warning Clauses – 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

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 applicable indoor and POW sound level limits and required construction measures for road and rail noise at in the indoor environment are listed in Table 5. Note that **whistle noise is included** in the assessment of rail noise for this purpose.

Table 5: Indoor Sound Level Limit: Construction Requirements – Road & Rail Traffic

Category	Daytime L <sub>eq,16hr</sub> (dBA)	Nighttime L <sub>eq,8hr</sub> (dBA)	Total L <sub>eq,24hr</sub> (dBA)	Mitigation Measures
Road Sound Level Indoor Limit Living Rooms / Bedrooms	45 / 45	45 / 40	-	Not Applicable
Road POW Sound Level Living & Bedrooms	>65	>60	-	Design building components to achieve indoor sound level limit
Rail Sound Level Indoor Limit Living Rooms / Bedrooms	40 / 40	40 / 35	-	Not Applicable
Rail POW Sound Level Living & Bedrooms	>60	>55	-	Design building components to achieve indoor sound level limit
Rail POW Sound Level Bedrooms	-	-	>60	Minimum of brick veneer or masonry equivalent construction from foundation to rafters in 1 <sup>st</sup> row of dwellings if within 100m of tracks

#### 4.4 Transportation Sound Level Predictions

Road traffic noise modelling was calculated using the ORNAMENT algorithms (the MECP road traffic noise model) within the Cadna/A noise propagation software, using line sources and sound emission. A validation file comparing the Cadna/A and MECP STAMSON 5.04 road traffic noise model is shown in Appendix C.

As indicated in the current draft version of the MECP Publication NPC-306, the U.S. Department of Transportation Federal Transit Administration (FTA) and Federal Railway Administration (FRA) algorithms are the replacement models for the former MECP “STEAM” model. For this assessment, rail traffic noise modelling was completed using FRA algorithms included in the Cadna/A software. FRA reference sound levels were applied for freight locomotives and horn/whistle noise, with FTA reference sound levels for individual rail cars. Horn/whistle noise was modelled based on half the train volume approaching a crossing from each direction, at a distance of 400 m from either side. Modelling input files for railway noise modelling are included in Appendix C.

As a conservative assessment of façade sound levels, reflective ground was applied in the noise modelling. The exception are the at-grade rear-yards, where the intervening grounds are primarily grassy/vegetative lands.

Façade noise impacts on the Project were assessed using the “building evaluation” feature in CadnaA, allowing for predicted noise levels along the entire façade of the development. Facades considered to be non-noise sensitive (blank walls, retail space, etc.) were excluded from the assessment. Individual receptors were applied to Outdoor amenity areas.

#### 4.4.1 Amenity Area Impacts

A summary of the calculated sound levels for the representative OLAs is presented in Table 7.

Table 6: Calculated OLA Sound Levels due to Transportation Sources

Location	Description	Predicted Transportation Sound Levels (dBA)
		Daytime (07:00–23:00) L <sub>eq,16hr</sub>
OLA1	Blocks 14 to 30, Rear Yard	59
OLA2	Blocks 97 to 100, Rear Yard	55
OLA3	Block 122, Rear Yard	56
OLA4	Block 123, Rear Yard	60

As the predicted transportation sound levels are at or below 60 dBA within the rear yards, physical noise control measures are not considered necessary providing a warning clause is included.

#### 4.4.2 Façade Impacts

The worst-case façade impacts for each building or set of buildings is summarized in the following table, and shown in Figures for roadway (Figure 3), locomotive (Figure 4), wheel (Figure 5), whistle noise (Figure 6), Total Transportation including whistle (Figure 7) and Total Transportation excluding whistle (Figure 8).

Table 7: Calculated Sound Levels due to Road & Rail Sources

POR ID	Predicted Transportation Sound Levels (dBA)							
	Daytime (07:00–23:00) L <sub>eq,16hr</sub>				Nighttime (23:00–07:00) L <sub>eq,8hr</sub>			
	Road	Rail (incl Whistle)	Combined (incl Whistle)	Combined (excl Whistle)	Road	Rail (incl Whistle)	Combined (incl Whistle)	Combined (excl Whistle)
Blocks 1 to 131	up to 65	up to 54	up to 65	up to 63	up to 60	up to 57	up to 61	up to 57
Block 132	up to 73	up to 61	up to 59	up to 73	up to 68	up to 64	up to 70	up to 68
Block 133	up to 74	up to 55	up to 74	up to 74	up to 67	up to 58	up to 68	up to 67
Block 134	up to 73	up to 51	up to 73	up to 73	up to 67	up to 54	up to 67	up to 67

Based on the above, the buildings along Thorold Townline Road and Highway 20/Lundy’s Lane have sound levels sufficiently high to require an assessment of noise control measures. In addition, transportation sound levels on Blocks 123 and 124 are also sufficiently high for an assessment of noise control measures to be required.

#### 4.5 Transportation Noise Control Recommendations

A summary of the noise control recommendations is included in the following table and Figure 9, and further discussed in the following sections.

Table 8: Transportation Noise Control Measures Summary

POR ID	Noise Barrier	Ventilation	Warning Clause	Building Components
Blocks 1 to 7, 10, 12 to 13, 31 to 33, 35, 44, 45, 62 to 74, 96 to 101, 111 to 119, 121, 126 to 128, 130, 131	-	Forced-Air Heating	Type C	Meet OBC Requirements
Blocks 14 to 30, Block 122	-	Forced-Air Heating	Type A, C	Meet OBC Requirements
Block 123	-	Central Air Conditioning	Type A, D	Designed to achieve indoor sound level criteria
Block 124	-	Central Air Conditioning	Type D, CN	Designed to achieve indoor sound level criteria
Block 132, Tower A, B, C, F	-	Central Air Conditioning	Type D, CN	Designed to achieve indoor sound level criteria
Block 132, Tower D, E	-	Central Air Conditioning	Type D, CN	Designed to achieve indoor sound level criteria
Block 132, Tower G, Building H	-	Forced-Air Heating	Type C, CN	Meet OBC Requirements

**4.5.1 Outdoor Living Areas – Barriers**

As the transportation sound levels are predicted to be 60 dBA or less, acoustic barriers are not considered necessary with the inclusion of a warning clause. The applicable warning clause is outlined in Section 4.5.4 below.

**4.5.2 Indoor Living Areas - Ventilation**

Sensitive receptors along the east and south facades of the development are expected to face POW sound levels above 65 dBA during the 16-hour day (07:00 – 23:00) and/or 60 dBA during the 8-hour night (23:00 – 07:00) due to road and rail noise (excluding whistle noise), therefore central air conditioning will be required for these units. This includes Blocks 132 to 134.

Sensitive receptors along the other facades of the development are expected to face POW sound levels between 55 dBA and 65 dBA during the 16-hour day (07:00 – 23:00) and/or between 50 dBA and 60 dBA during the 8-hour night (23:00 – 07:00) due to road and rail noise (excluding whistle noise), therefore forced air heating with the provision for central air conditioning is the minimum requirement for these units. This includes Blocks 1 to 7, 10, 12 to 33, 35, 44, 45, 62 to 74, 96 to 101, 111 to 119, 121 to 124, 126 to 128, 130, 131.

**4.5.3 Indoor Living Areas - Building Components**

The Project Site is located >100m from the nearest railway. Therefore, while exterior façades may need to be designed to achieve indoor sound level requirements, they are not required to include brick or masonry equivalent façade construction by default.

Sensitive receptors along the south and east facades of the Project are expected to face POW sound levels above 65/60 dBA during the 16-hour day (07:00 – 23:00) and/or 60/55 dBA during the 8-hour night (23:00 – 07:00) due to road/rail noise, therefore building components on these façades must be designed to achieve the indoor sound level limit. This includes Blocks 123, 124, 132 to 134.

Sensitive receptors along the other façades of the Project are not expected to face POW sound levels above 65/60 dBA during the 16-hour day (07:00 – 23:00) and/or 60/55 dBA during the 8-hour night (23:00 – 07:00) due to road/rail noise, therefore building components on these façades need only be designed to meet the requirements of OBC.

The building component requirements were determined using the National Research Council Building Practice Note BPN-56. At the time of the assessment, suite layouts showing room types and dimensions were not available.

The following assumptions were applied for the Project towers:

- 70% glazing for the wall component of living room and bedroom facades;
- Bedroom façade-to-floor area ratio of 100%
- Living/Dining room façade-to-floor area ratio of 50%
- Non-glazing wall component to have an STC 41 rating for all facades.

The following assumptions were applied for the townhouse units:

- 55% glazing for the wall component of living room and bedroom facades;
- Bedroom façade-to-floor area ratio of 100%
- Living/Dining room façade-to-floor area ratio of 50%
- Non-glazing wall component to have an STC 37 rating for all facades.

A summary of the building component requirements is included in Table 9.

Table 9: Building Envelope Requirements

Location	Non-Glazing	Living/Dining Glazing	Bedroom Glazing
Block 132, Building A	STC 41	STC 33	STC 36
Block 132 Building B to E	STC 41	STC 31	STC 33
Block 133, Building A/B	STC 41	STC 33	STC 34
Block 134, Midrise A	STC 41	STC 32	STC 34
Block 123 and 124	OBC	OBC	OBC

Note: Corner rooms are likely to require an increase of 3 STC points to address noise entering from 2 facades.

#### 4.5.4 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) and legal counsel if required.

Warning clauses are to be included in all agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations. A summary of the warning clause requirements is shown in Table 8 above.

The **Type A** warning clause is required to be included in the development agreements for the Project if one or more representative OLA receptors is predicted to be exposed to transportation sound pressure levels greater than 55 dBA (excluding train whistle noise) and less than 60 dBA without noise controls installed. An example of a Type A warning clause is as follows, and applicable to Blocks 14 to 30, 122 and 123:

*“Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air 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, Conservation and Parks.”*

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 16-hour day (07:00 – 23:00) or between 50 dBA and 60 dBA during the 8-hour night (23:00 – 07:00) (excluding train whistle noise), and the Project includes central air conditioning. An example of a Type C warning clause is as follows, and is applicable to Blocks 1 to 49, 53, 61 to 76, 88 to 102, 105, 106, 109 to 124, 126 to 128, 131:

*“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 **Type D** 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 greater than 65 dBA during the 16-hour day (07:00 – 23:00) or 60 dBA during the 8-hour night (23:00 – 07:00) (excluding train whistle noise), and the Project includes central air conditioning. An example of a Type D warning clause is as follows, and is applicable to Blocks 123, 124, 132 to 134:

*“This dwelling unit has been supplied with a central air conditioning system which 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 **CN Rail** warning clause may be included in the development agreements for the Project where one or more dwelling units included in the Project are located within 300m of rail tracks. The typical rail warning clause is as follows and is applicable to Blocks 124 and 132:

*“Warning: Canadian National Railway Company or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CNR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way.”*

## 5.0 Stationary Noise Assessment

### 5.1 Critical Stationary Noise Receptors

NPC-300 defines a point of reception for the assessment of stationary noise sources as any location on a noise sensitive land use where noise from a stationary source is received. This typically includes both Points Of Reception on building façades, representing the plane-of-window of noise sensitive spaces (POR) and Outdoor Points Of Reception representing areas such as balconies, gardens, patios, and terraces (OPOR). These locations may be the same or different from the POW and OLA receptors identified as part of a transportation noise assessment.

#### 5.1.1 Project Receptors

The Project point of reception (PPOR) and Project outdoor point of reception (POPOR) receptor(s) were applied consistently with the roadway noise assessment.

The noise-sensitive PPOR includes all facades of the residential buildings (high-rise, mid-rise, townhomes, and single family homes).

Private common amenity areas (e.g. rooftop amenity areas) are currently not included with the Project. In addition, private balconies and terraces are assumed to be less than 4 m in depth and do not meet the minimum requirements for inclusions. Therefore, as with the transportation assessment, an assessment of OLAs was not completed.

Publicly accessible outdoor amenity areas are considered landscaped areas and not for the private use of the occupants. Therefore, as with the transportation assessment, these spaces have not been included in this assessment as OLAs.

#### 5.1.2 Surrounding Receptors

The Surrounding Point of Reception (SPOR) and Surrounding Outdoor Point of Reception (SOPOR) receptor(s) most likely to be affected by stationary noise from the Project include those associated with planned and existing residential areas to the west, east, and south of the Project. Areas north of the project are undeveloped and therefore not considered to be noise sensitive.

The selections and locations of the Project's mechanical equipment are not yet available at this stage. Thus, TT is unable to perform a detailed analysis of the impact of the Project on the surroundings at this time.

### 5.2 Project Area Classification

NPC-300 defines the applicable sound pressure level limit at a given receptor as the higher of a set exclusionary sound level limit based on the area classification of that receptor, or the actual background sound level at the location of the receptor, whichever is higher. In this report, the defined exclusionary limits were used for the purposes of assessing compliance.

The Project is currently located in a Class 2 area as defined in NPC-300, based on the surrounding area features and its proximity to regional roads.

### 5.2.1 Class 2 Area Exclusionary Sound Level Limits

NPC-300 defines a Class 2 area as having an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as “urban hum” during the daytime (07:00 – 19:00 or 23:00), but with low evening and night background sound levels defined by the natural environment and infrequent human activity (19:00 or 23:00 – 07:00).

Table 10 provides a summary of the applicable exclusionary sound level limits for steady noise sources impacting receptors in a Class 2 area. Steady stationary noise sources are assessed against a 1-hour equivalent sound pressure level ( $L_{eq,1hr}$ ) expressed in A-weighted decibels (dBA).

Table 10: Class 2 Exclusionary Sound Level Limits – Steady Noise

Time Period	Normal Operations Steady Noise ( $L_{eq,1hr}$ , dBA)
	POR
Daytime (07:00 – 19:00)	50
Evening (19:00 – 23:00)	50
Nighttime (23:00 – 07:00)	45

Table 11 provides a summary of the applicable exclusionary sound level limits for impulse noise sources impacting receptors in a Class 2 area. These limits are based on the number of impulses generated by stationary sources in a one-hour period. Impulse noise sources are assessed against a Logarithmic Mean Impulse Sound Level, ( $L_{LM}$ ) expressed in A-weighted impulsive decibels, dBAI. Impulse noise sources are assessed separately from steady noise sources.

Table 11: Class 2 Exclusionary Sound Level Limits – Impulsive Noise

Actual Number of Impulses in One Hour	Impulsive Sound Level Limits, Class 2 Area ( $L_{LM}$ , dBAI)
	POR ( $L_{LM}$ , dBAI) Daytime (07:00 – 23:00) / Nighttime (23:00 – 07:00)
9 or more	50 / 45
7 to 8	55 / 50
5 to 6	60 / 55
4	65 / 60
3	70 / 65
2	75 / 70
1	80 / 75

For this assessment, the default guideline limits were applied to be conservative and consistent with the Quarry AAR. However, on review of the existing traffic TMCs, relaxed guideline limits are anticipated for buildings in close proximity to Thorold Townline Road due to the road traffic volumes (a Regional Road), moderately high truck percentages, and high posted speed limit (80 km/h).

### 5.3 Stationary Noise Sources

NPC-300 defines a stationary source of noise as one or more sources of sound that are normally operated within a given property. Stationary sources typically include mechanical equipment such as Heating, Ventilation and Air Conditioning (HVAC) equipment, standby power generators with routine testing, and heavy vehicle traffic (truck idling, driving, and loading).

Certain sources of noise, such as residential air conditioners, passenger automobile traffic in parking lots, or temporary noise such as that related to construction are not considered to be stationary sources in NPC-300 and are not assessed in this report. These sources are typically handled in a more qualitative fashion by applicable noise by-laws.

#### 5.3.1 Surrounding Sources

Based on a review of satellite imagery and field inspection, no significant stationary sources have been identified in the surrounding area. However, a quarry (Upper's Quarry) is being proposed and located northeast of the Project.

An acoustic assessment report titled *Upper's Quarry: Acoustic Assessment Report Walker Aggregates Inc.* dated October 28, 2021, updated August 2, 2023 (Quarry AAR), was prepared by RWDI to assess the impact of the quarry on the surrounding noise-sensitive receptors. The Quarry AAR states that the quarry will have multiple phases - each with different noise producing sources and configurations. From the Quarry AAR, TT has determined that Phase 1A Sinking cut, 1A South Sinking cut, and 1B Extraction will have the highest potential impact on the Project.

#### Continuous Noise

Continuous noise impacts from Phase 1A Sinking Cut, Phase 1A South Sinking Cut and Phase 1B Extraction were assessed based on the Quarry AAR information. Stationary noise sources associated with these phases include the following:

- Working Face and Primary Crusher, including rock drill (silenced), primary crusher and screen, loader and dumping of rocks into primary crusher
- Conveyor from Working Face Primary Crusher to Processing Plant
- Processing Plant, including secondary crusher and screen, tertiary crusher and screen, loader and shipping trucks
- Internal Haul Truck Routes
- Shipping Truck Routes

Figure 10a to d shows the noise source locations for each phase considered. As the Phase 1B extraction scenario source locations were not provided in the Quarry AAR, a modelling scenario was approximated based on the Phase 4 working face equipment modelling parameters, combined with the Phase 1A South Sinking Cut scenario.

Quarry operations are limited to daytime hours only (7 am to 7 pm), with the exception of haul routes and loader operation. Haul routes and loader are in operation 24 hrs per day.

The relevant portions of the Quarry AAR are included in Appendix D, summarizing the quarry phasing, equipment lists, source data, and noise impact contours.

### Impulsive Noise

Impulsive noise from the proposed quarry includes the Asphalt silo dust collector pulse, where the Asphalt Plant will be added in Phase 3. The Asphalt Plant will operate 24 hours per day.

#### **5.3.2 Project Sources**

Due to the early stage of planning for the Project, detailed information regarding stationary noise sources at the project is not currently available. The impact of the Project sources to the surrounding areas will be assessed as the design and locations of the Project buildings have developed further.

#### **5.4 Stationary Sound Level Predictions**

Continuous noise from Phase 1A Sinking Cut, Phase 1A South Sinking Cut, and Phase 1B were assessed, as these scenarios are considered to have the worst-case impacts on the Project. In addition, impulsive noise from the Asphalt Plant was also assessed on the Project.

##### **5.4.1 Quarry Noise Modelling**

Sound levels from the proposed quarry were calculated using the software CadnaA in accordance with the methods described in ISO 9613-2. A noise model was generated by TT with the CadnaA noise modelling software and using information included in the Quarry AAR's report.

In general, source data, modelling inputs/parameters, noise controls, etc. were applied based on information provided in the Quarry AAR, including the 3 m perimeter berm. The exception is the surrounding topography, which was obtained from Ontario Geohub.

##### Noise Control Measures Included in the Modelling

Noise control measures were included in the noise modelling based on mitigation measures outlined in the Quarry AAR, as follows:

- 3 m tall perimeter berms, as outlined in the Quarry AAR; and
- Locating the primary crusher within 30 m of the working face to maximize quarry terrain's screening effect for Phase 1B modelling.

##### Sinking Cut Scenarios

The sinking cut noise impact modelling (Phase 1A and Phase 1A South) were calibrated against the available noise contours included in the Quarry's AAR, prior to predicting noise impacts within the Project lands. At the noise contour height of 4.5 m, the TT noise model generally correlates to within 1 dBA in the direction of the Project lands and is otherwise conservatively high regarding predicted noise impacts (within 1 or 2 dBA).

The TT modelled noise impact contours at 4.5 m height, 7.5 m height and 23.5 m heights are shown in Figure 11a to c and Figure 12a to c for the Phase 1A and Phase 1A South sinking cut scenarios, respectively .

### Worst Case Working Face

The Phase 1B extraction scenario source locations were approximated based on the Phase 4 working face equipment and modelling parameters, combined with the Phase 1A South Sinking Cut scenario, as source data was not provided in the Quarry AAR.

#### **5.4.2 Quarry Noise Control Measures**

Based on the predicted quarry noise impacts for Phase 1 A South Sinking cut shown in Figure 12a to Figure 12c, excesses of the 50 dBA daytime guideline limit is shown within the north-east portion of the Project lands. An excess of up to 3 dBA are expected for the Block 134 buildings (closest to proposed quarry), including the noise controls identified in the Quarry AAR.

An additional temporary barrier is considered necessary for the Phase 1 A Sinking cut scenario to reduce noise impacts from the primary crusher and associated equipment, meeting the following:

- Height of 5 m;
- L-shaped, with a total length of approx. 35 m;
- Located at a set-back of approximately 12 m from the acoustic centre of the primary crusher operations.
- Must be sealed with no gaps and meet the minimum surface density requirements of 20 kg/m<sup>2</sup>.

Modelled noise impact contours, including the additional temporary barrier are shown in Figure 13a to c for contour heights of 4.5 m, 7.5 m and 23.5 m.

#### **5.4.3 Stationary Noise Impacts on the Project**

Quarry noise impacts were predicted within the Project, taking into consideration the Project Site Master Plan and building elevations (refer drawings in Appendix B). In addition, site specific ground absorption was applied, including 0 for the storm water management pond and 1 for large grass/vegetation covered areas. A general 0.5 ground absorption was applied to the remaining site to account for the mixture of grass/vegetation and roadways.

Façade noise impacts on the Project were assessed using the “building evaluation” feature in CadnaA, allowing for predicted noise levels along the entire façade of the development at all heights. Facades considered to be non-noise sensitive (blank walls, retail space, etc.) were excluded from the assessment.

### Continuous Noise

The predicted continuous noise impacts from the proposed quarry on the Project lands are summarized in the following tables and Figure 14 to Figure 16 for Phase 1A Sinking Cut, Phase 1A South Sinking Cut (including the temporary screen), and Phase 1B extraction, respectively.

Based on the results shown in Table 12 to Table 14, continuous noise from the proposed quarry is predicted to meet the applicable sound level limits at all noise sensitive buildings for the Project, including the proposed quarry noise controls indicated in Section 5.4.2. No additional noise controls are considered necessary to address noise impacts on the Project lands in addition to the proposed temporary barrier.

Table 12: Predicted Continuous Noise Source Impacts to the Project – Phase 1A

POR ID	Time Period	Predicted Sound Level <sup>[1]</sup> L <sub>eq,1hr</sub> (dBA)	Sound Level Limit L <sub>eq,1hr</sub> (dBA)	Meets Limit
Blocks 1 to 131	Daytime	up to 49	50	Yes
	Evening	up to 33	50	Yes
	Nighttime	up to 33	45	Yes
Block 132	Daytime	up to 46	50	Yes
	Evening	up to 29	50	Yes
	Nighttime	up to 29	45	Yes
Block 133	Daytime	up to 49	50	Yes
	Evening	up to 32	50	Yes
	Nighttime	up to 32	45	Yes
Block 134	Daytime	up to 50	50	Yes
	Evening	up to 34	50	Yes
	Nighttime	up to 34	45	Yes

Note: [1] Noise Impacts were predicted along the entire façade of the building, with highest levels shown

Table 13: Predicted Continuous Noise Source Impacts to the Project – Phase 1A South Sinking Cut

POR ID	Time Period	Predicted Sound Level <sup>[1]</sup> L <sub>eq,1hr</sub> (dBA)	Sound Level Limit L <sub>eq,1hr</sub> (dBA)	Meets Limit
Blocks 1 to 131	Daytime	up to 49	50	Yes
	Evening	up to 31	50	Yes
	Nighttime	up to 31	45	Yes
Block 132	Daytime	up to 46	50	Yes
	Evening	up to 28	50	Yes
	Nighttime	up to 28	45	Yes
Block 133	Daytime	up to 49	50	Yes
	Evening	up to 31	50	Yes
	Nighttime	up to 31	45	Yes
Block 134	Daytime	up to 50	50	Yes
	Evening	up to 32	50	Yes
	Nighttime	up to 32	45	Yes

Note: [1] Noise Impacts were predicted along the entire façade of the building, with highest levels shown

Table 14: Predicted Continuous Noise Source Impacts to the Project – Phase 1B Extraction

POR ID	Time Period	Predicted Sound Level <sup>[1]</sup> L <sub>eq,1hr</sub> (dBA)	Sound Level Limit L <sub>eq,1hr</sub> (dBA)	Meets Limit
Blocks 1 to 131	Daytime	up to 47	50	Yes
	Evening	up to 28	50	Yes
	Nighttime	up to 28	45	Yes
Block 132	Daytime	up to 44	50	Yes
	Evening	up to 26	50	Yes
	Nighttime	up to 26	45	Yes
Block 133	Daytime	up to 49	50	Yes
	Evening	up to 29	50	Yes
	Nighttime	up to 29	45	Yes
Block 134	Daytime	up to 50	50	Yes
	Evening	up to 30	50	Yes
	Nighttime	up to 30	45	Yes

Note: [1] Noise Impacts were predicted along the entire façade of the building, with highest levels shown

Impulsive Noise

The predicted impulsive noise impacts from the proposed quarry Asphalt Plant on the Project lands are summarized in the following table and shown in Figure 17.

Impulsive noise from the proposed quarry is predicted to meet the applicable sound level limits at all noise sensitive buildings for the Project. No additional noise controls are considered necessary.

Table 15: Predicted Impulsive Noise Source Impacts to the Project – Asphalt Plant

POR ID	Time Period	Predicted Sound Level <sup>[1]</sup> L <sub>LM</sub> (dBAI)	Sound Level Limit L <sub>LM</sub> (dBAI)	Meets Limit
Blocks 1 to 131	Daytime	up to 42	50	Yes
	Evening	up to 42	50	Yes
	Nighttime	up to 42	45	Yes
Block 132	Daytime	up to 39	50	Yes
	Evening	up to 39	50	Yes
	Nighttime	up to 39	45	Yes
Block 133	Daytime	up to 42	50	Yes
	Evening	up to 42	50	Yes
	Nighttime	up to 42	45	Yes
Block 134	Daytime	up to 44	50	Yes
	Evening	up to 44	50	Yes
	Nighttime	up to 44	45	Yes

Note: [1] Noise Impacts were predicted along the entire façade of the building, with highest levels shown

## 5.5 Warning Clauses

As the proposed quarry has the potential to be audible within the Project lands, an MECP Type E Warning Clause is recommended, should the quarry be approved. Refer Section 7.4.3 for a general quarry warning clause, which includes noise.

Warning clauses are to be included in all agreements of Offers of Purchase and Sale, lease/rental agreements, condominium declarations, subdivision agreement and future site plan agreements.

## 5.6 Development Mechanical System Impacts on Surrounding Receptors

At the time of the assessment, insufficient information was available to complete an assessment of the Project mechanical system noise impacts.

Project mechanical systems are expected to include make-up air units, cooling units, parking garage ventilation fans, exhaust fans, and emergency generators. 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.

Once sufficient information is available, an assessment of stationary noise impacts from the development mechanical systems should be completed to confirm the applicable guideline limits are met.

## 6.0 Railway Vibration Assessment

The Project's building envelopes are located more than 75 meters from the nearest railway alignment. Therefore, an assessment of vibration impacts due to the railway traffic is not considered necessary and was not completed.

## 7.0 Land Use Compatibility

Industrial and sensitive land uses are commonly separated by LUPAs in their official plans and zoning by-laws. When these types of land use occur near each other there is a potential for conflict due to contaminants such as noise, dust, or odours from the industrial land use. While industrial facilities are required to limit their impacts on surrounding sensitive land uses and are often designed with mitigation measures intended to address existing neighbors, the introduction of new sensitive receptors can lead to increased complaints, and more stringent mitigation requirements for existing facilities.

### 7.1 Regulatory Background

#### 7.1.1 Provincial Planning Statement

The *Provincial Planning Statement, 2024 Under the Planning Act* (PPS), published by the government of Ontario came into effect on October 20, 2024. The PPS replaces both the 2020 Provincial Policy Statement and the 2019 Growth Plan for the Greater Golden Horseshoe.

Section 3.5 of the PPS reads as follows:

*3.5.1 Major facilities and sensitive land uses shall be planned and developed to avoid, or if avoidance is not possible, minimize and mitigate any potential adverse effects from odour, noise and other contaminants, minimize risk to public health and safety, and to ensure the long-term operational and economic viability of major facilities in accordance with provincial guidelines, standards and procedures.*

*3.5.2 Where avoidance is not possible in accordance with policy 3.5.1, planning authorities shall protect the long-term viability of existing or planned industrial, manufacturing or other major facilities that are vulnerable to encroachment by ensuring that the planning and development of proposed adjacent sensitive land uses is only permitted if potential adverse affects to the proposed sensitive land use are minimized and mitigated, and potential impacts to industrial, manufacturing or other major facilities are minimized and mitigated in accordance with provincial guidelines, standards and procedures.*

Providing the Municipal and Provincial policies, guidelines and standards are met, the requirements of the PPS are also met.

### **7.1.2 Environmental Protection Act**

Section 9 of Ontario's Environmental Protection Act (EPA) requires that industrial facilities obtain an approval to operate from the MECP.

#### ***Approval, plant or production process***

*9 (1) No person shall, except under and in accordance with an environmental compliance approval,*

*(a) use, operate, construct, alter, extend or replace any plant, structure, equipment, apparatus, mechanism or thing that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water; or*

*(b) alter a process or rate of production with the result that a contaminant may be discharged into any part of the natural environment other than water or the rate or manner of discharge of a contaminant into any part of the natural environment other than water may be altered.*

In order to obtain and maintain this approval, industrial facilities are required to demonstrate that their emissions (including noise emissions) are within applicable limits at nearby sensitive receptors.

### **7.2 Recommended Setbacks**

The *D-6 Compatibility Between Industrial Facilities (D6)* guideline published by the MECP was last revised in July 1995, and sets out potential influence areas, as well as minimum recommended separation distances for industrial facilities from sensitive land uses.

The D6 guidelines are generally accepted as applicable screening standards for demonstrating compliance with the PPS and GP requirements for land use compatibility. In cases where a sensitive land use would be located within the identified minimum recommended separation distance, additional consideration and mitigation is typically recommended in order to ensure that the sensitive land use is not subject to adverse effects, and the industrial facility is not unreasonably limited in its operations.

The separation distances may be determined from different points on the properties depending on the site conditions; however, the typical measurement is based on the property lines.

Table 16 provides the potential influence area and recommended minimum separation distance from the industrial facility to the sensitive land use and

Table 17 shows the criteria for the categorization of the industrial facilities.

Table 16: D-6 Separation Distances for Industry Classes

Category	Potential Influence Area	Recommended Minimum Separation Distance
Class I	70m	20m
Class II	300m	70m
Class III	1000m	300m

Table 17: D-6 Industrial Categorization Criteria

Category	Outputs	Scale	Process	Operation/Intensity
Class I	<ul style="list-style-type: none"> <li>- Sound not audible off property</li> <li>- No ground borne vibration on plant property</li> <li>- Infrequent and not intense dust and/or odour</li> </ul>	<ul style="list-style-type: none"> <li>- No outside storage</li> <li>- Small scale plant or scale is irrelevant in relation to all other criteria for this Class</li> </ul>	<ul style="list-style-type: none"> <li>- Self-contained plant or building which produces/stores a packaged product</li> <li>- Low probability of fugitive emissions</li> </ul>	<ul style="list-style-type: none"> <li>- Daytime operations only</li> <li>- Infrequent movement of products and/or heavy trucks</li> </ul>
Class II	<ul style="list-style-type: none"> <li>- Sound occasionally audible off property</li> <li>- Possible ground borne vibration, but cannot be perceived off property</li> <li>- Frequent and occasionally intense dust and/or odour</li> </ul>	<ul style="list-style-type: none"> <li>- Outside storage permitted</li> <li>- Medium level of production allowed</li> </ul>	<ul style="list-style-type: none"> <li>- Open process</li> <li>- Periodic outputs of minor annoyance</li> <li>- Low probability of fugitive emissions</li> </ul>	<ul style="list-style-type: none"> <li>- Shift operations permitted</li> <li>- Frequent movement of products and/or heavy trucks with the majority of movements during daytime hours</li> </ul>
Class III	<ul style="list-style-type: none"> <li>- Sound frequently audible off property</li> <li>- Ground borne vibration can frequently be perceived off property</li> <li>- Persistent and/or intense dust and/or odour.</li> </ul>	<ul style="list-style-type: none"> <li>- Outside storage of raw and finished products</li> <li>- Large production levels</li> </ul>	<ul style="list-style-type: none"> <li>- Open process</li> <li>- Frequent outputs of major annoyances</li> <li>- High probability of fugitive emissions</li> </ul>	<ul style="list-style-type: none"> <li>- Continuous movement of products and employees</li> <li>- Daily shift operations permitted</li> </ul>

The D6 guideline also states that: *“When a change in land use is proposed for either industrial or sensitive land use, less than the minimum separation distance ... may be acceptable subject to either the municipality or the proponent providing a justifying impact assessment (i.e. a use specific evaluation of the industrial processes and the potential for off-site impacts on existing and proposed sensitive land uses). Mitigation is the key to dealing with less than the minimum to the greatest extent possible.”*

**7.3 Zoning & Official Plan**

The surrounding lands include both the City of Thorold (west of Thorold Townline Road and the City of Niagara Falls (east of Thorold Townline Road). Copies of the zoning maps and official plans are included in Appendix E.

**7.3.1 City of Thorold**

Zoning By-Law 60-2019

The Project site is currently zoned as a combination of “C5 – Highway Commercial” and “FD – Future Development” under the City of Thorold’s Zoning By-Law 60-2019. An area zoned “U – Utility” passes through but is not part of the Project Site. Much of the site is classified as FD.

Official Plan

The project site is currently captured in the City of Thorold’s Official Plan under Schedule A-3 - The Neighborhoods of Rolling Meadows Secondary Plan, which designates the areas zoned C5 as “RM-Highway Commercial”, the areas zoned as FD as a combination of “RM-Residential” and “RM-Employment – Prestige Industrial”. The utility corridor passing through the Project Site is designated as “RM-Open Space & Parks”.

The official plan further notes that areas in the vicinity of the planned “RM-Employment – Prestige Industrial”, including parts of the Project site are in an “Aggregate Impact Area”.

**7.3.1 City of Niagara Falls**

Zoning By-Law 79-200

Lands to the east of Thorold Townline Road primarily include lands zoned as “A – Agricultural Zone”, with areas of “HL-Hazard Land”.

Official Plan

The lands to the east of Thorold Townline Road are designated as “Good General Agricultural”.

**7.4 Surrounding Industrial Facilities**

Based on a review of satellite imagery, zoning maps, and existing MECF approvals in the vicinity of the Project as well as a field inspection of the surrounding area, TT has identified the actual or potential industrial facilities listed in Table 18 and illustrated in Figure 18.

Table 18: Actual or Potential Industrial Facilities Surrounding the Project

Category	Name	Location	Distance	Description
Class I	Marty's Auto Repair	13011 Lundy's Lane	~25m (Adjacent South)	Auto Shop
Class I	Golden Gardens Supply Company	13045 Lundy's Lane	~25m (Adjacent South)	Landscaping Supply
Class II	N/A	N/A	N/A	N/A
Class III	Walker Aggregates Upper's Quarry	NE of Project	~60m	Proposed Gravel Quarry

**7.4.1 Class I Industries**

Two Class I facilities are located on the South side of Lundy's Lane, across from the proposed development. Marty's Auto Repair and Golden Gardens Supply Company are both located within the 70m potential influence area for a Class I facility, but beyond the 20m recommended minimum separation distance.

Neither of these properties operate under an environmental approval for air or noise emissions.

Based on their apparent operations (auto garage with overhead doors, and landscape supplier with outdoor storage of material), and their location across Lundy's Lane, these facilities are not expected to have a significant impact on the Project, or to be limited in their operation by the Project.

**7.4.2 Class III Industries**

The area northeast of the Project is proposed to be developed into the Upper's Quarry, which would be considered a Class III industrial facility with a 1000 m area of influence and a minimum separation distance of 300 m. The Project is located within both the area of influence and the minimum separation distance for Class III industries, therefore additional review is considered necessary for the Quarry operations.

The proposed quarry would have potential stationary noise, blasting and air emission impacts on this proposed development.

TT has reviewed the following reports prepared on behalf of the proposed quarry:

- *Walker Aggregates Inc. Niagara Falls, Ontario Upper's Quarry: Acoustic Assessment Report* dated October 28, 2021 (Updated August 2, 2023), prepared by RWDI AIR Inc. (Quarry AAR);
- *Blast Impact Analysis Uppers Quarry, Part of Lots 119, 120, 136 and 137, Part of the road allowance between Lots 120 and 136 (Geographic Township of Stamford), City of Niagara Falls, Regional Municipality of Niagara* dated October 2021 (Updated August 2023), prepared by Explotech (Quarry BIA); and,
- *Walker Aggregates Inc. Niagara Falls, Air Quality Assessment for the Proposed Upper's Quarry* dated October 26, 2021 (Updated July 12, 2023), prepared by RWDI AIR Inc. (Quarry AQA)

The following is a summary of our review.

#### 7.4.2.1 Official Plan Recognition of Proposed Quarry

Section B1.8.12.3 *Aggregate Resource Protection Policies* of the *City of Thorold Official Plan* identifies that development applications within 500m of the potential bedrock resource area (proposed Upper's Quarry) should be reviewed and incorporate mitigation to demonstrate that future aggregate extraction will not be precluded or hindered and to achieve land use compatibility.

It should be noted that the policy goes on to state that *"Once the proponent has prepared the appropriate studies and necessary mitigation is incorporated into the proposed development, if necessary, the utilization of such mitigation measures does not relieve the new mineral aggregate operation from providing appropriate setbacks and mitigation measures in order to achieve land use compatibility."*

Thus, while the City of Thorold's official plan does anticipate the proposed Upper's Quarry, it also identifies the potential for development in close proximity to the quarry, and imposes reciprocal obligations on the proposed quarry and nearby sensitive developments, such as this Project.

#### 7.4.2.2 Proposed Quarry Air Impacts

##### Air Emissions

Air emission sources associated with the proposed quarry operations will primarily consist of fugitive dust emissions from on-site vehicle traffic, aggregate extraction and processing, and combustion products from on-site vehicles and heavy equipment. In addition, air emissions and odour are associated with the Asphalt Plant.

The air emission sources identified include the following:

- Drilling and blasting operations;
- Material crushing, screening, conveying, and stockpiling;
- Material handling operations (loaders loading haul trucks and highway trucks);
- Equipment travel over unpaved surfaces (haul trucks, loaders, and highway trucks);
- Tailpipe emissions from on-site vehicles and heavy equipment; and
- Asphalt Plant operations.

Aside from the drilling/blasting operations and primary crushing, the majority of air emissions sources are located to the north/central part of the proposed Quarry (phases 2 to 4). The drilling/blasting operations and primary crushing are understood to move with the working face or the various phases. For all air emission sources, existing sensitive receptors are located at similar or closer proximity than the Project buildings.

As the air emission limits are predicted in the Quarry AQA to be met at the closer existing receptors, the limits are also expected to be met at the Project Buildings. In addition, the highest predicted impacts are expected to occur at grade as concluded in the Quarry AQA, therefore impacts at higher elevations, such as the Project buildings, are not expected to be a concern.

Based on the above, air emissions from the Quarry are not anticipated to be a concern for the Project based on the controls identified in the Quarry AQA. No additional analysis is considered necessary.

##### Odour

The proposed quarry's asphalt plant is a potential source of odour. The proposed location of the asphalt plant is approximately 900 m from the Project buildings, and out outside of the minimum distance to trigger an odour management plan required under the Ontario Asphalt Mix Industry Standard. Therefore,

given the large separation distance, odour is not anticipated to be a concern for the Project buildings and no additional analysis is considered necessary.

#### Haul Route

The preferred off-site haul route for the proposed quarry is understood to be northward from the quarry entrance along Thorold Townline Road, away from the Project lands. As the quarry entrance is located approximately 1 km north of the Project lands, dust from the Haul Route is not anticipated to be a concern for the Project and additional analysis is not considered necessary.

#### **7.4.2.3 Proposed Quarry Stationary Noise Impacts**

As described in Section 5.0 of this report, stationary noise impacts from the proposed quarry operations are predicted to meet the MECP NPC-300 guideline limits for the Project, with the inclusion of noise controls discussed with the proposed quarry and outlined in Section 5.4.2 above.

#### **7.4.2.4 Proposed Quarry Blasting Impacts (Vibration and Overpressure)**

A blast impact analysis was completed as part of the Quarry BIA of both vibration and overpressure sound levels for surrounding sensitive receptors, a utility building, the hydro corridor, a natural gas pipeline and active spawning beds.

The Quarry BIA concluded the planned aggregate extraction can be carried out within the MECP guidelines set out in NPC-119 for all existing surrounding sensitive buildings. As the Project's closest buildings are located at a distance of approximately 180 m from the quarry license boundary, and farther than the closest sensitive building to the proposed quarry (approx. 60 m), the applicable guideline limits can be met at the Project without any additional charge restrictions. No additional analysis is considered necessary.

#### **7.4.3 Warning Clause**

At the request of the City of Niagara Falls, a warning clause is recommended regarding the proposed quarry operations, should the quarry be approved. The following is example Quarry warning clause text:

*"Due to the proximity of the adjacent quarry, purchasers/tenants are advised of the operational noise from the quarry, the potential of dust or odors from the quarry and related operations, vibrations due to blasting, and the utilization of Thorold Townline Road as a haul route for the proposed quarry."*

Warning clauses are to be included in all agreements of Offers of Purchase and Sale, lease/rental agreements, condominium declarations, subdivision agreement and future site plan agreements.

#### **7.4.4 Vacant Lands**

##### Zoning

Vacant lands to the north of the Project are currently zoned Future Development, where allowable uses include agricultural, existing residential dwellings, existing uses and home occupation. As industrial facilities are not permitted based on the allowed land use, no significant air, noise or vibration emissions are anticipated from the vacant lands to the north. Additional analysis is not considered necessary.

## Official Plan

The lands fall under Schedule A-3 -The Neighborhoods of Rolling Meadows Secondary Plan of the City of Thorold's Official Plan. Vacant lands to the north include lands designated as Residential, adjacent to Prestige Industrial designated lands.

As indicated in the City of Thorold's Official Plan, the Rolling Meadows Secondary Plan is recognized as "a new community providing the integration of diverse land uses including various housing types, community facilities such as schools and recreational areas, a range of commercial uses, compatible employment lands and open space/natural heritage areas". In addition, the allowable uses within the RM Prestige Industrial lands includes "enclosed warehousing, offices, limited product distribution services, product showroom and display centres, research and development facilities, business and government services as well as light manufacturing and processing operations deemed not to be noxious by reason of dust, odour, fumes, particulate matter, noise and excessive vibrations".

Based on the City of Thorold Official Plan, the Prestige Employment lands are not anticipated to include industries or facilities with significant air or noise emissions. In addition, as land designations within the Official Plan currently include RM Residential lands adjacent to the RM Prestige Industrial lands, the facilities within the RM Prestige Industrial Lands are expected to be smaller operations and compatible with adjacent sensitive lands uses. Additional analysis is not considered necessary.

## **8.0 Concluding Comments**

### **8.1 Noise**

An assessment of surrounding roadway and railway noise sources was completed for the Project. Transportation noise impacts on the Project are expected to meet all applicable MECP noise requirements with the inclusion of upgraded façade construction, ventilation requirements and warning clauses as presented in Section 4.5. of this report. As the glazing analysis was completed based on generic room and window dimensions, a reviewed analysis should be completed once detailed floor and façade plans are available.

Surrounding stationary noise impacts from the proposed quarry was assessed based on the information available from the Quarry AAR. With the inclusion of quarry noise control measures outlined in Section 5.4.2, the applicable MECP noise limits are predicted to be met for the Project.

As the Project's design proceeds and mechanical equipment is selected, acoustical modelling of the impacts of this equipment should be confirmed in order to evaluate compliance with applicable sound limits at surrounding sensitive receptors and confirm that impacts to the Project itself will be acceptable.

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

### **8.2 Railway Vibration**

As the Project's building envelopes are located more than the minimum separation distance requirements for assessment, a vibration assessment was not considered necessary and was not completed.

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

### 8.3 Compatibility Study

On review of the surrounding industries, the proposed quarry was identified as a facility with the potential to impact the Project. A review was completed for potential impacts from air quality, dust, odour, blasting (vibration and overpressure), noise, and vibration from the proposed quarry.

Air emissions, dust, and odour from the proposed quarry are not anticipated to be a concern for the Project based on our review of the Quarry AQA. The Project is considered to be compatible with the Quarry regarding air emissions, dust, and odour, without additional controls beyond those identified in the Quarry AQA.

Based on an initial review of noise impacts from the proposed quarry, stationary noise has the potential to impact the Project. Additional analysis was completed based on the Quarry AAR. Stationary noise impacts from the proposed quarry operations are predicted to meet the MECP NPC-300 guideline limits for the Project, with the inclusion of noise controls discussed with proposed quarry. Therefore, the Project is considered compatible with the proposed quarry regarding noise, including the noise controls outlined in Section 5.4.2 above.

Blasting impacts (vibration and noise) are not anticipated to be a concern for the Project, based on our review of the Quarry BIA. Basting from the proposed quarry is considered compatible with the Project, without additional restrictions already applicable to the proposed quarry's blasting operations.

At the request of the City of Niagara Falls, a general warning clause is recommended regarding the proposed quarry operations, as outlined in Section 7.4.3.

Based on our review, the Project is considered compatible with the surrounding land uses. The conversion of the Project lands:

- are not likely to result in an increased risk of complaint and nuisance claims;
- are not likely to result in operational constraints for the surrounding industries and commercial operations; and
- are not likely to result in constraints on surrounding industries to reasonably expand, intensify or introduce changes to their operations.

No additional studies are currently recommended.

Yours Truly,

Thornton Tomasetti



Marcus Li, P.Eng.  
Vice President

Reviewed by:  
Robert Fuller, P.Eng.  
Senior 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.

## Appendix A: Figures

- Figure 1: Project Location & Surroundings
- Figure 2: Project Site Plan
- Figure 3: Predicted Sound Levels, Road
- Figure 4: Predicted Sound Levels, Loco
- Figure 5: Predicted Sound Levels, Wheel
- Figure 6: Predicted Sound Levels, Whistle
- Figure 7: Predicted Sound Levels, Total Trans
- Figure 8: Predicted Sound Levels, Total Trans (Excl Whistle)
- Figure 9: Mitigation Measures Summary
- Figure 10: Quarry Noise Source Locations
- Figure 11: Modelled Noise Contours, Ph1A
- Figure 12: Modelled Noise Contours, Ph1A South
- Figure 13: Modelled Noise Contours, Ph1A South (Mitigated)
- Figure 14: Predicted Sound Levels, Quarry Ph1A
- Figure 15: Predicted Sound Levels, Quarry Ph1A S
- Figure 16: Predicted Sound Levels, Quarry Ph1B
- Figure 17: Predicted Sound Levels, Asphalt Impulse
- Figure 18: Guideline D6 Separation Distances

**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

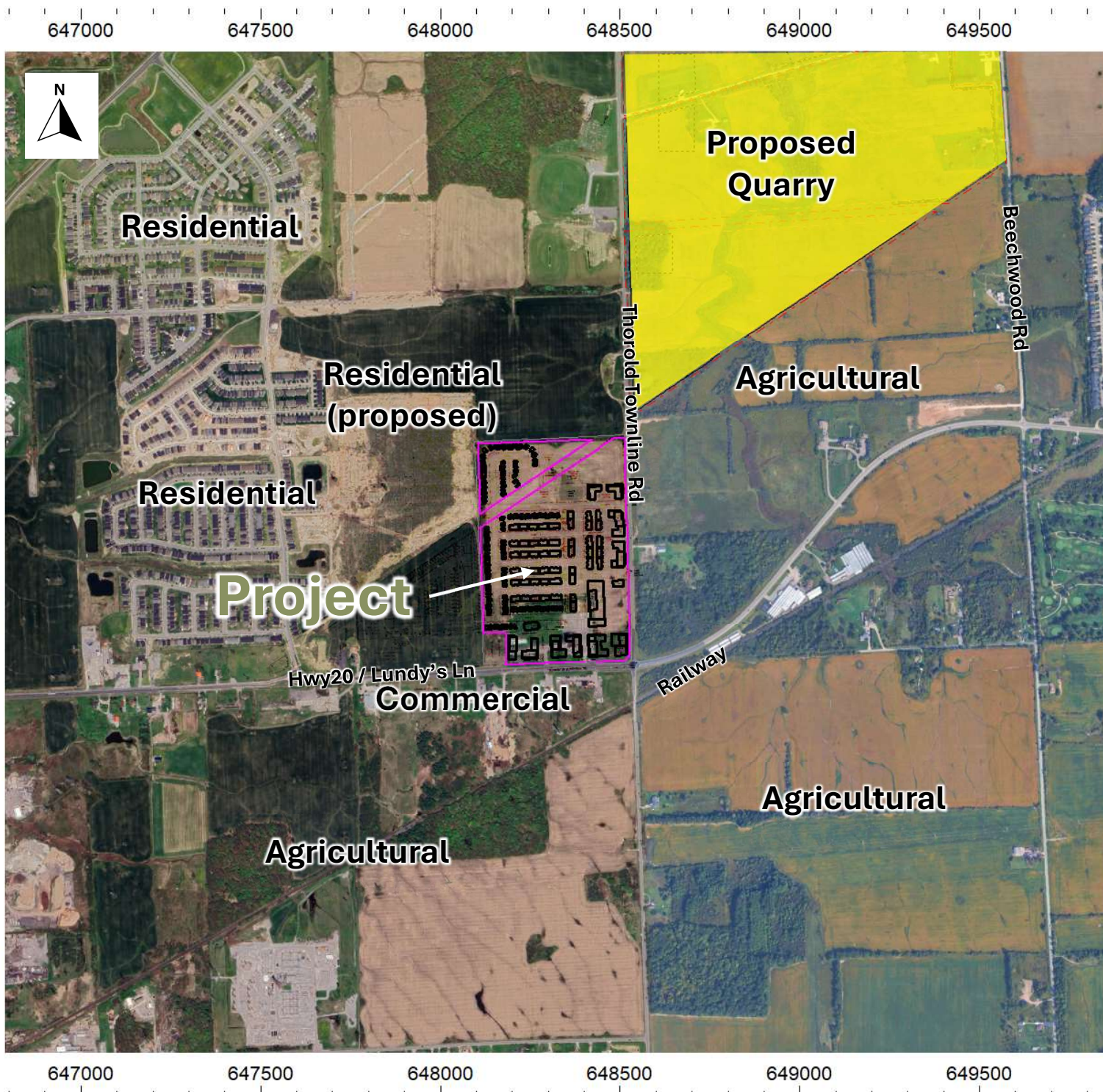
**Notes:**

**Figure Title**  
Project Location and Surroundings

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**  
1) Not to Scale



**Figure Title**  
Project Site Plan

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Sept 24, 2025

**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**  
Legend

— Line Source

**Sound Pressure Levels**

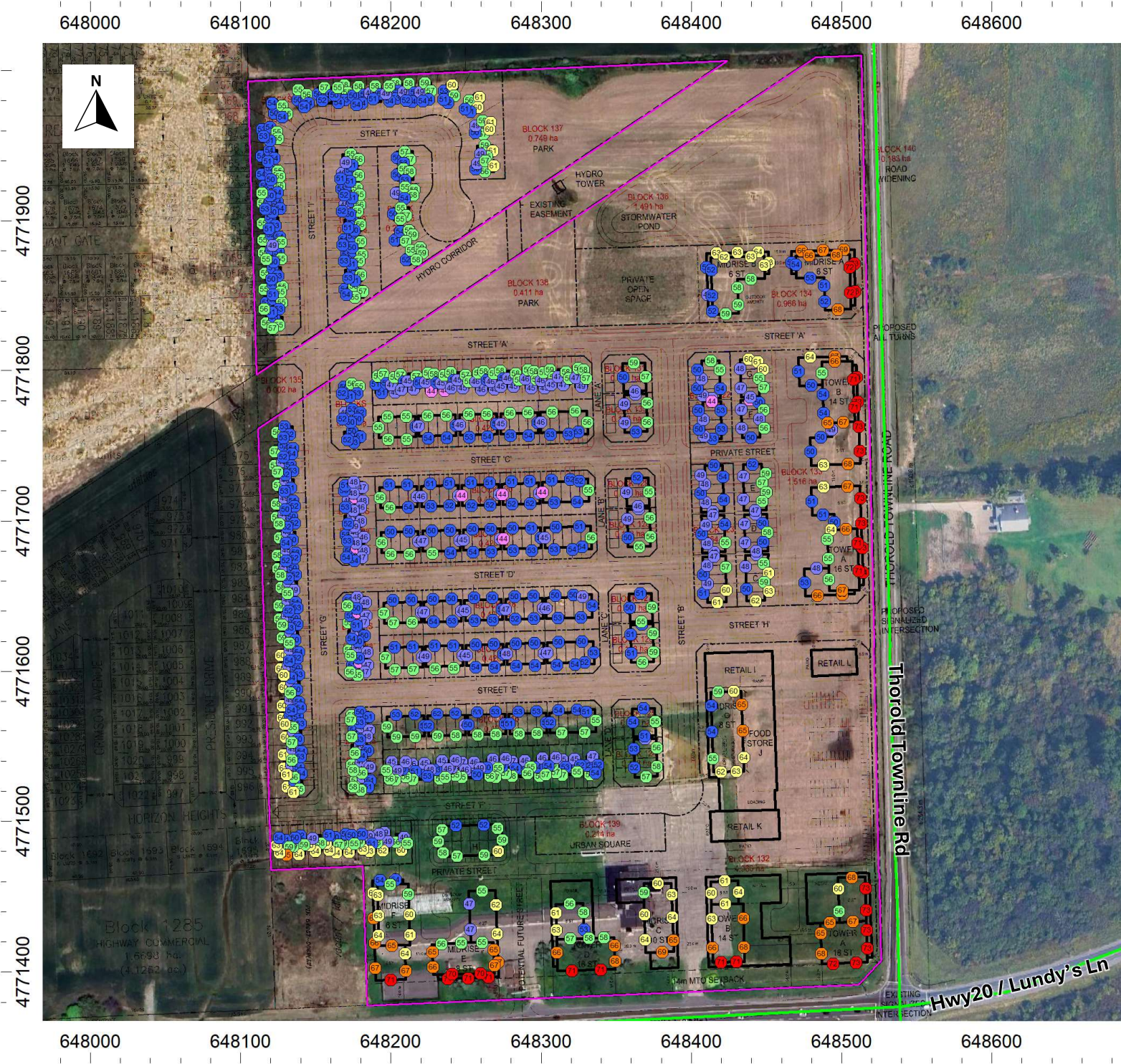
- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Road, Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**  
**Legend**

— Line Source

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Road, Ngt

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

3b



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

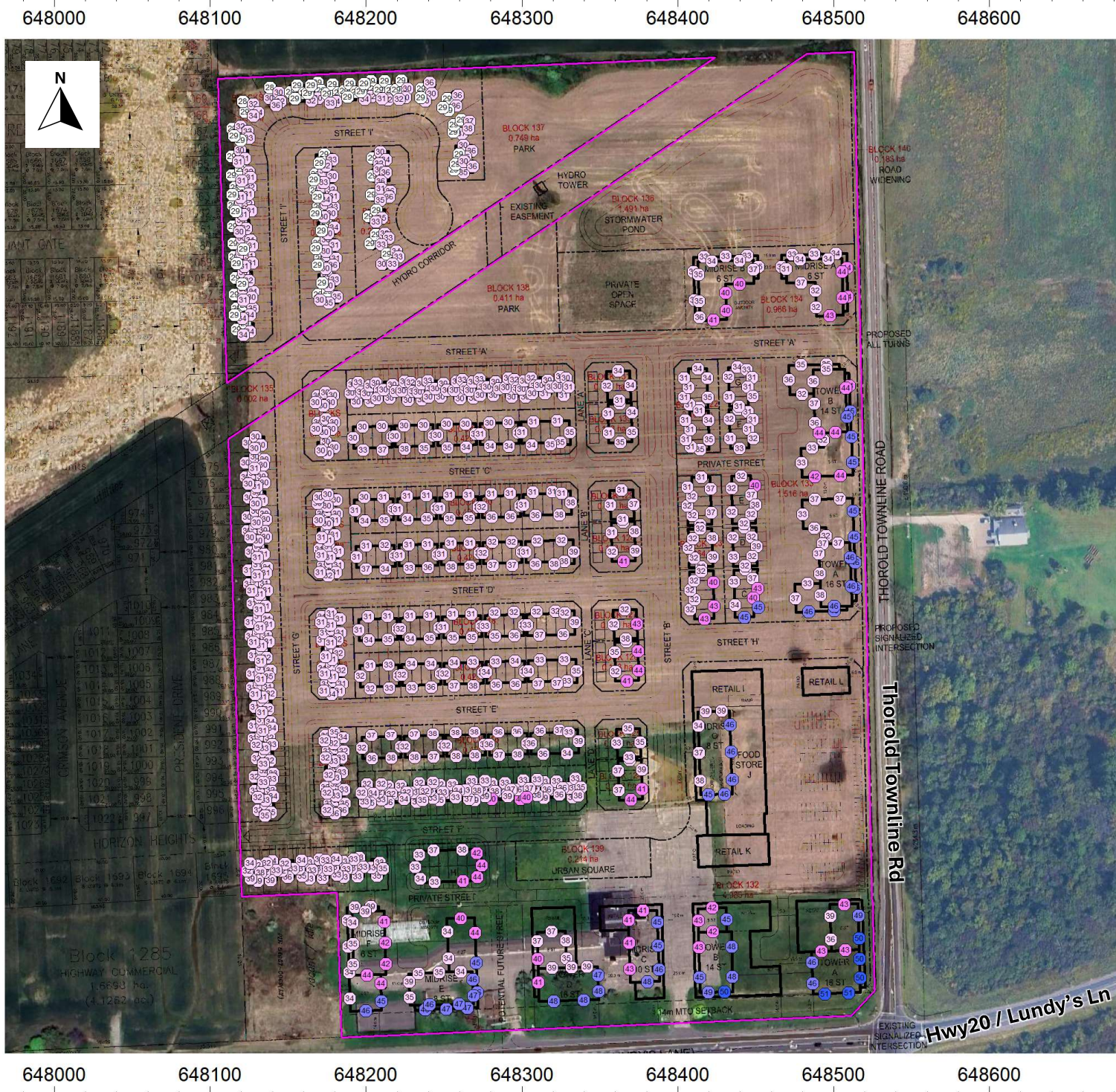
**Figure Title**  
Predicted Sound Levels – Rail Loco, Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

4a



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

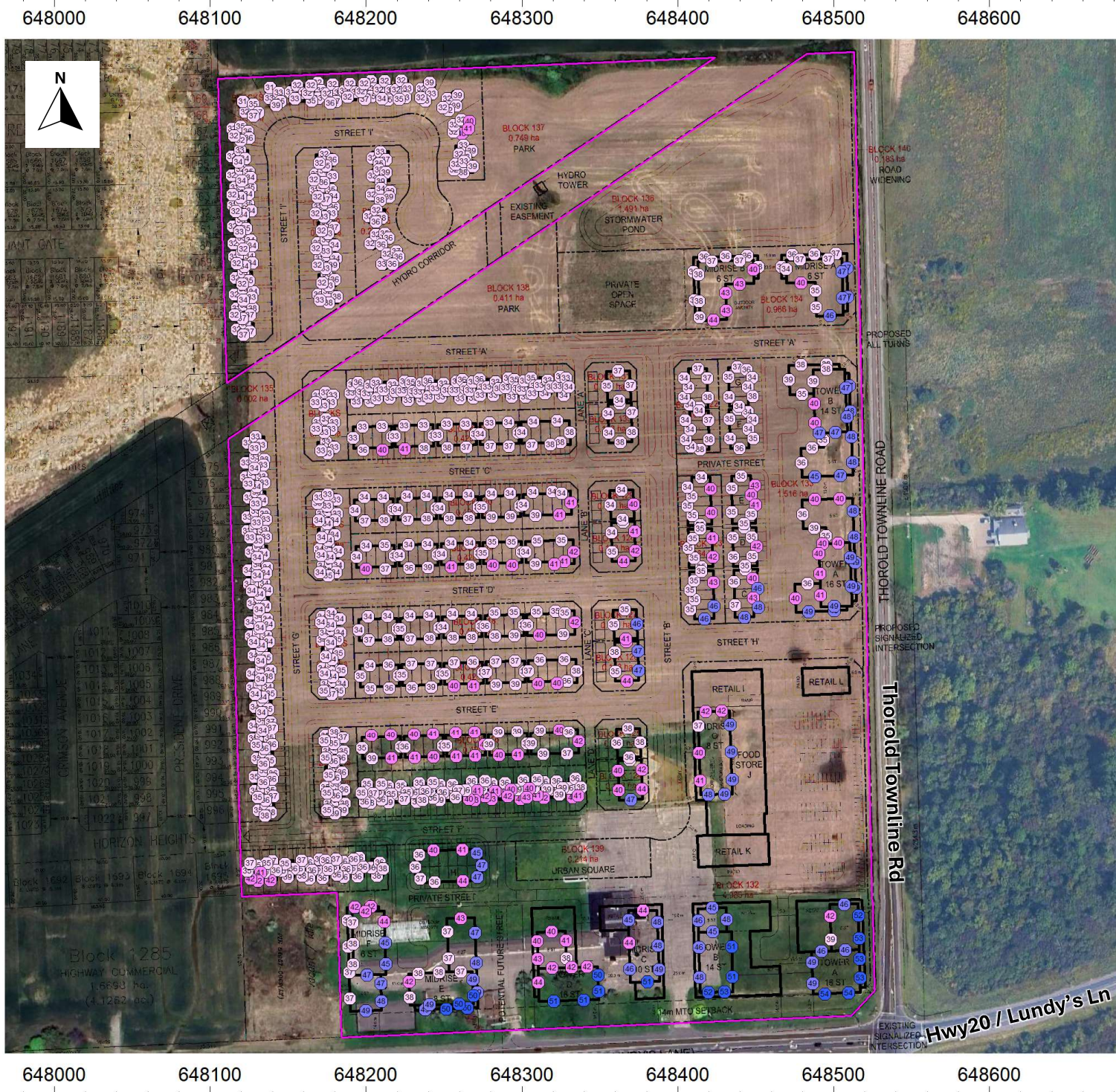
**Figure Title**  
Predicted Sound Levels – Rail Loco, Ngt

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

4b



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

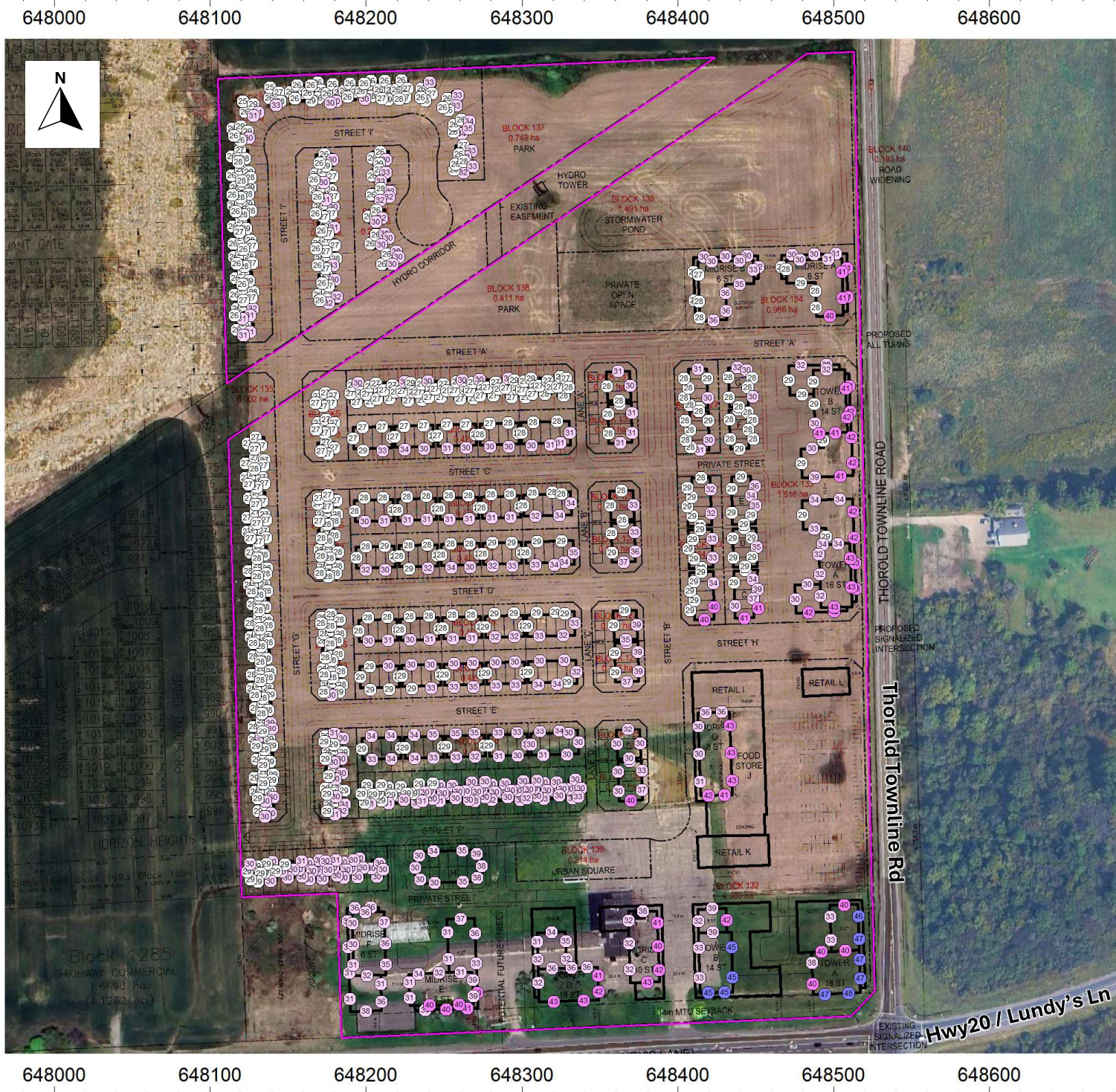
**Figure Title**  
Predicted Sound Levels – Rail Wheel, Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

5a



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Rail Wheel, NgT

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

5b



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Rail Whistle, Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

6a



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Rail Whistle, NgT

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

6b



# Thornton Tomasetti

Client Name  
Rudanco Hospitality Corp.

Project Name  
13030 Lundy's Lane

Notes:  
Legend

— Line Source

### Sound Pressure Levels

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

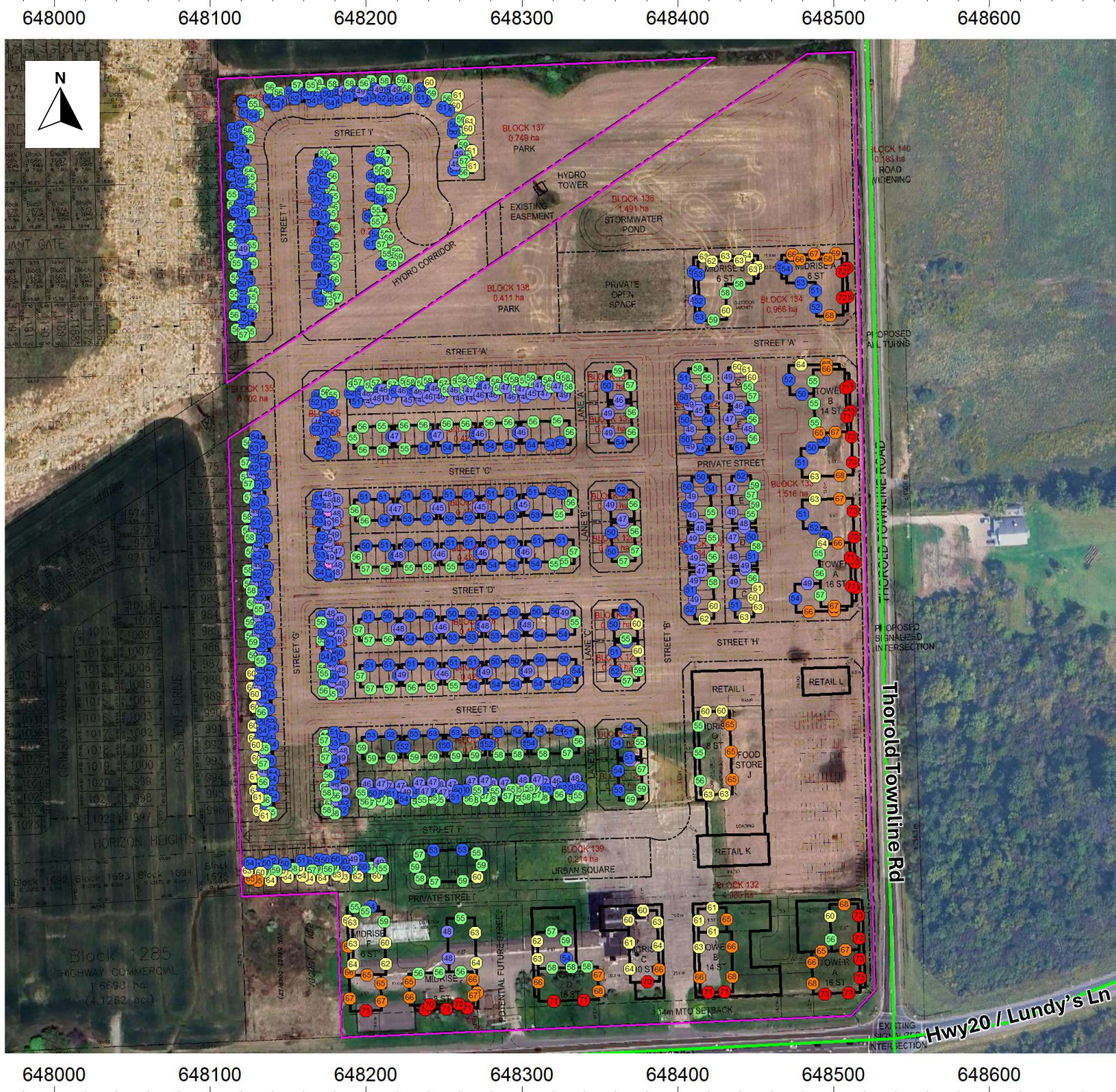
Figure Title  
Predicted Sound Levels – Total Trans, Day

Produced By  
MTL

TT Project #  
SW21382

Date  
Aug 24, 2025

7a





**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**  
Legend

Line Source

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

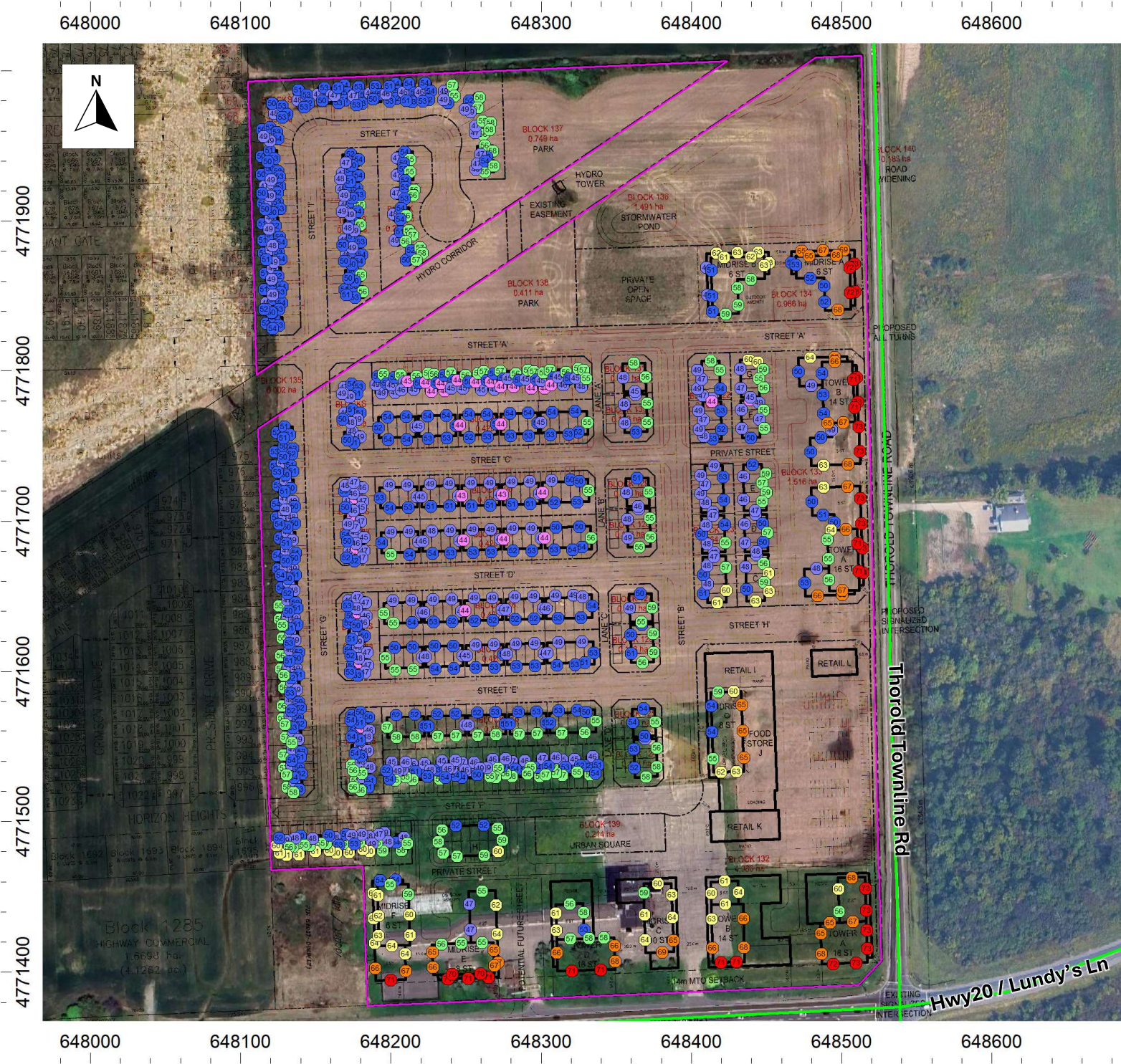
**Figure Title**  
Predicted Sound Levels – Total Trans (excl Whistle), Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

8a



64800 648100 648200 648300 648400 648500 648600

64800 648100 648200 648300 648400 648500 648600

4771900  
4771800  
4771700  
4771600  
4771500  
4771400

4771900  
4771800  
4771700  
4771600  
4771500  
4771400

Thorold Townline Rd  
Hwy20 / Lundy's Ln

**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**  
Legend

— Line Source

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

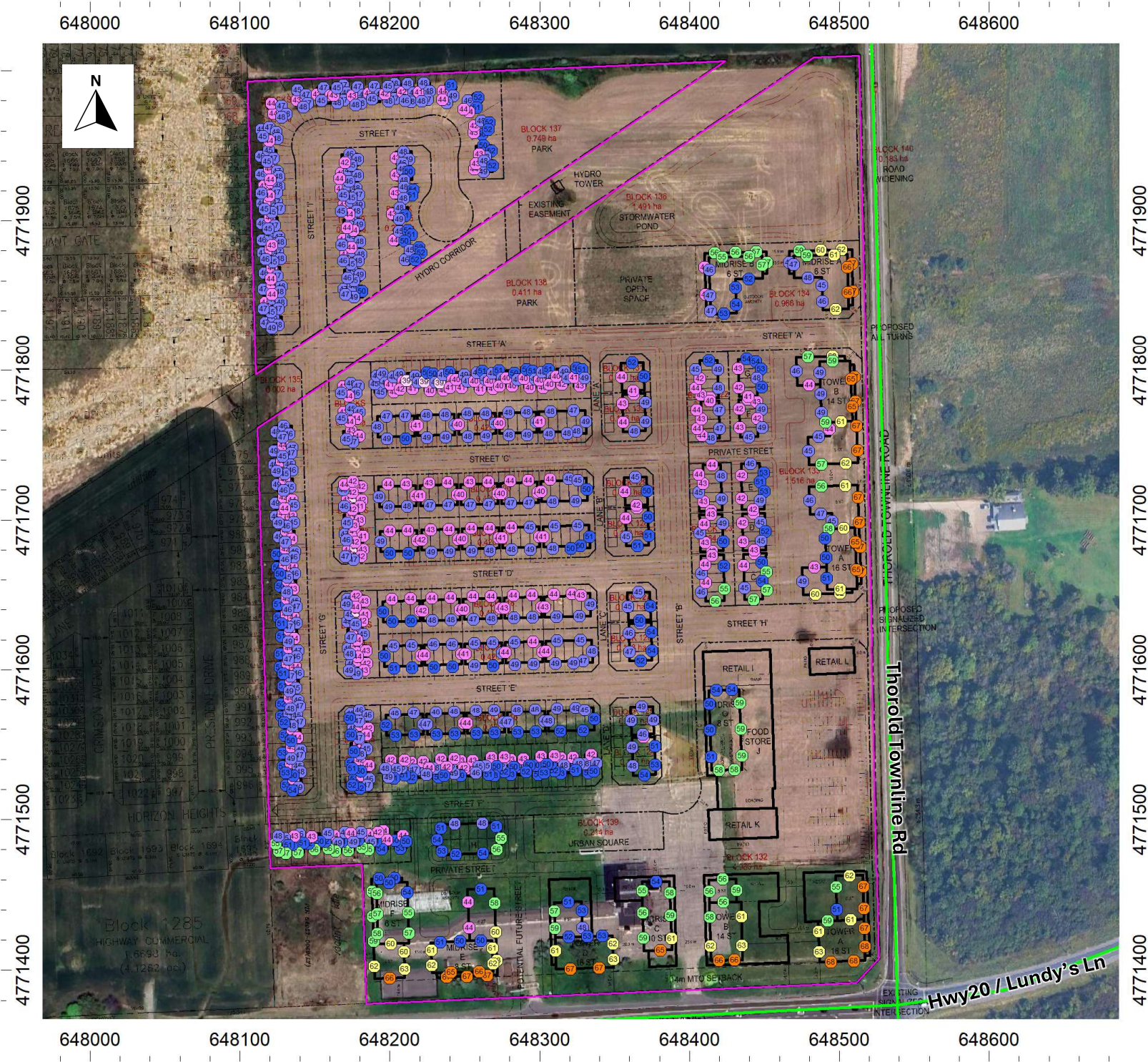
**Figure Title**  
Predicted Sound Levels – Total Trans (excl Whistle), Ngt

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

8b



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

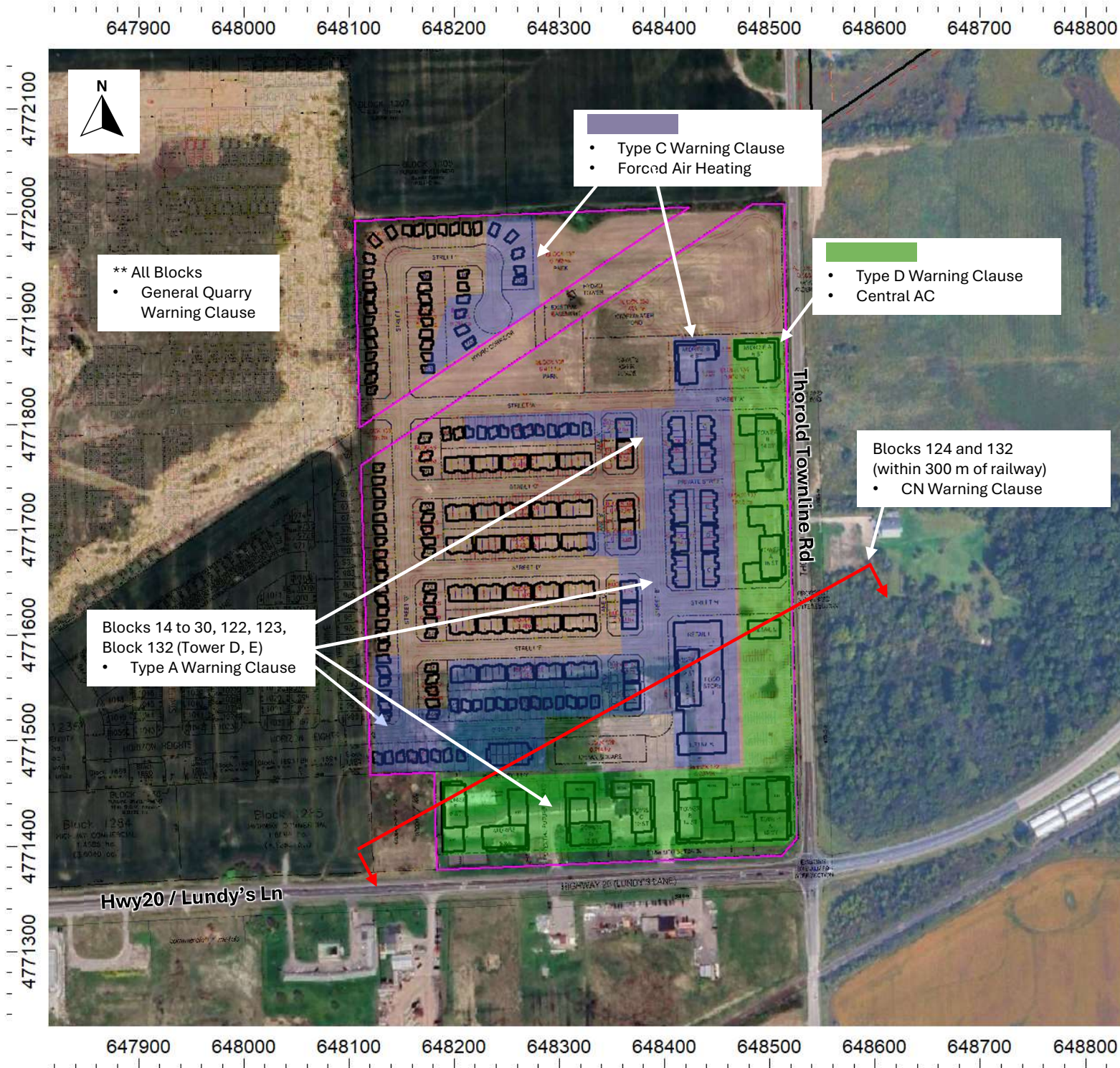
**Notes:**

**Figure Title**  
Mitigation Measures  
Summary

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 27, 2025



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

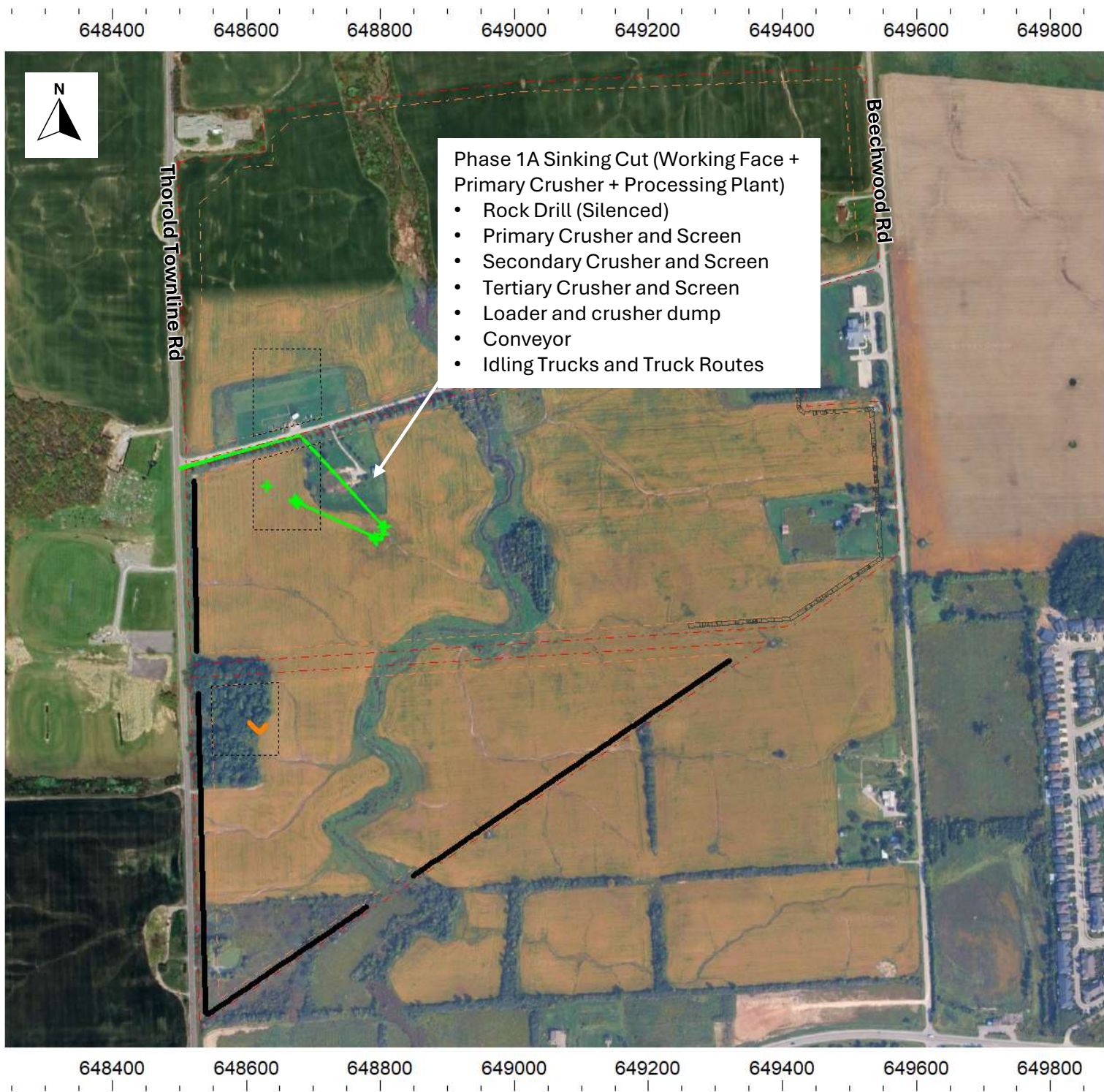
- + Point Source
- Line Source

**Figure Title**  
Quarry Noise Source Locations – Ph 1A

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- Temporary Barrier

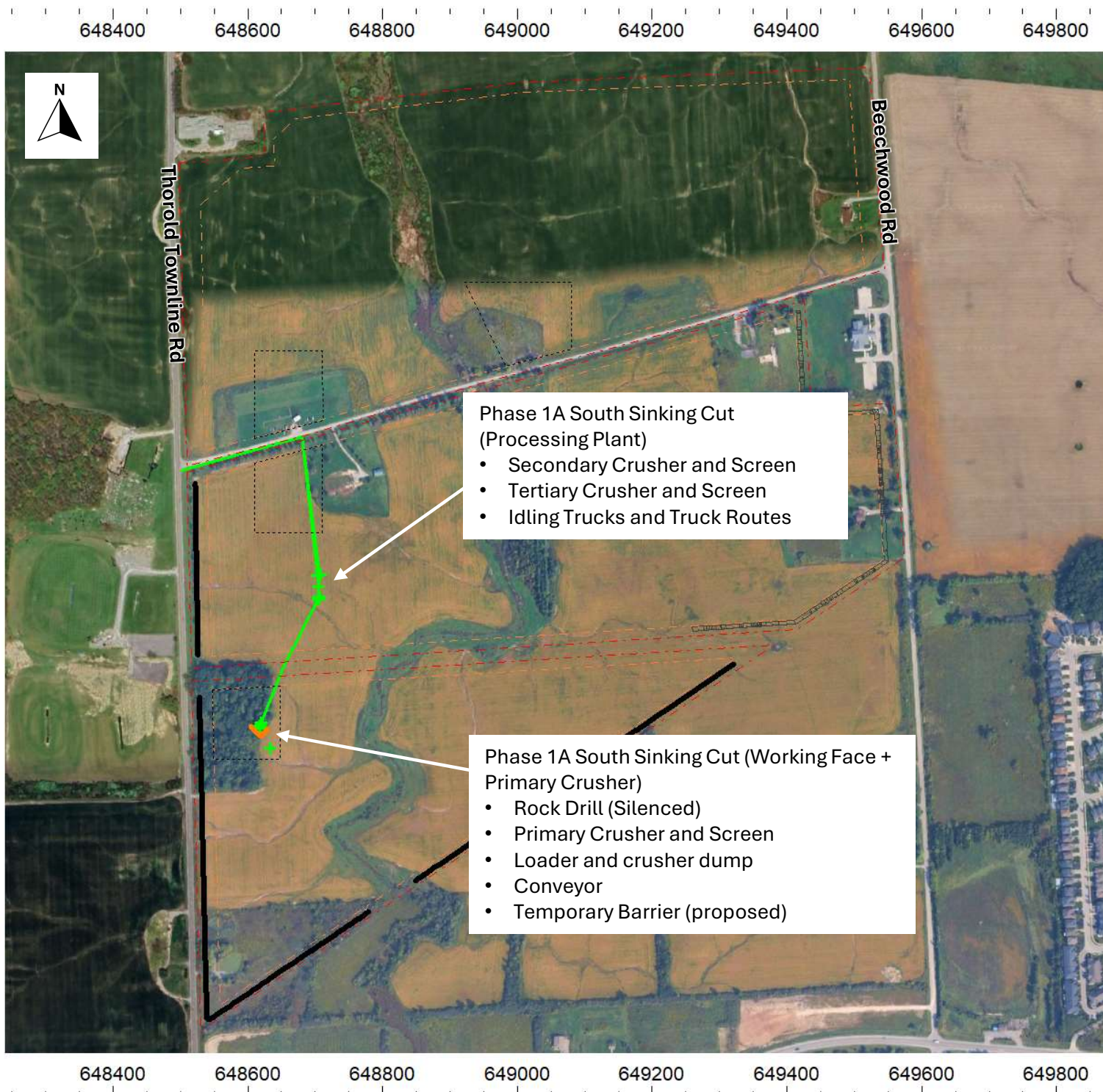
**Figure Title**  
Quarry Noise Source Locations – Ph 1A South

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 27, 2025

10b



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source

**Figure Title**

Quarry Noise Source Locations – Ph 1B

**Produced By**

MTL

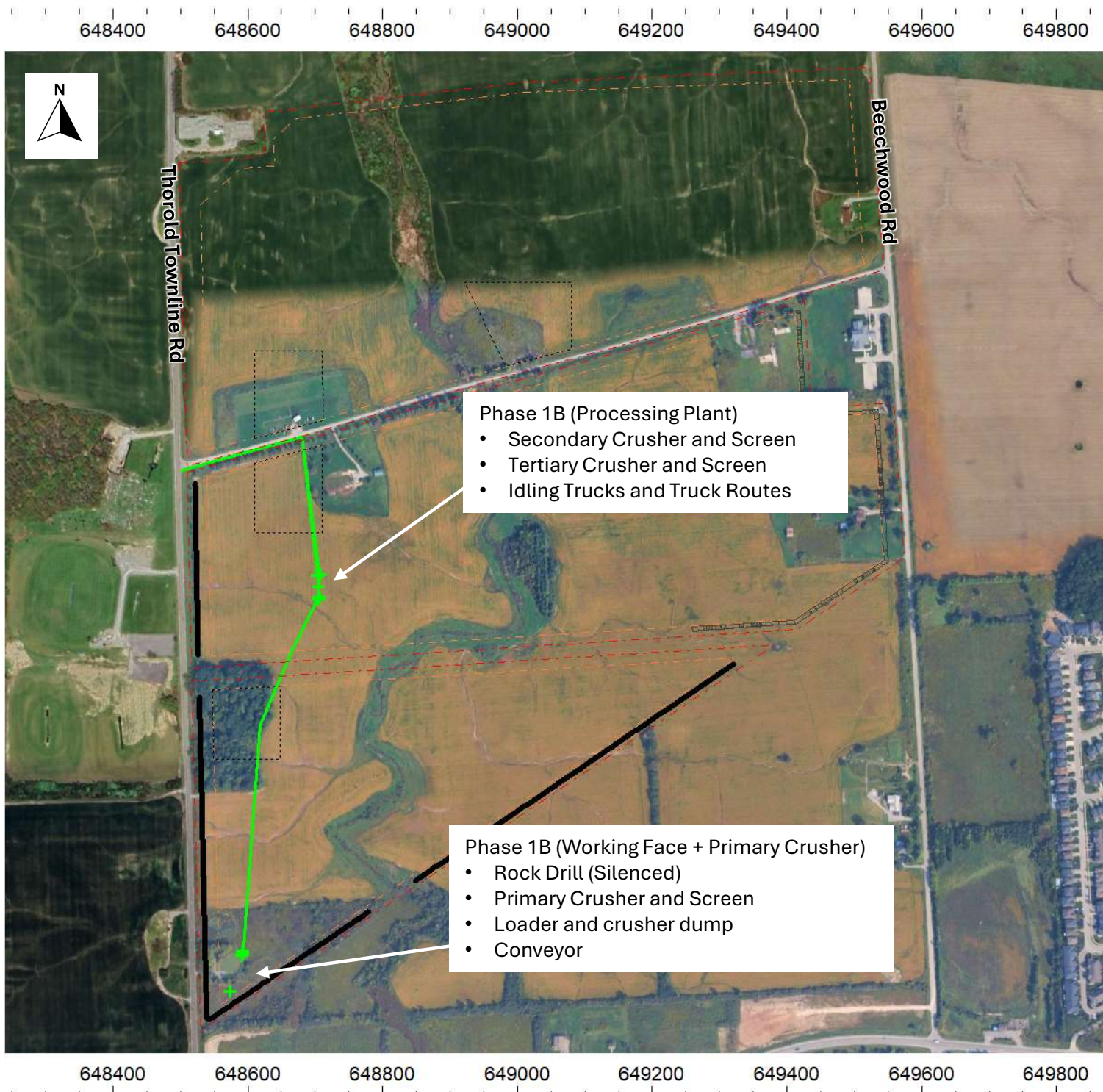
**TT Project #**

SW21382

**Date**

Aug 24, 2025

10c



# Thornton Tomasetti

**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

 Point Source

**Figure Title**

Quarry Noise Source  
Locations – Impulsive

**Produced By**

MTL

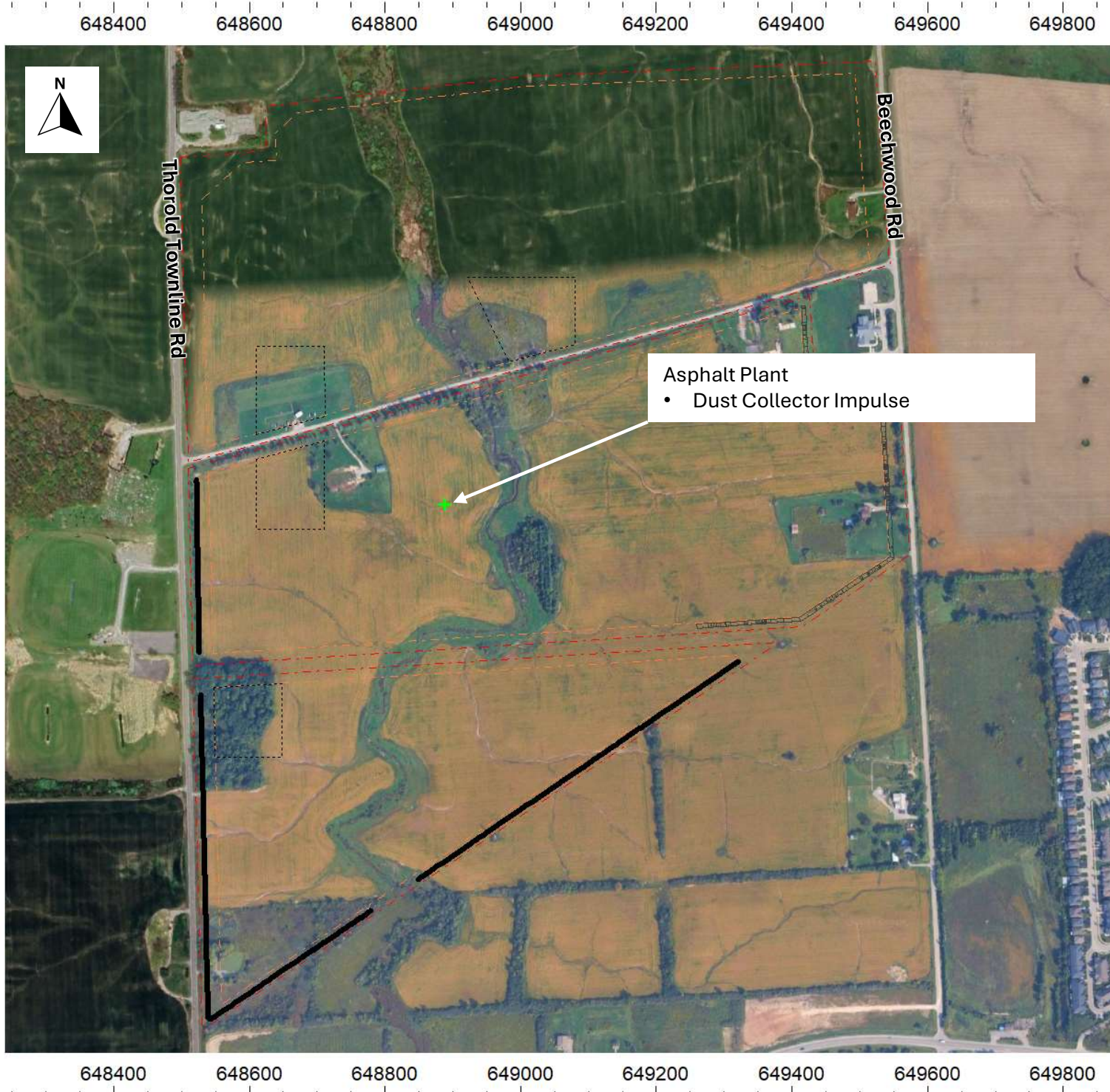
**TT Project #**

SW21382

**Date**

Aug 24, 2025

10d



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 4.5 m**

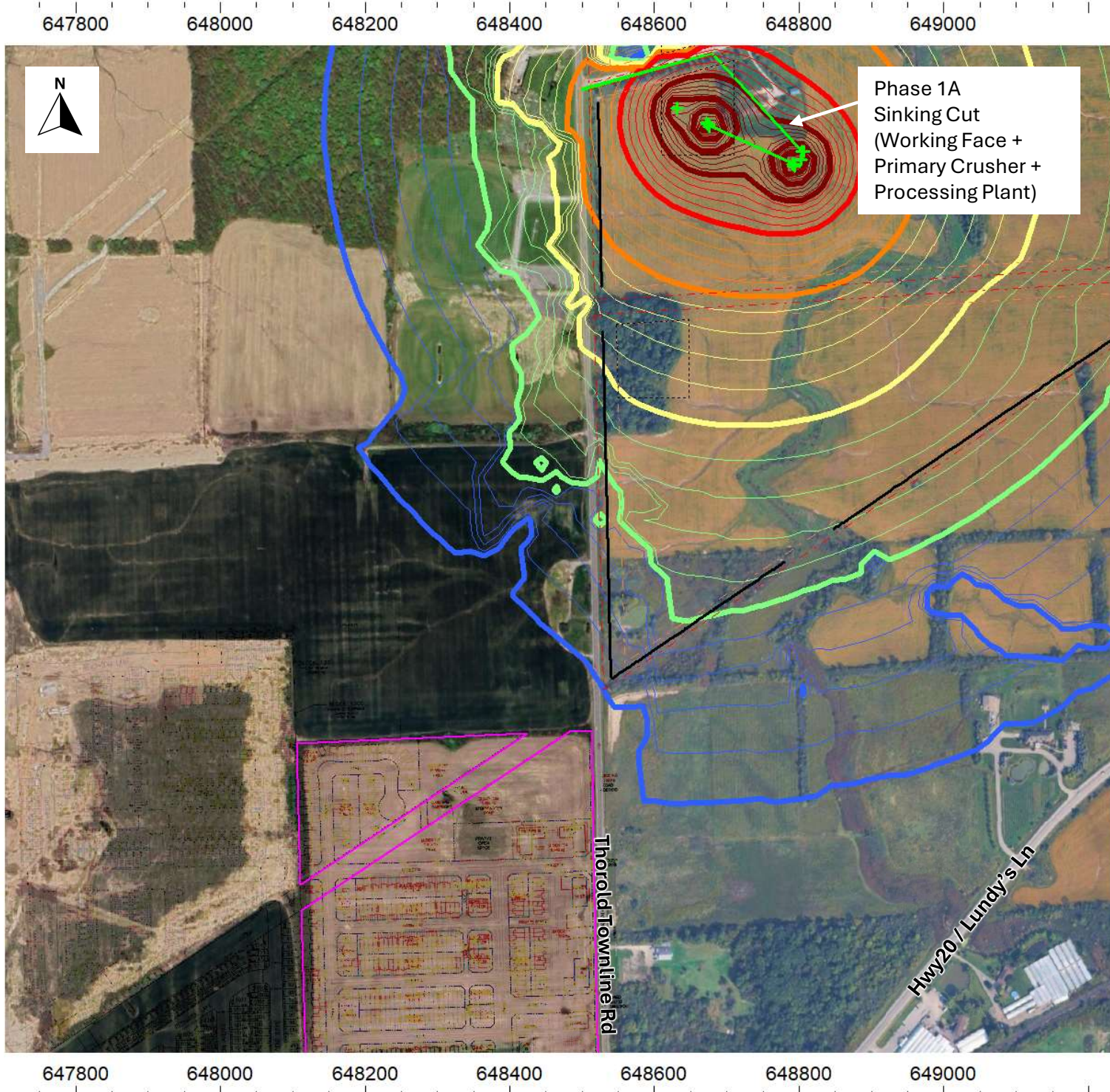
**Figure Title**  
Modelled Noise Contours –  
Ph1A, H=4.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

**11a**



Phase 1A  
Sinking Cut  
(Working Face +  
Primary Crusher +  
Processing Plant)



Thorold Townline Rd

Hwy20 / Lundy's Ln

**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 7.5 m**

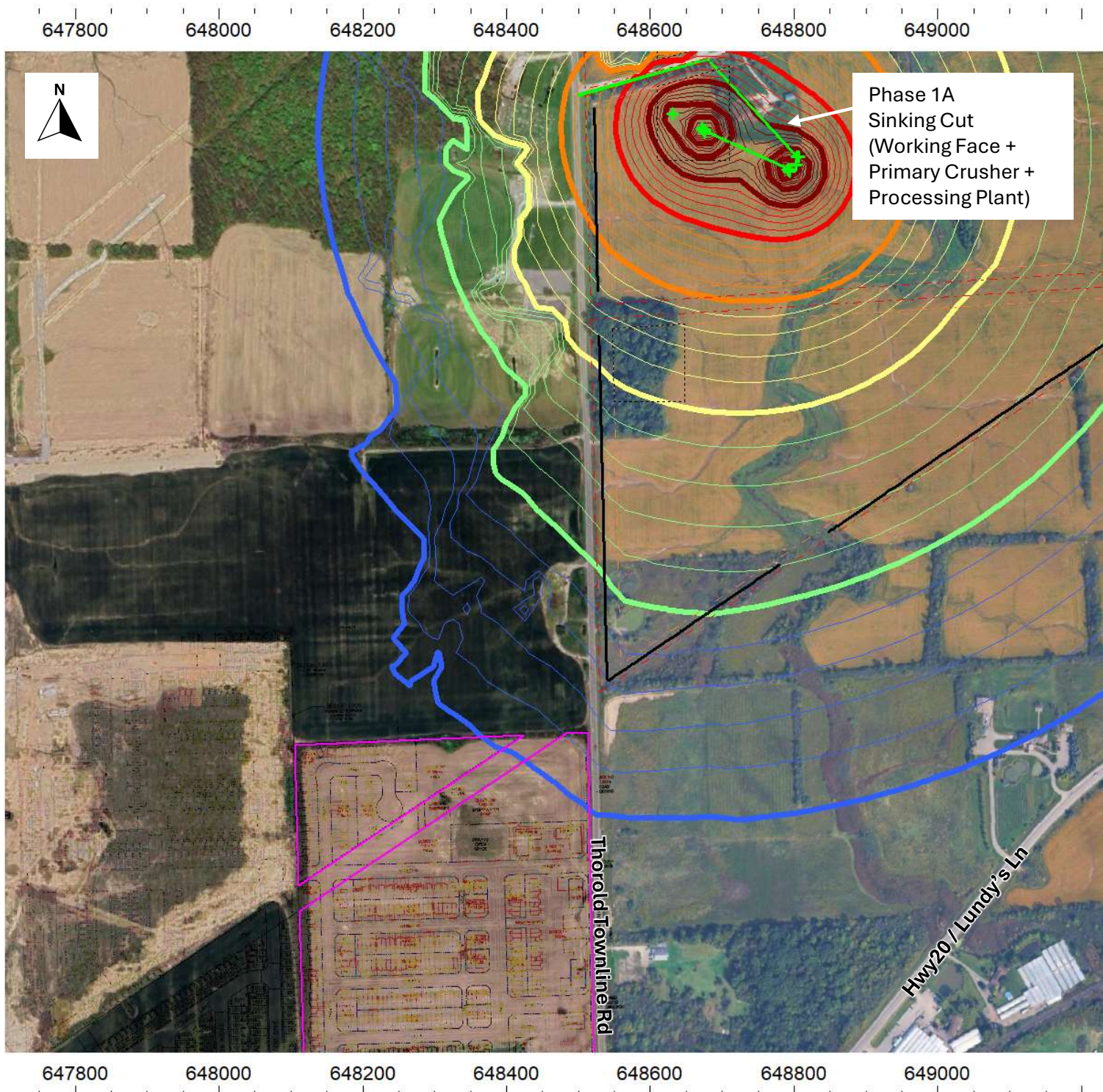
**Figure Title**  
Modelled Noise Contours – Ph1A, H=7.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

**11b**



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 23.5 m**

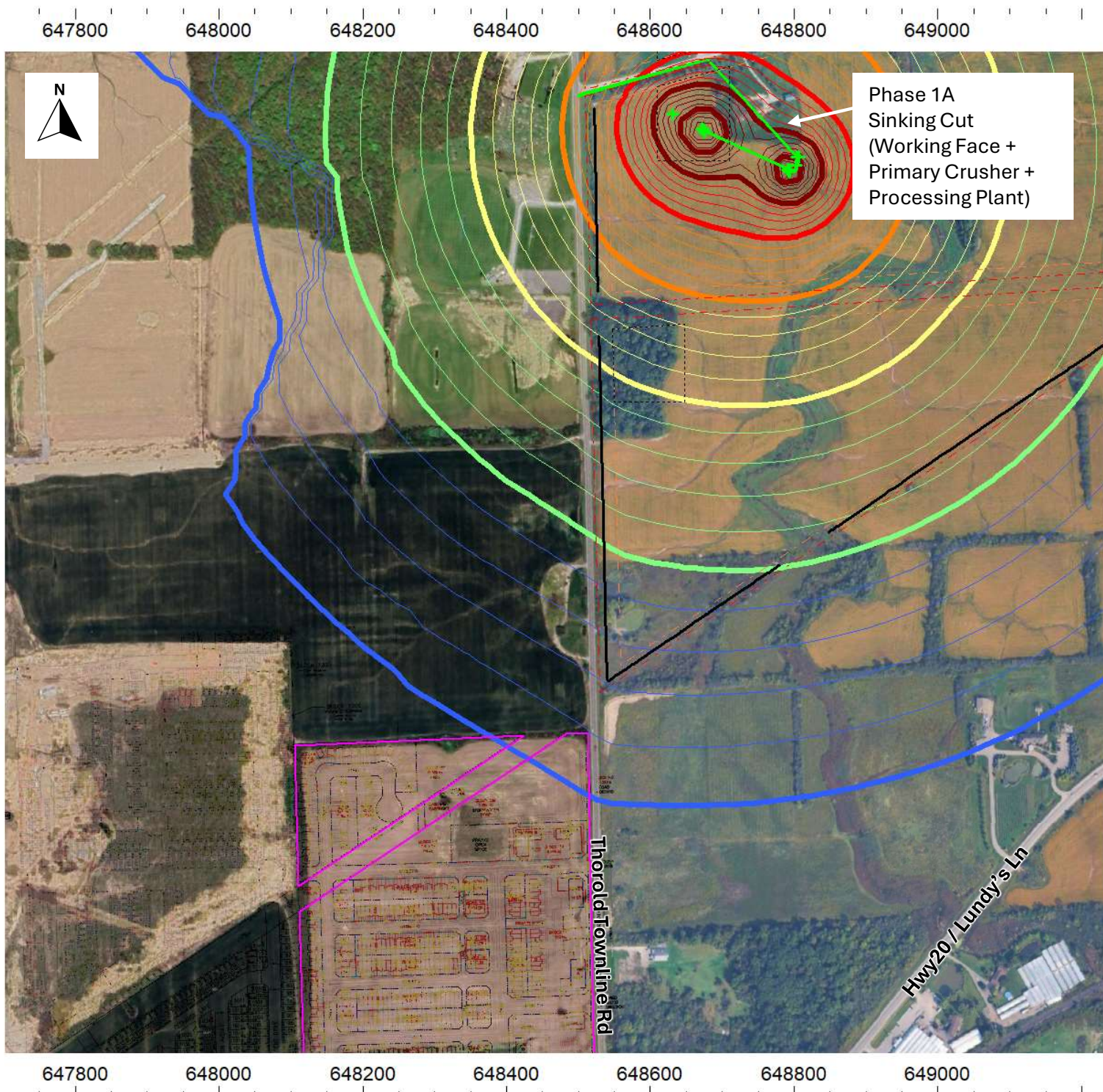
**Figure Title**  
Modelled Noise Contours – Ph1A, H=23.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

**11c**



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 4.5 m**

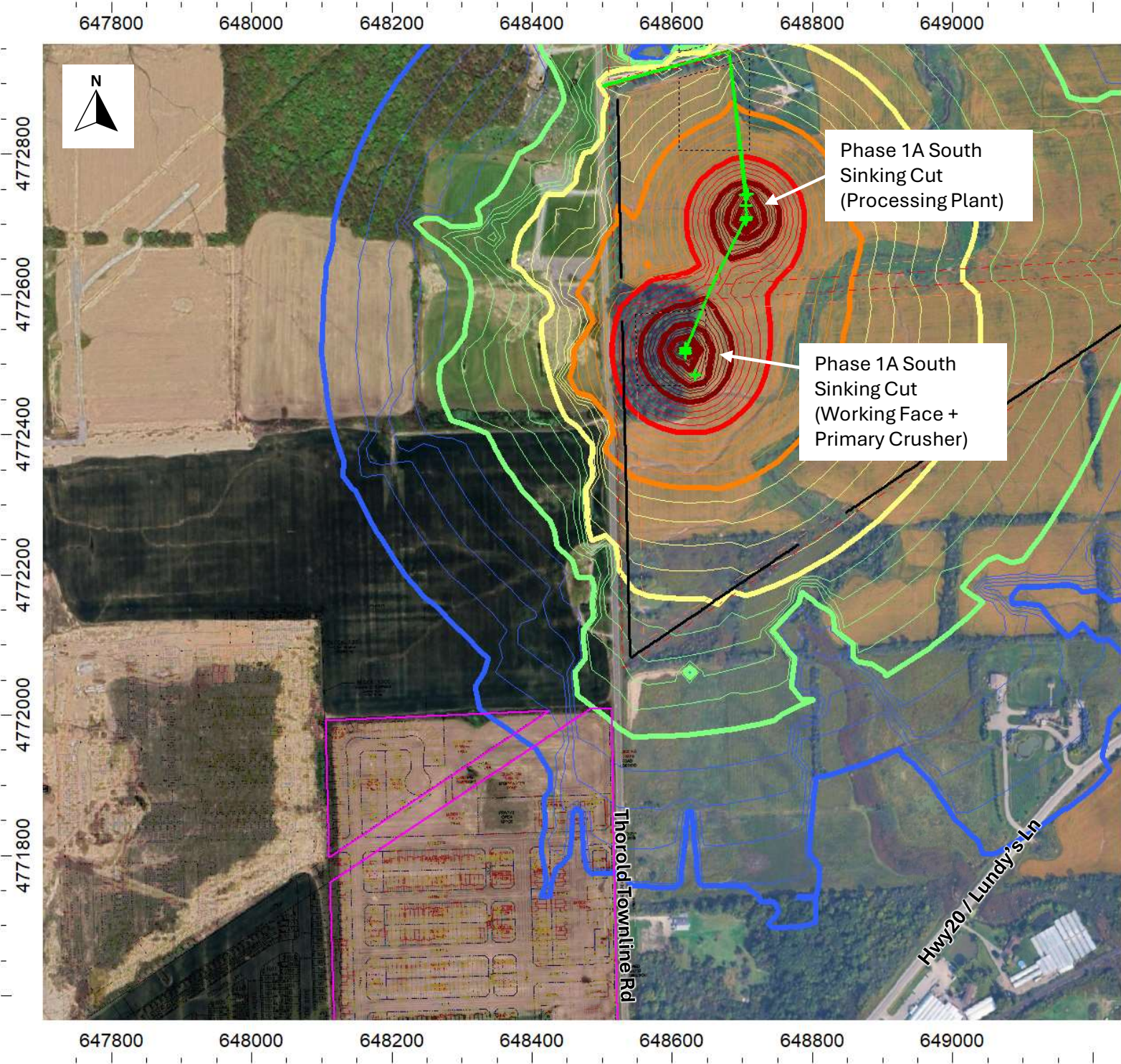
**Figure Title**  
Modelled Noise Contours – Ph1A South, H=4.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

12a



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 7.5 m**

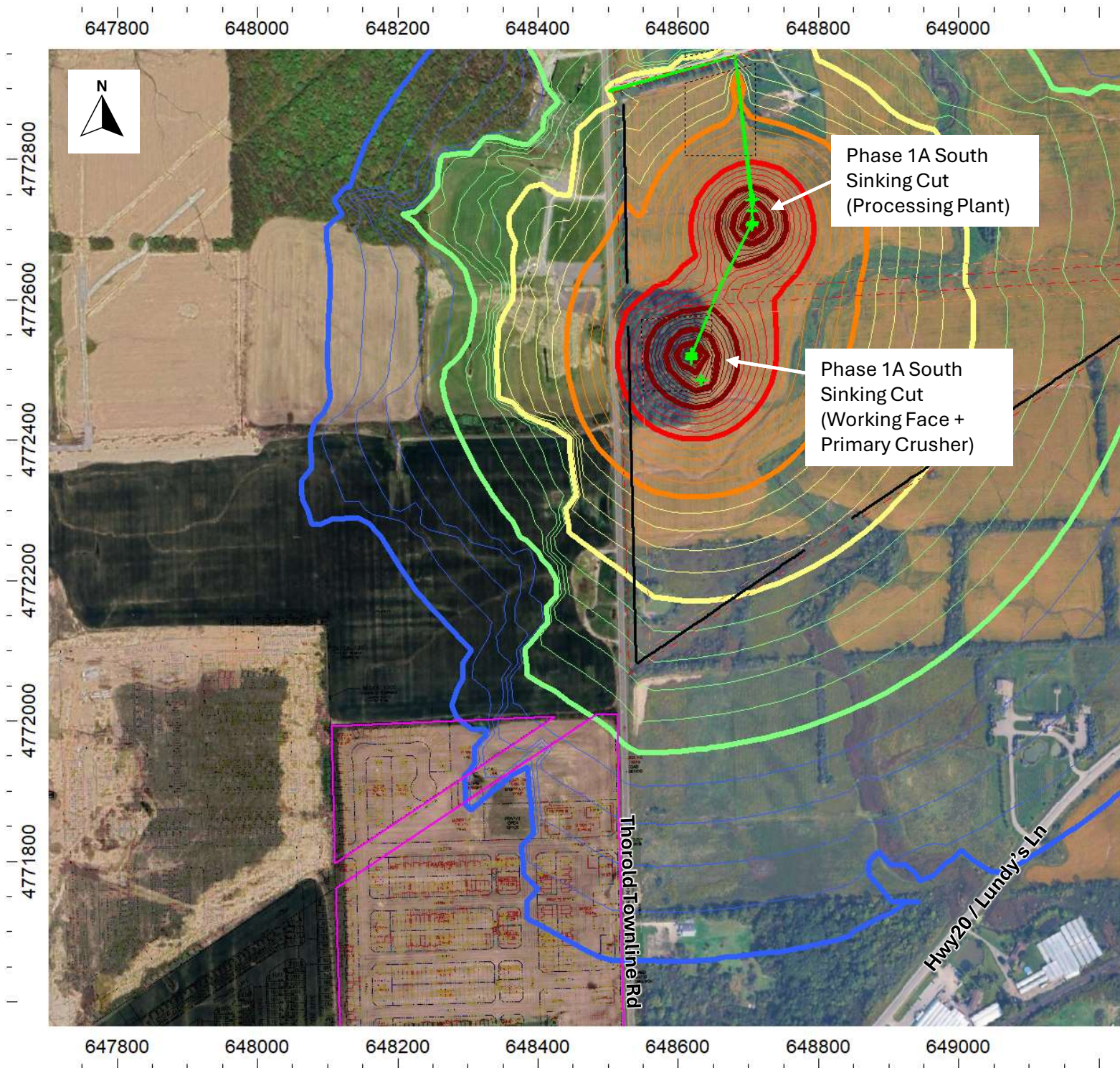
**Figure Title**  
Modelled Noise Contours – Ph1A South, H=7.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

**12b**



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 23.5 m**

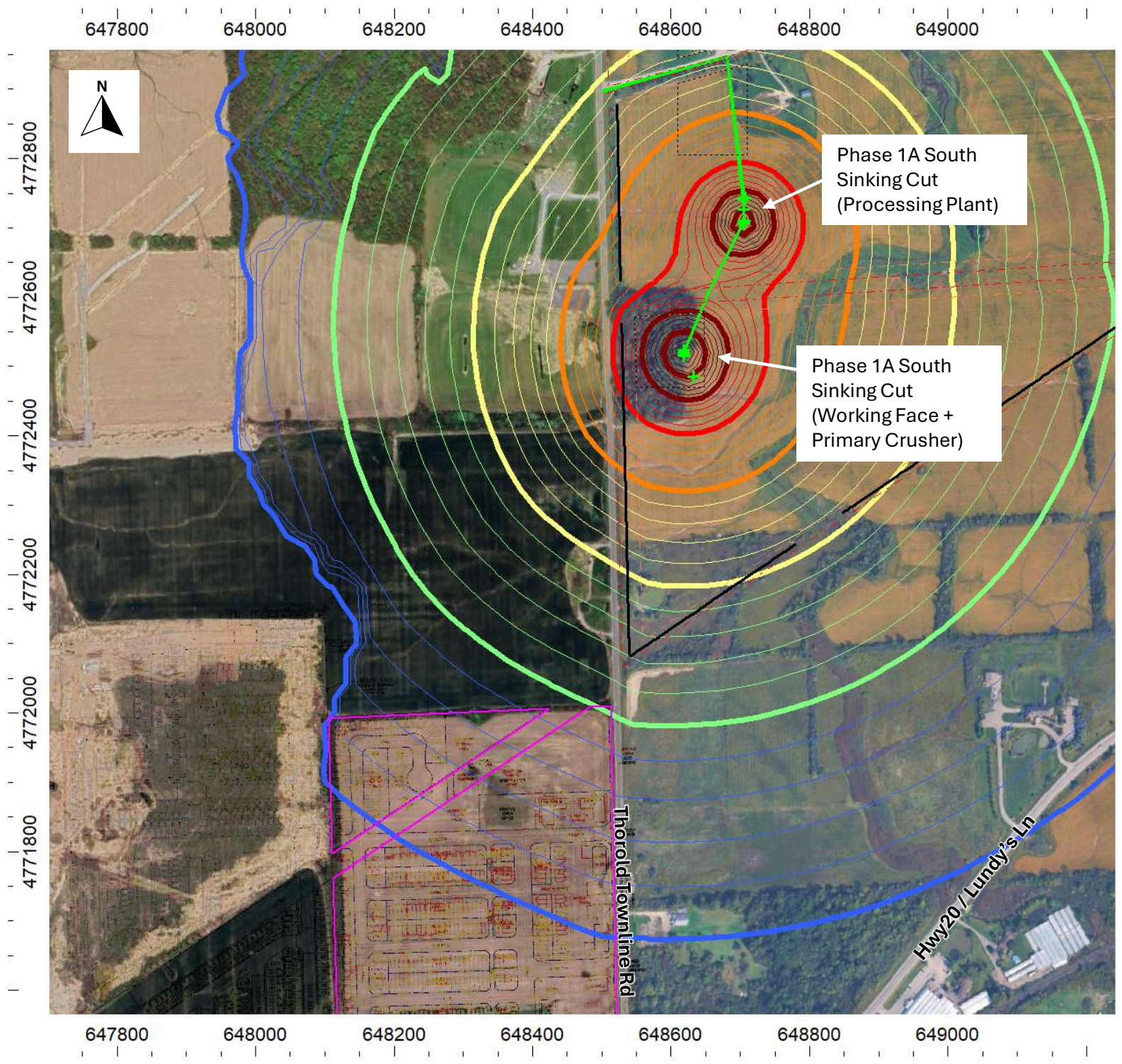
**Figure Title**  
Modelled Noise Contours –  
Ph1A South, H=23.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

12c



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- Temporary Barrier
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 4.5 m**

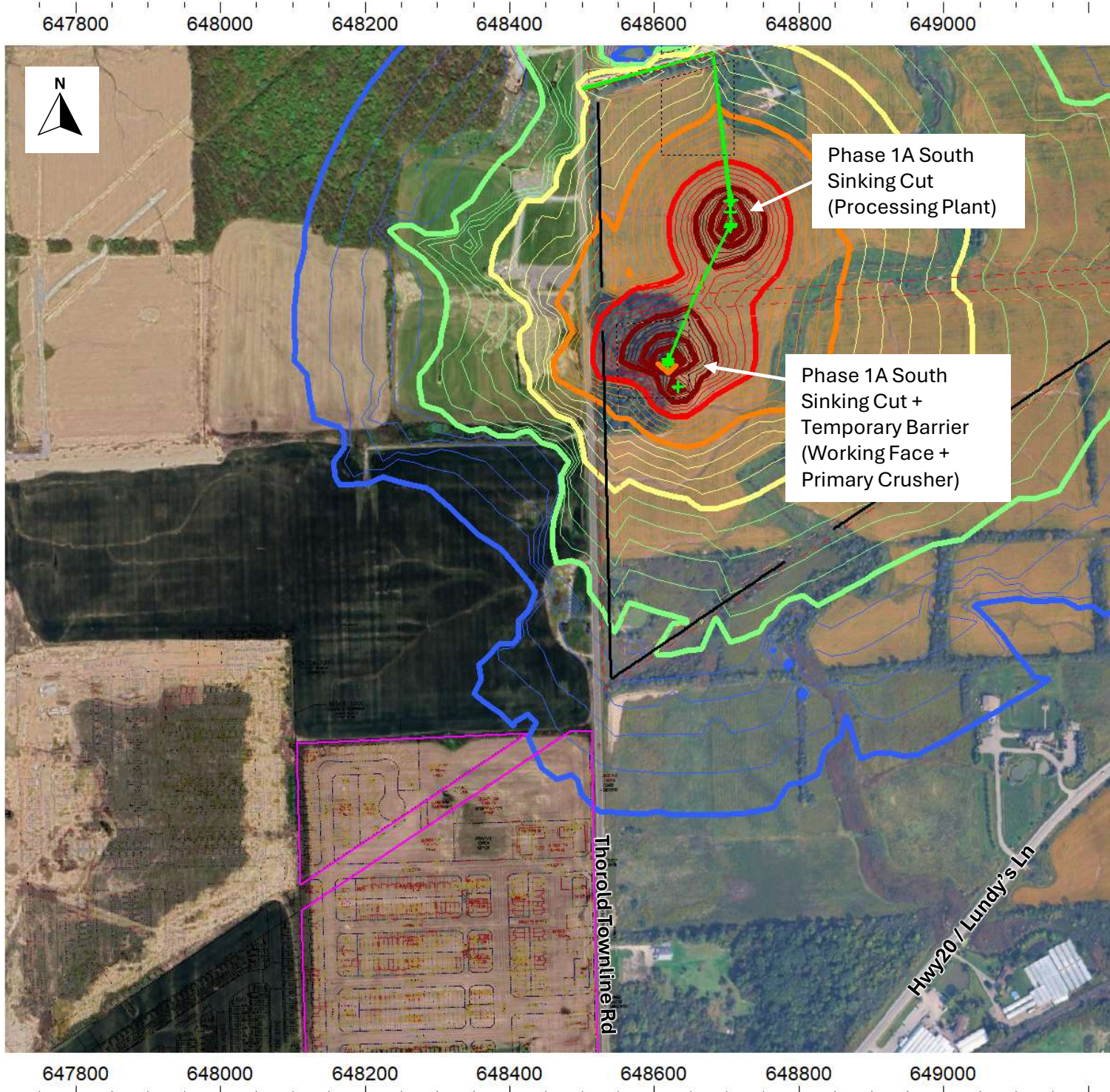
**Figure Title**  
Modelled Noise Contours – Ph1A S (mitigated), H=4.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

**13a**



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- Temporary Barrier
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 7.5 m**

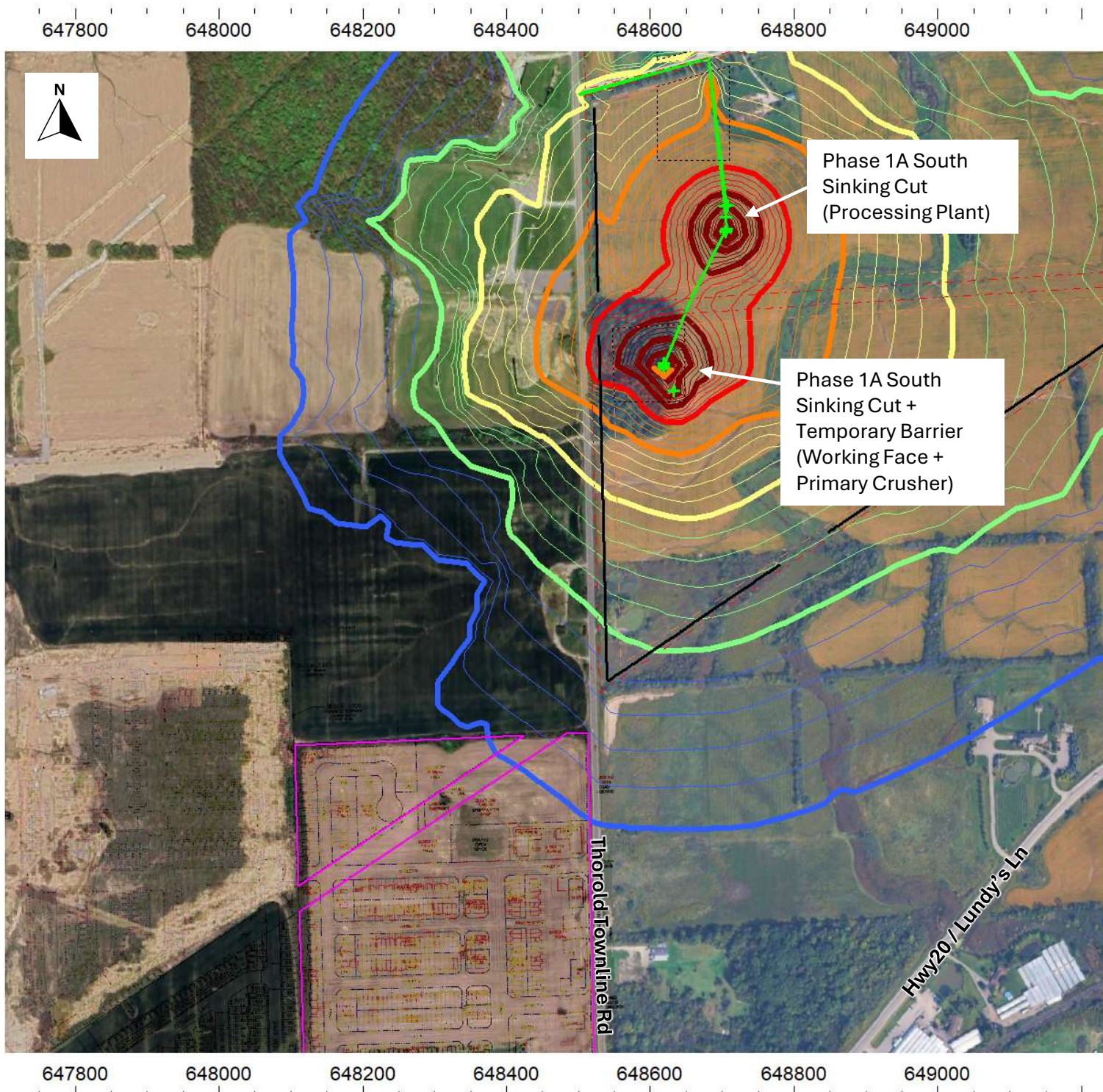
**Figure Title**  
Modelled Noise Contours –  
Ph1A S (mitigated), H=7.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

**13b**



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Legend**

- + Point Source
- Line Source
- Temporary Barrier
- 3 m berm (Quarry AAR)

**Sound Pressure Levels**

- 0 to 29 dBA
- 30 to 39 dBA
- 40 to 44 dBA
- 45 to 49 dBA
- 50 to 54 dBA
- 55 to 59 dBA
- 60 to 64 dBA
- 65 to 69 dBA
- 70 to 74 dBA
- 75 + dBA

**Contour Height = 23.5 m**

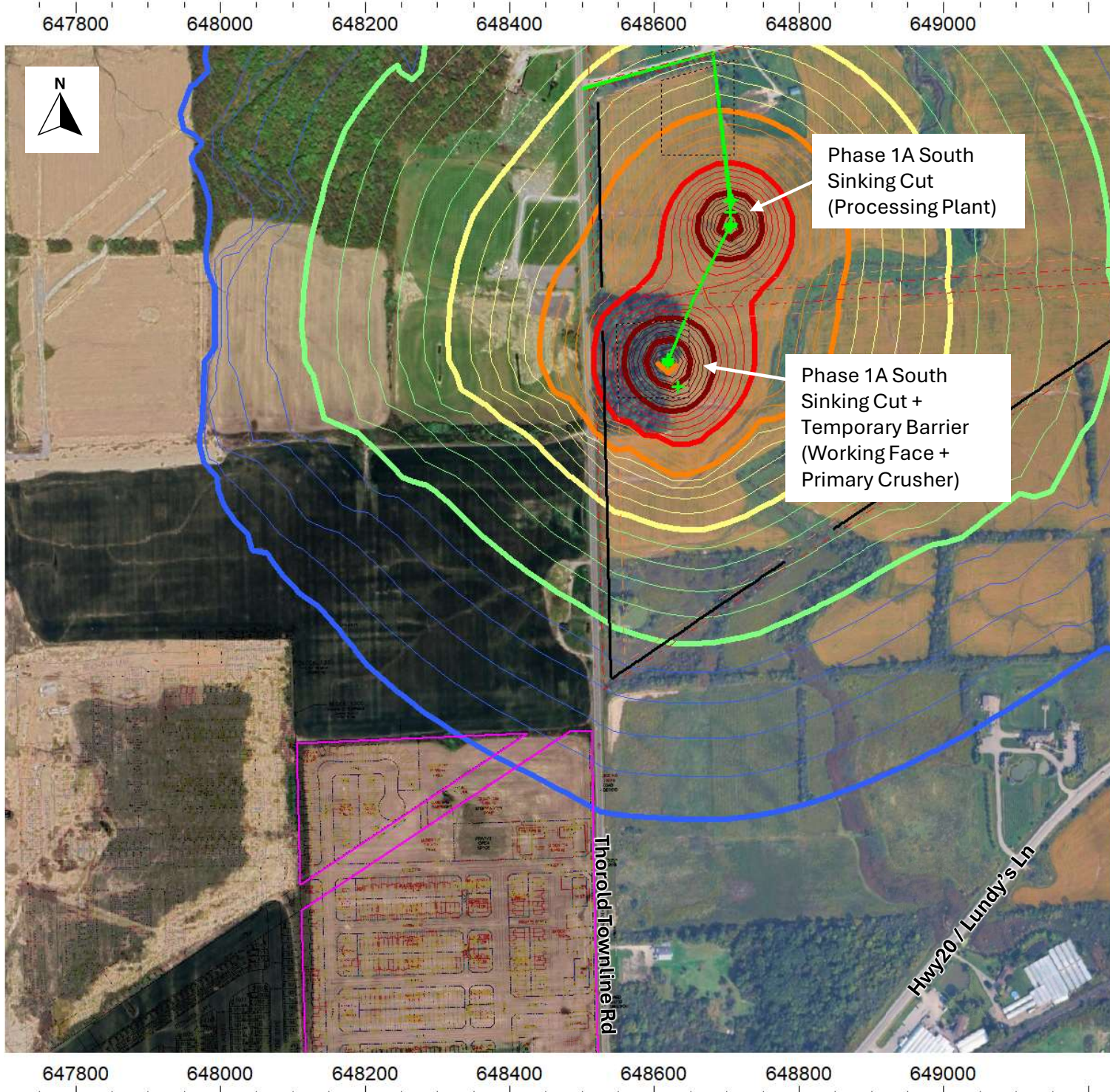
**Figure Title**  
Modelled Noise Contours – Ph1A S (mitigated), H=23.5m

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 26, 2025

**13c**



4772800  
4772600  
4772400  
4772200  
4772000  
4771800

647800 648000 648200 648400 648600 648800 649000

647800 648000 648200 648400 648600 648800 649000

**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Quarry Ph1A, Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

14a



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels –  
Quarry Ph1A, Eve/Ngt

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Quarry Ph1A S, Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

15a



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

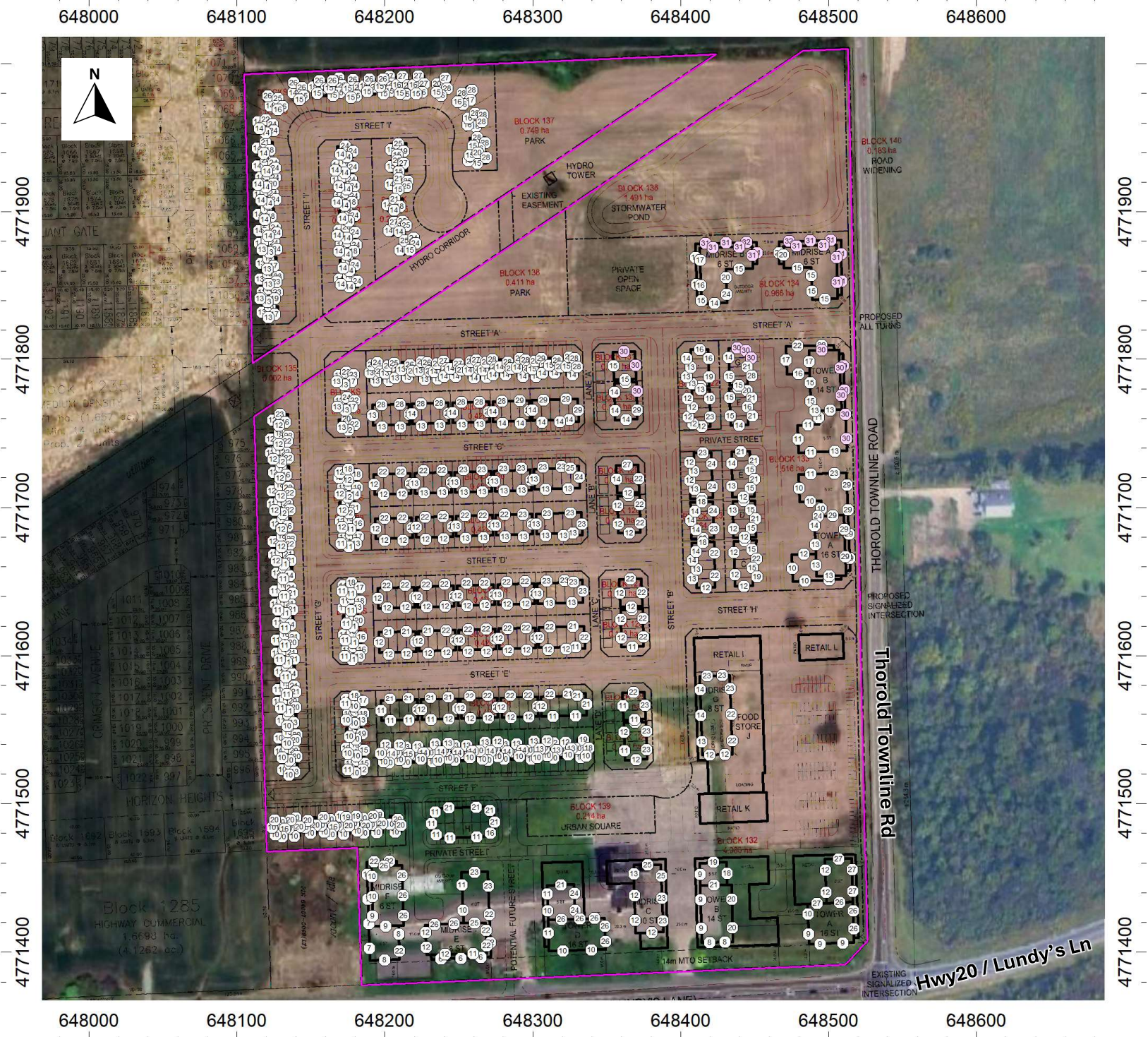
**Figure Title**  
Predicted Sound Levels –  
Quarry Ph1A South, Eve/Ngt

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

15b



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

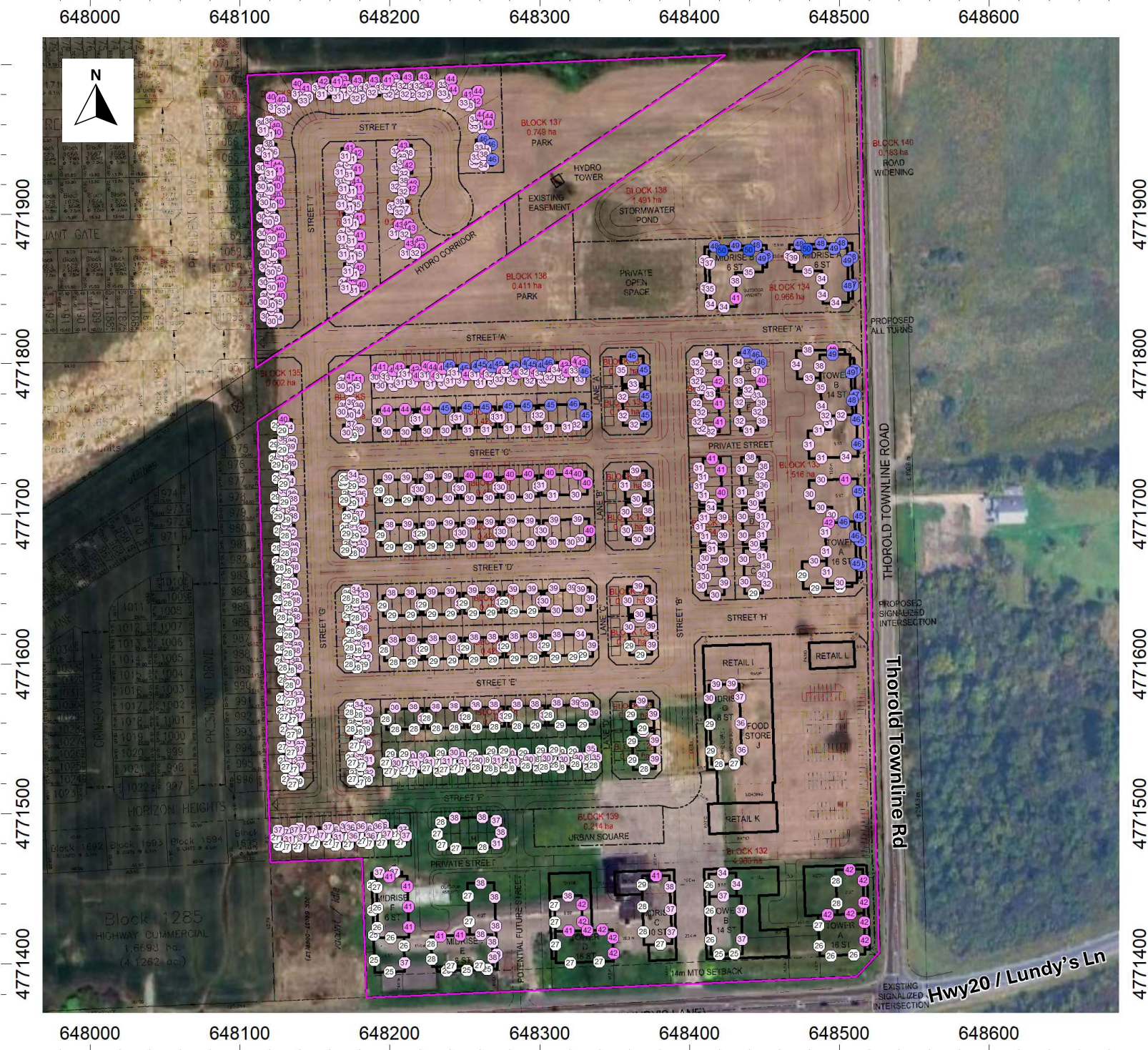
**Figure Title**  
Predicted Sound Levels – Quarry Ph1B, Day

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

16a



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

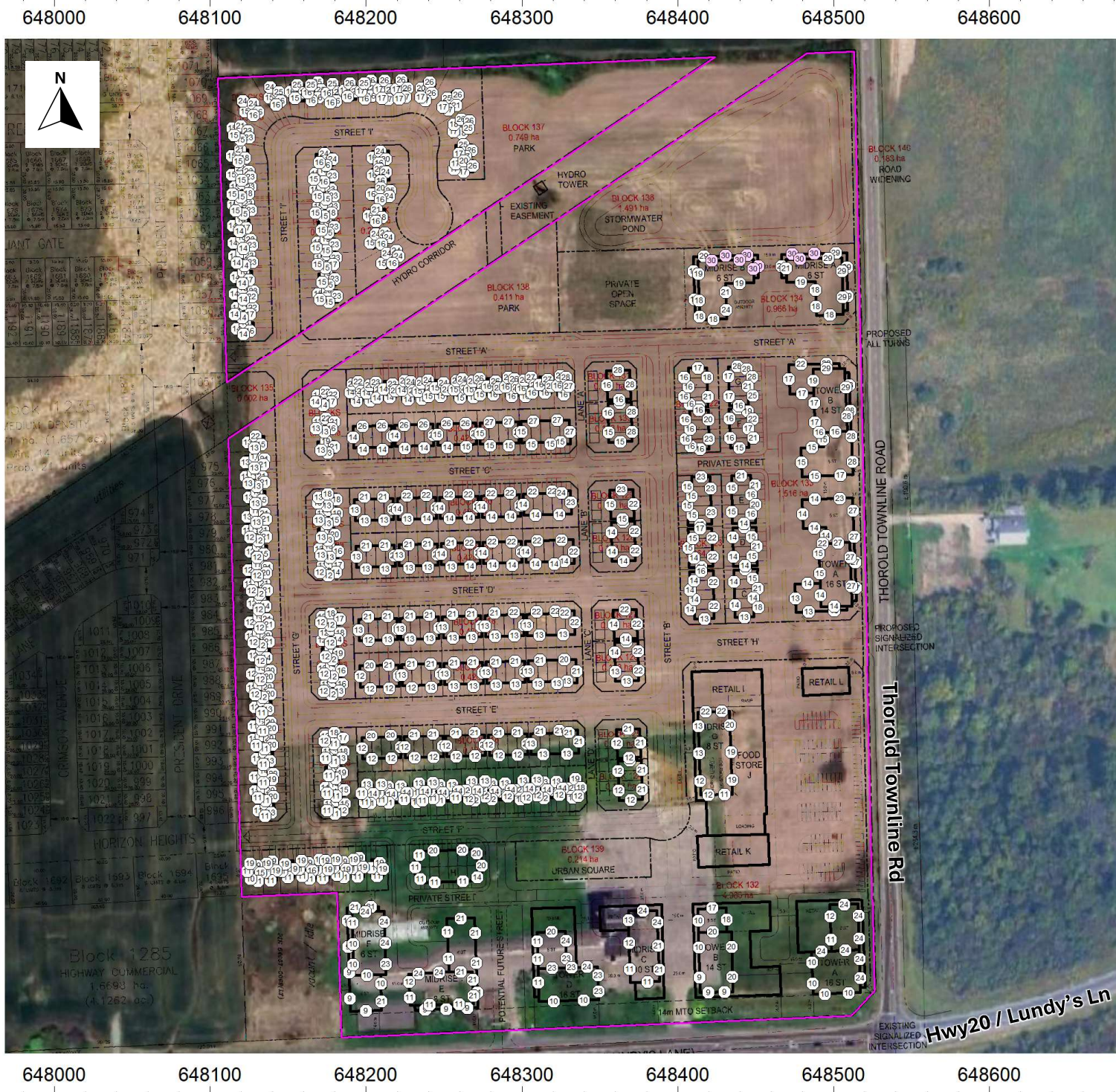
**Figure Title**  
Predicted Sound Levels –  
Quarry Ph1B, Eve/Ngt

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

**16b**



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

**Sound Pressure Levels**

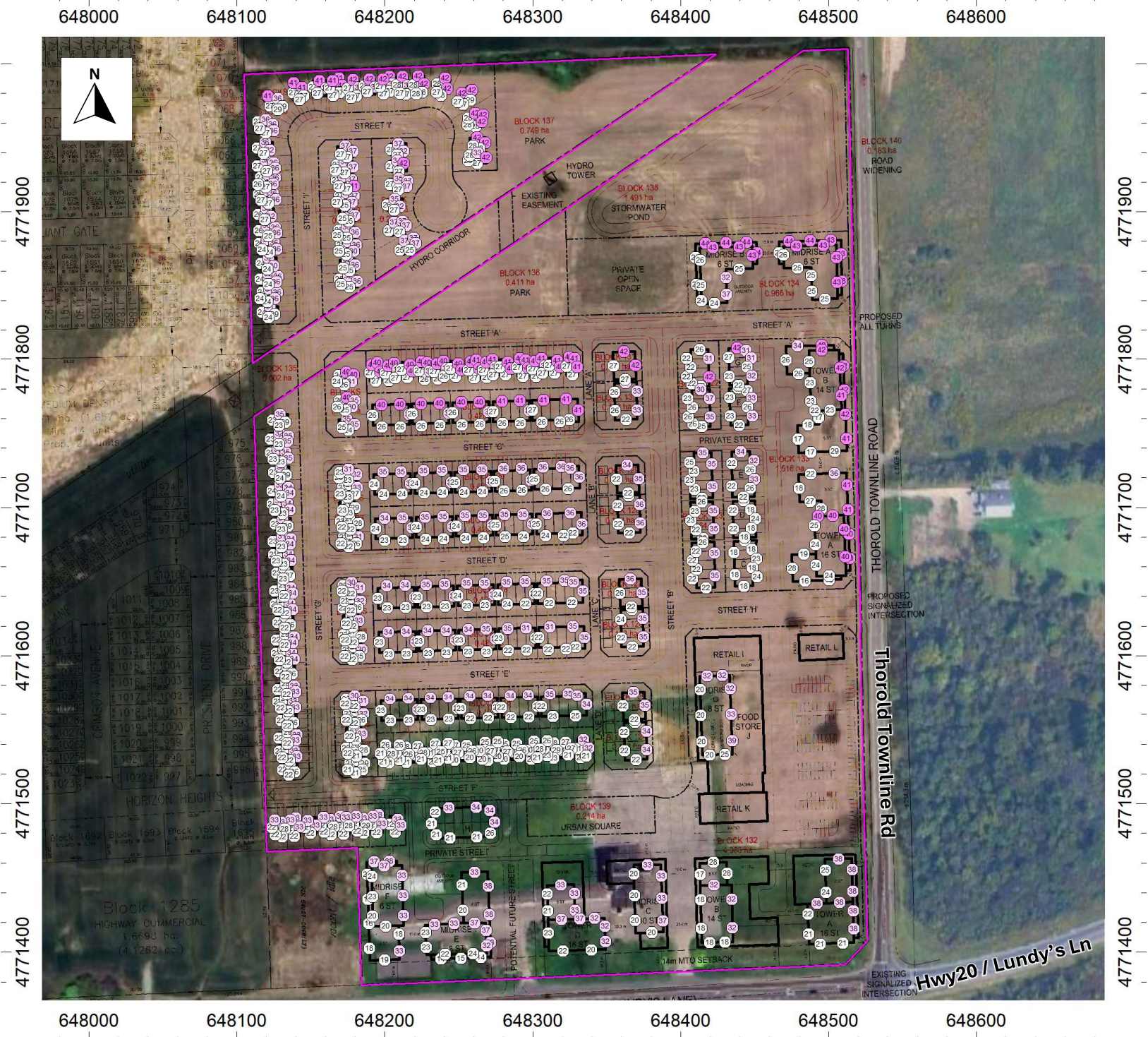
- 0 to 30 dBA
- 31 to 40 dBA
- 41 to 45 dBA
- 46 to 50 dBA
- 51 to 55 dBA
- 56 to 60 dBA
- 61 to 65 dBA
- 66 to 70 dBA
- 71 to 75 dBA
- 76 + dBA

**Figure Title**  
Predicted Sound Levels – Quarry Asphalt Impulse

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

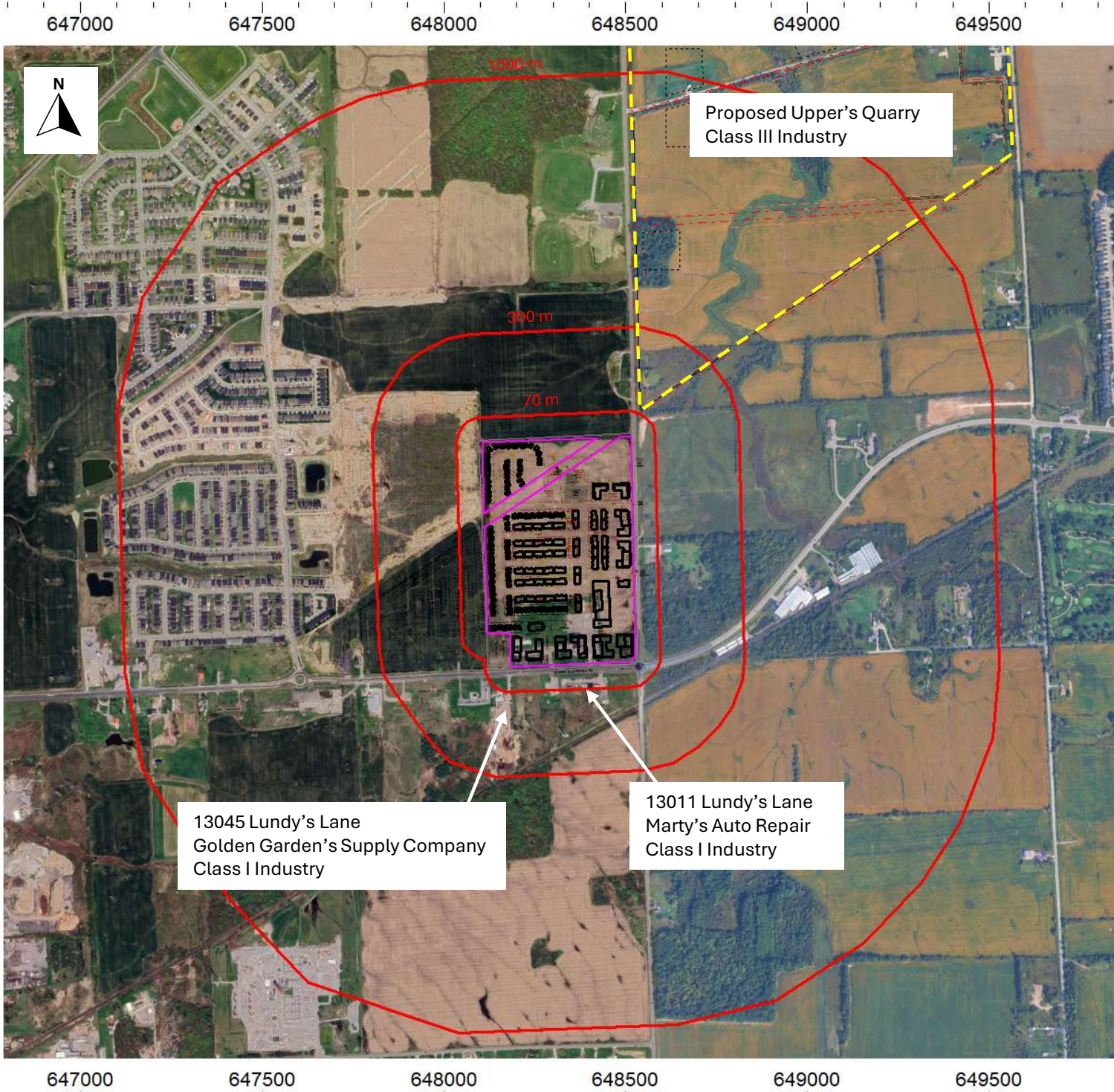
**Notes:**

**Figure Title**  
Guideline D6 Separation  
Distances

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025



## **Appendix B: Development Drawings**

Grass Site	228,687 sm	22,960 ha	
Development Site (See Summary Below)	157,203 sm	15,700 ha	6.0%
Parkland (BLOCK 137, 138, 139)	13,747 sm	1,375 ha	
DWM Pond (BLOCK 138)	14,870 sm	1,487 ha	
Unserv'd Development Lot (BLOCK 135)	29 sm	0.002 ha	
Reserve Blocks (BLOCK 140, 141, 142, 143)	259 sm	0.026 ha	
Thorold TL Road Widening (BLOCK 144)	1,851 sm	0.185 ha	
Public ROW	41,794 sm	4,175 ha	

Summary	Block Area	Unit Count			GCA Retail		GCA Residential		GCA Total		FSI	
		Town	Detach	Apart	sm	sf	sm	sf	sm	sf		
BLOCK 1-74	24,944	74	-	-	74	-	17,020	183,202	17,020	183,202	0.68	
BLOCK 75-115	17,037	41	-	-	41	-	9,430	101,508	9,430	101,508	0.55	
BLOCK 116-121	29,365	126	-	-	126	-	32,760	352,626	32,760	352,626	1.12	
BLOCK 122-123	4,291	22	-	-	22	-	5,560	58,773	5,560	58,773	1.28	
BLOCK 124-131	7,441	28	-	-	28	-	7,560	81,375	7,560	81,375	1.02	
BLOCK 132	49,420	24	-	-	24	-	1,070	10,940	89,556	891,596	9,010	1,001,153
BLOCK 133	15,078	22	-	-	22	-	4,290	45,148	41,940	451,438	39,780	428,108
BLOCK 134	9,627	-	-	-	-	-	-	11,300	121,620	11,300	121,620	1.35
<b>Development Site Total</b>	<b>157,203</b>	<b>222</b>	<b>115</b>	<b>1,699</b>	<b>2,036</b>	<b>8,320</b>	<b>89,556</b>	<b>210,900</b>	<b>2,262,574</b>	<b>218,520</b>	<b>2,352,130</b>	

Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
BLOCK 1-13 Detached Houses	1-2	-	-	13	-	-	2,950	32,184	2,950	32,184
BLOCK 14-21 Detached Houses	1-2	-	-	8	-	-	1,840	19,806	1,840	19,806
BLOCK 22-43 Detached Houses	1-2	22	-	22	-	-	5,060	54,465	5,060	54,465
BLOCK 44-49 Detached Houses	1-2	-	-	5	-	-	1,150	12,378	1,150	12,378
BLOCK 49-53 Detached Houses	1-2	-	-	5	-	-	1,150	12,378	1,150	12,378
BLOCK 54-58 Detached Houses	1-2	-	-	5	-	-	1,150	12,378	1,150	12,378
BLOCK 59-61 Detached Houses	1-2	-	-	3	-	-	690	7,427	690	7,427
BLOCK 62-74 Detached Houses	1-2	-	-	13	-	-	3,990	42,138	3,990	42,138
<b>Total</b>	<b>1-2</b>	<b>22</b>	<b>-</b>	<b>74</b>	<b>-</b>	<b>-</b>	<b>17,020</b>	<b>183,202</b>	<b>17,020</b>	<b>183,202</b>

Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
BLOCK 75-100 Detached Houses	1-2	-	-	25	-	-	5,560	64,568	5,560	64,568
BLOCK 101-109 Detached Houses	1-2	-	-	8	-	-	2,070	22,281	2,070	22,281
BLOCK 110-115 Detached Houses	1-2	-	-	8	-	-	3,800	44,854	3,800	44,854
<b>Total</b>	<b>1-2</b>	<b>41</b>	<b>-</b>	<b>41</b>	<b>-</b>	<b>-</b>	<b>9,430</b>	<b>101,508</b>	<b>9,430</b>	<b>101,508</b>

Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
BLOCK 116	1-1	21	-	21	-	-	5,460	58,773	5,460	58,773
BLOCK 117	1-1	21	-	21	-	-	5,460	58,773	5,460	58,773
BLOCK 118	1-1	21	-	21	-	-	5,460	58,773	5,460	58,773
BLOCK 119	1-1	21	-	21	-	-	5,460	58,773	5,460	58,773
BLOCK 120	1-1	21	-	21	-	-	5,460	58,773	5,460	58,773
BLOCK 121	1-1	21	-	21	-	-	5,460	58,773	5,460	58,773
<b>Total</b>	<b>1-1</b>	<b>126</b>	<b>-</b>	<b>126</b>	<b>-</b>	<b>-</b>	<b>32,760</b>	<b>352,626</b>	<b>32,760</b>	<b>352,626</b>

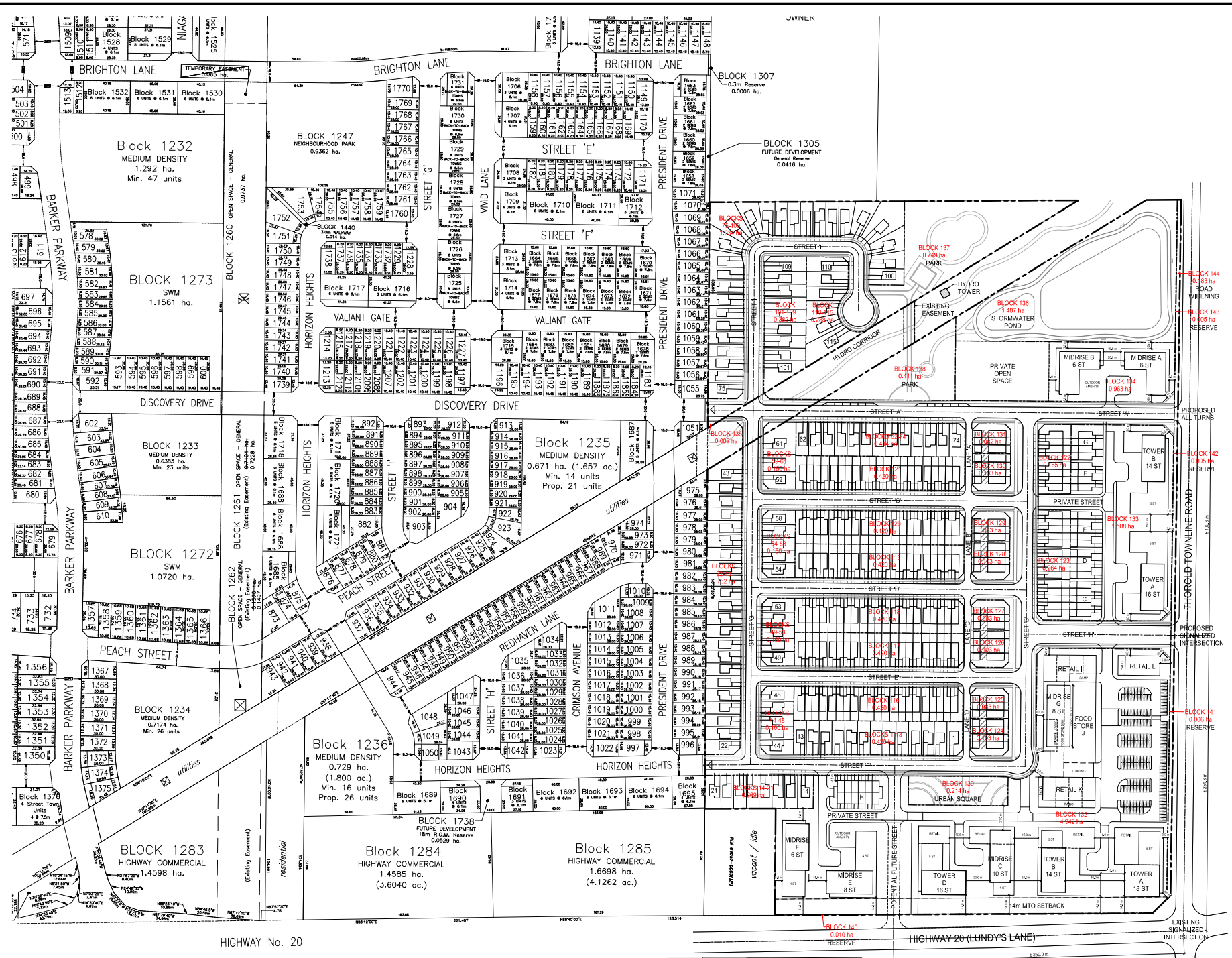
Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
BLOCK 122	1-1	8	-	8	-	-	2,000	21,528	2,000	21,528
BLOCK 123	1-1	14	-	14	-	-	3,500	37,674	3,500	37,674
<b>Total</b>	<b>1-1</b>	<b>22</b>	<b>-</b>	<b>22</b>	<b>-</b>	<b>-</b>	<b>5,500</b>	<b>59,202</b>	<b>5,500</b>	<b>59,202</b>

Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
BLOCK 124	1-1	4	-	4	-	-	1,080	11,625	1,080	11,625
BLOCK 125	1-1	3	-	3	-	-	810	8,719	810	8,719
BLOCK 126	1-1	4	-	4	-	-	1,080	11,625	1,080	11,625
BLOCK 127	1-1	3	-	3	-	-	810	8,719	810	8,719
BLOCK 128	1-1	4	-	4	-	-	1,080	11,625	1,080	11,625
BLOCK 129	1-1	3	-	3	-	-	810	8,719	810	8,719
BLOCK 130	1-1	4	-	4	-	-	1,080	11,625	1,080	11,625
BLOCK 131	1-1	3	-	3	-	-	810	8,719	810	8,719
<b>Total</b>	<b>1-1</b>	<b>28</b>	<b>-</b>	<b>28</b>	<b>-</b>	<b>-</b>	<b>7,560</b>	<b>81,375</b>	<b>7,560</b>	<b>81,375</b>

Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
TOWER A - 18 ST	1	-	-	-	1,300	15,999	903	9,688	2,203	25,687
Subtotal	1	-	-	-	1,300	15,999	903	9,688	2,203	25,687
TOWER B - 14 ST	1	-	-	-	220	2,220	1,300	13,999	1,520	16,219
Subtotal	1	-	-	-	220	2,220	1,300	13,999	1,520	16,219
MIDRISE C - 100 ST	1	-	-	-	580	6,243	900	9,688	1,480	15,931
Subtotal	1	-	-	-	580	6,243	900	9,688	1,480	15,931
TOWER D - 16 ST	1	-	-	-	400	4,306	1,880	20,236	2,280	24,542
Subtotal	1	-	-	-	400	4,306	1,880	20,236	2,280	24,542
MIDRISE E - 8 ST	1	-	-	-	800	8,400	800	8,400	1,600	16,800
Subtotal	1	-	-	-	800	8,400	800	8,400	1,600	16,800
MIDRISE F - 6 ST	1	-	-	-	148	1,150	1,440	15,000	1,588	16,150
Subtotal	1	-	-	-	148	1,150	1,440	15,000	1,588	16,150
MIDRISE G - 8 ST	1	-	-	-	330	3,444	330	3,444	660	6,888
Subtotal	1	-	-	-	330	3,444	330	3,444	660	6,888
Townhouse H	1-4	24	-	24	-	-	4,320	46,500	4,320	46,500
Retail	1-3	-	-	-	-	-	870	9,365	870	9,365
Food Store J	1-3	-	-	-	-	-	2,890	31,108	2,890	31,108
Retail K	1-3	-	-	-	-	-	900	9,688	900	9,688
Retail L	1-3	-	-	-	-	-	500	5,382	500	5,382
<b>Total</b>	<b>1-4</b>	<b>24</b>	<b>-</b>	<b>24</b>	<b>1,070</b>	<b>11,994</b>	<b>6,200</b>	<b>66,500</b>	<b>13,470</b>	<b>146,154</b>

Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
BLOCK 132	1	-	-	-	1,300	15,999	903	9,688	2,203	25,687
Subtotal	1	-	-	-	1,300	15,999	903	9,688	2,203	25,687
BLOCK 133	1	-	-	-	220	2,220	1,300	13,999	1,520	16,219
Subtotal	1	-	-	-	220	2,220	1,300	13,999	1,520	16,219
BLOCK 134	1	-	-	-	580	6,243	900	9,688	1,480	15,931
Subtotal	1	-	-	-	580	6,243	900	9,688	1,480	15,931
BLOCK 135	1	-	-	-	400	4,306	1,880	20,236	2,280	24,542
Subtotal	1	-	-	-	400	4,306	1,880	20,236	2,280	24,542
BLOCK 136	1	-	-	-	800	8,400	800	8,400	1,600	16,800
Subtotal	1	-	-	-	800	8,400	800	8,400	1,600	16,800
BLOCK 137	1	-	-	-	148	1,150	1,440	15,000	1,588	16,150
Subtotal	1	-	-	-	148	1,150	1,440	15,000	1,588	16,150
BLOCK 138	1	-	-	-	330	3,444	330	3,444	660	6,888
Subtotal	1	-	-	-	330	3,444	330	3,444	660	6,888
Townhouse I	1-4	24	-	24	-	-	4,320	46,500	4,320	46,500
Retail	1-3	-	-	-	-	-	870	9,365	870	9,365
Food Store J	1-3	-	-	-	-	-	2,890	31,108	2,890	31,108
Retail K	1-3	-	-	-	-	-	900	9,688	900	9,688
Retail L	1-3	-	-	-	-	-	500	5,382	500	5,382
<b>Total</b>	<b>1-4</b>	<b>24</b>	<b>-</b>	<b>24</b>	<b>1,070</b>	<b>11,994</b>	<b>6,200</b>	<b>66,500</b>	<b>13,470</b>	<b>146,154</b>

Level	Town	Detach	Apart	Total	GCA Retail		GCA Residential		GCA Total	
					sm	sf	sm	sf	sm	sf
TOWER A - 18 ST	1	-	-	-	2,000	21,528	2,000	21,528	4,000	43,056
Subtotal	1	-	-	-	2,000	21,528	2,000	21,528	4,000	43,056
TOWER B - 14 ST	1	-	-	-	220	2,220	1,300	13,999	1,520	16,219
Subtotal	1	-	-	-	220	2,220	1,300	13,999	1,520	16,219
TOWER C - 100 ST	1	-	-	-	580	6,243	900	9,688	1,480	15,931
Subtotal	1	-	-	-	580	6,243	900	9,688	1,480	15,931
TOWER D - 16 ST	1	-	-	-	400	4,306	1,880	20,236	2,280	24,542
Subtotal	1	-	-	-	400	4,306	1,880	20,236	2,280	24,542
TOWER E - 8 ST	1	-	-	-	800	8,400				



NOT FOR CONSTRUCTION

OWNER

Block 1232  
MEDIUM DENSITY  
1.292 ha.  
Min. 47 units

Block 1233  
MEDIUM DENSITY  
0.6383 ha.  
Min. 23 units

Block 1234  
MEDIUM DENSITY  
0.7174 ha.  
Min. 26 units

Block 1235  
MEDIUM DENSITY  
0.671 ha. (1,657 ac.)  
Min. 14 units  
Prop. 21 units

Block 1236  
MEDIUM DENSITY  
0.729 ha. (1,800 ac.)  
Min. 16 units  
Prop. 26 units

Block 1283  
HIGHWAY COMMERCIAL  
1.4598 ha.

Block 1284  
HIGHWAY COMMERCIAL  
1.4595 ha.  
(3,604 ac.)

Block 1285  
HIGHWAY COMMERCIAL  
1.6698 ha.  
(4,1262 ac.)

Block 1305  
FUTURE DEVELOPMENT  
General Reserve  
0.0416 ha.

Block 137  
0.748 ha  
PARK

Block 138  
1.487 ha  
STORMWATER POND

Block 139  
0.214 ha  
URBAN SQUARE

Block 140  
0.010 ha  
RESERVE

Block 141  
0.005 ha  
RESERVE

Block 142  
0.005 ha  
RESERVE

Block 143  
0.005 ha  
RESERVE

Block 144  
0.005 ha  
ROAD WIDENING RESERVE

Block 1261  
OPEN SPACE - GENERAL  
(Existing Easement)  
0.1728 ha.

Block 1262  
OPEN SPACE - GENERAL  
(Existing Easement)  
0.1728 ha.

Block 1266  
OPEN SPACE - GENERAL  
(Existing Easement)  
0.1728 ha.

Block 1307  
0.3m Reserve  
0.0006 ha.

Block 1305  
FUTURE DEVELOPMENT  
General Reserve  
0.0416 ha.

Block 137  
0.748 ha  
PARK

Block 138  
1.487 ha  
STORMWATER POND

Block 139  
0.214 ha  
URBAN SQUARE

Block 140  
0.010 ha  
RESERVE

Block 141  
0.005 ha  
RESERVE

Block 142  
0.005 ha  
RESERVE

Block 143  
0.005 ha  
RESERVE

Block 144  
0.005 ha  
ROAD WIDENING RESERVE

ISSUED FOR ZBA	25/04/13
ISSUED FOR ZBA	24/09/13
ISSUED FOR ZBA / ZBA	23/11/10
Revision	Date

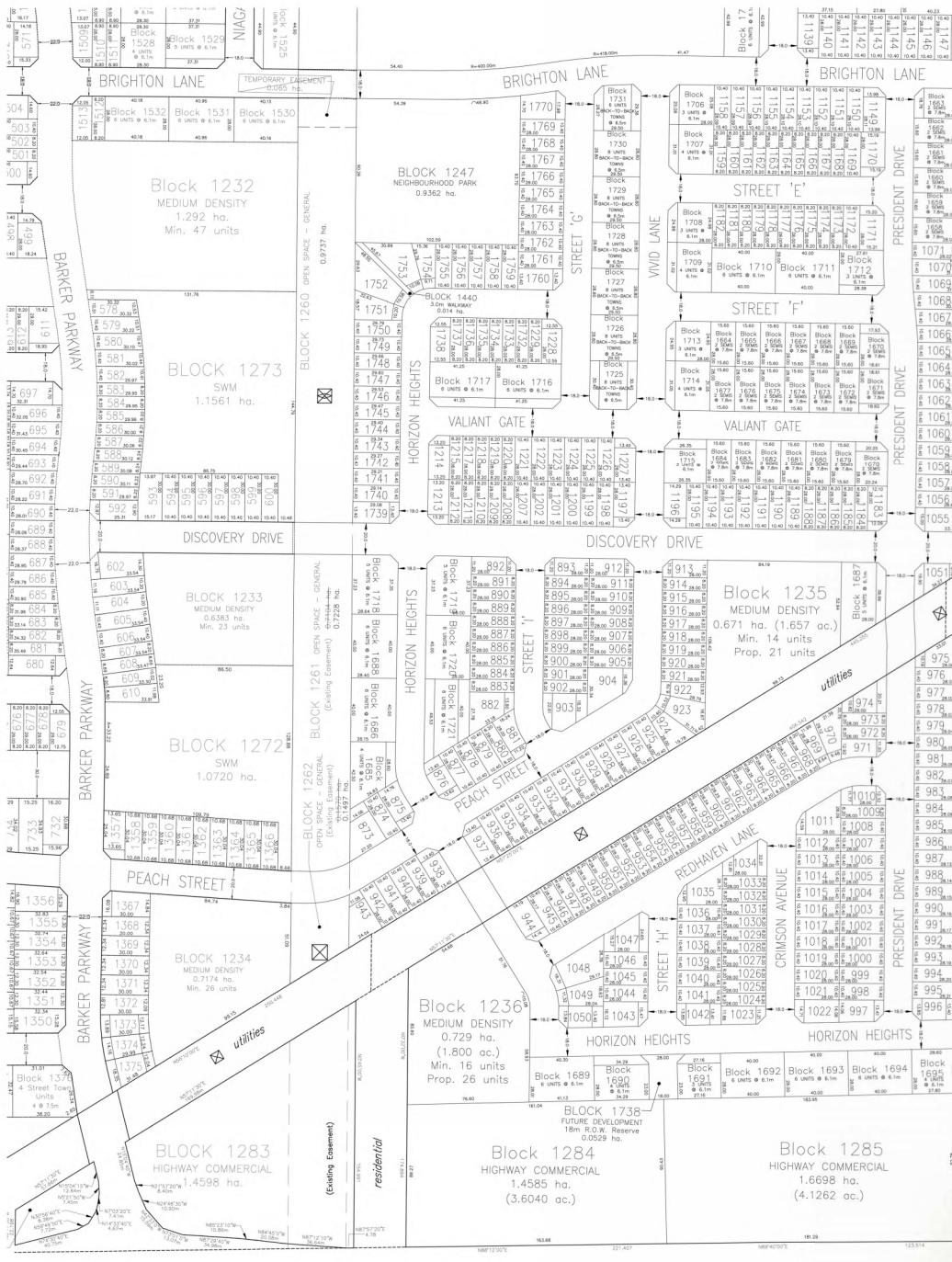


giannone  
petricone  
associates

13030 LUNDY'S LANE  
THOROLD, ONTARIO

MASTER PLAN

A1.00



NOT FOR CONSTRUCTION

ISSUED FOR ZBA 25-09-18  
 ISSUED FOR ZBA 24-09-25  
 ISSUED FOR OPA / ZBA 23-11-10  
 Revision Date

gianpette  
 petricone  
 associates

13030 LUNDY'S LANE  
 THOROLD, ONTARIO

RENDERED MASTER PLAN  
 UPDATED

14m MTO SETBACK

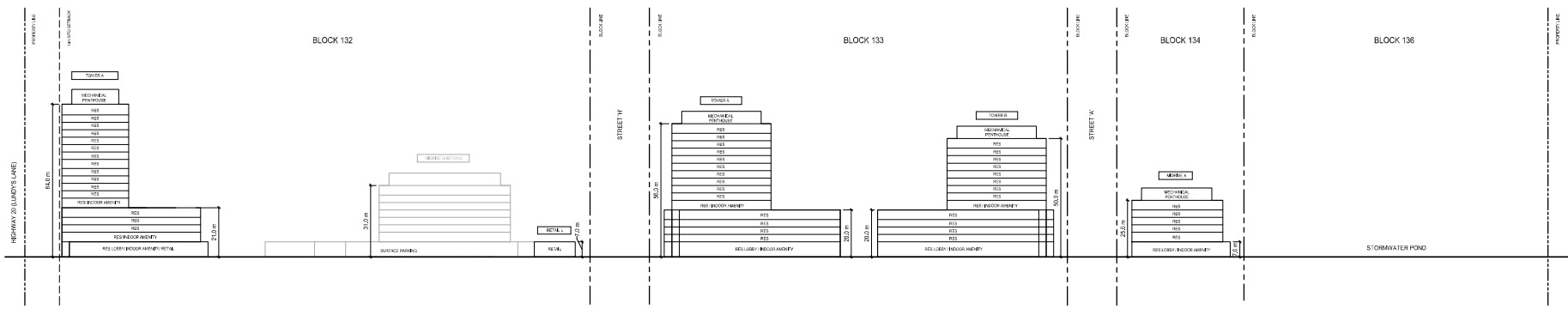
EXISTING SIGNALIZED INTERSECTION

PROPOSED SIGNALIZED INTERSECTION

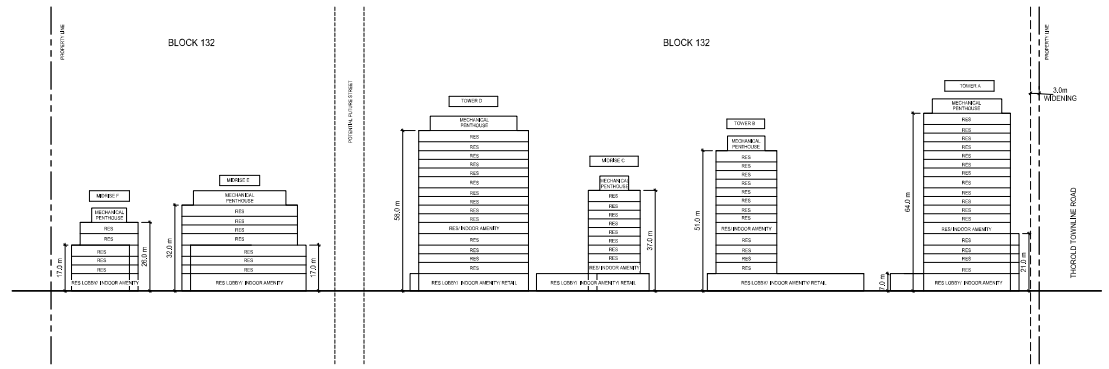
PROPOSED ALL TURNS

Block 144 0.183 ha  
 Road Widening  
 Block 143 0.005 ha  
 Reserve  
 Block 142 0.005 ha  
 Reserve  
 Block 141 0.006 ha  
 Reserve  
 Block 139 0.411 ha  
 Park  
 Block 138 0.284 ha  
 Reserve  
 Block 137 0.749 ha  
 Park  
 Block 136 1.487 ha  
 Stormwater Pond  
 Block 135 0.0416 ha  
 Future Development  
 Block 134 0.963 ha  
 Midrise A  
 Block 133 1.508 ha  
 Tower B  
 Block 132 4.942 ha  
 Tower A  
 Block 131 0.082 ha  
 Retail L  
 Block 130 0.103 ha  
 Retail K  
 Block 129 0.083 ha  
 Retail J  
 Block 128 0.103 ha  
 Retail I  
 Block 127 0.083 ha  
 Retail H  
 Block 126 0.103 ha  
 Retail G  
 Block 125 0.083 ha  
 Retail F  
 Block 124 0.103 ha  
 Retail E  
 Block 123 0.284 ha  
 Retail D  
 Block 122 0.103 ha  
 Retail C  
 Block 121 0.103 ha  
 Retail B  
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 Block 1 0.288 ha  
 Retail

**NOT FOR CONSTRUCTION**



1 THOROLD TOWNLINE ROAD ELEVATION  
3/20/20



1 HIGHWAY 26 (LUNDY'S LANE) ELEVATION  
3/20/20

ISSUED FOR ZBA	25/09/18
ISSUED FOR ZBA	24/09/20
ISSUED FOR OPA / ZBA	29/11/20
Revision	Date

**giannone  
petricone  
associates**  
Giannone Petricone Associates Inc. Architects  
100 Queen Street West, Toronto, Ontario M5H 2P4  
T 416.593.1788 F 416.593.1052 E info@gpa.ca

13030 LUNDY'S LANE  
THOROLD, ONTARIO

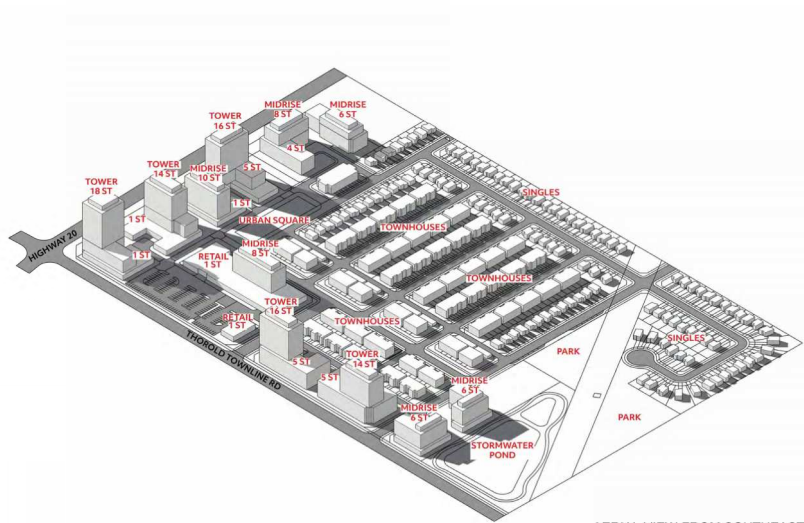
SHEET 11

SOUTH & EAST ELEVATION

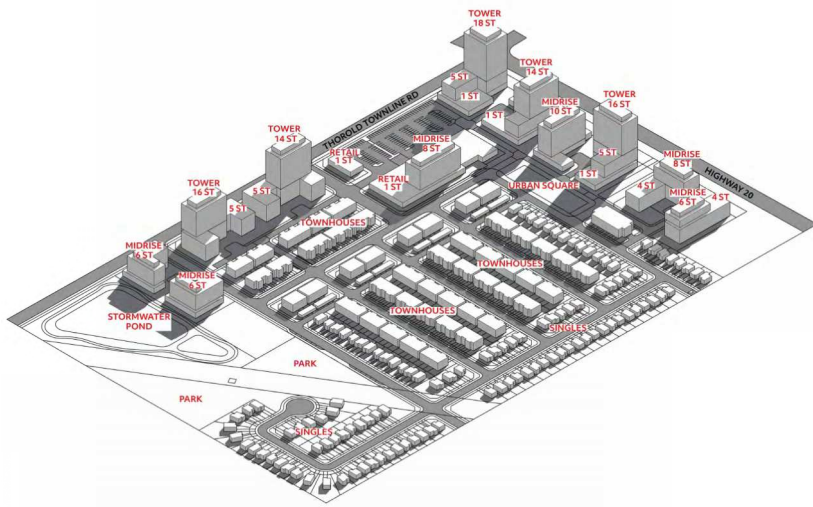
DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE
SHEET NUMBER	

A2.00

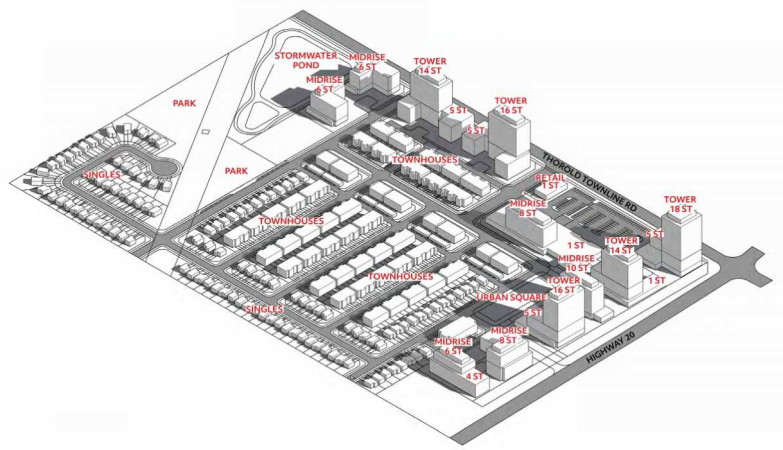
**NOT FOR CONSTRUCTION**



AERIAL VIEW FROM SOUTHEAST



AERIAL VIEW FROM SOUTHWEST



AERIAL VIEW FROM NORTHEAST



AERIAL VIEW FROM NORTHWEST

ISSUED FOR ZBA	25-09-18
ISSUED FOR ZBA	24-09-25
ISSUED FOR OPA / ZBA	23-11-10
Revision	Date

**giannone  
petricone  
associates**  
Giannone Petricone Associates Inc. Architects  
100 Dundas Street West, Suite 1000, Toronto, Ontario M5G 1Z4  
T: 416-593-1788 F: 416-593-1282 E: info@gpa.ca

13030 LUNDY'S LANE  
THOROLD, ONTARIO

SHEET 11

3D MASSING

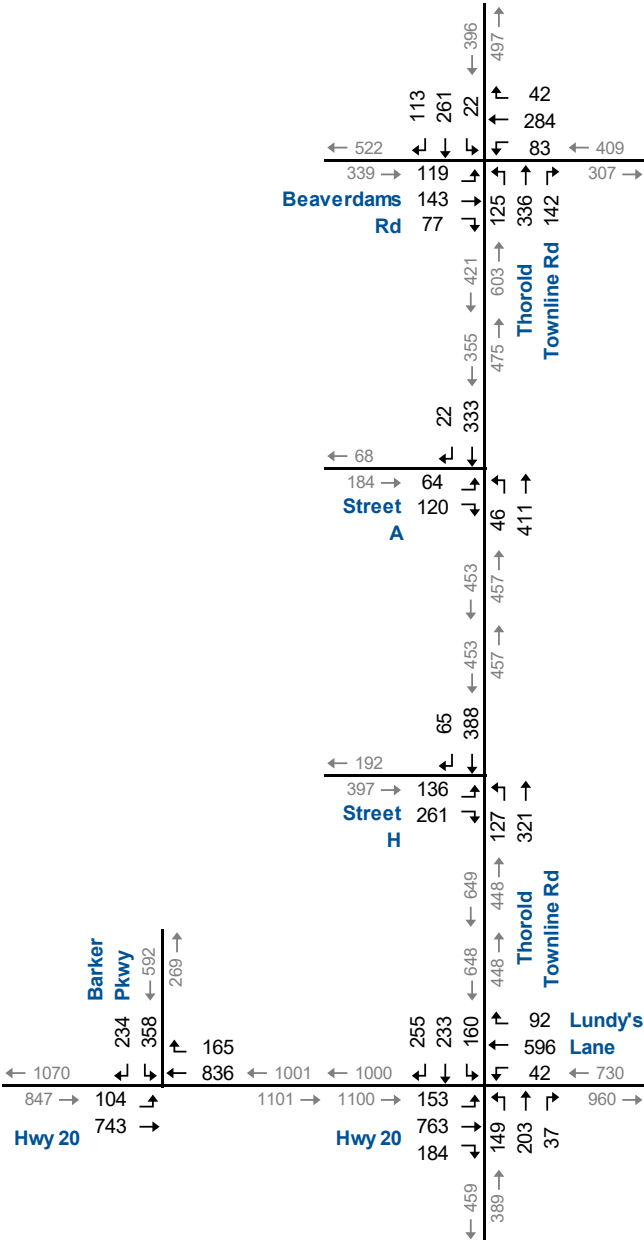
DESIGNED BY	DATE
PROJECT NO.	
PROJECT TITLE	
SCALE	
SHEET NUMBER	

A5.00

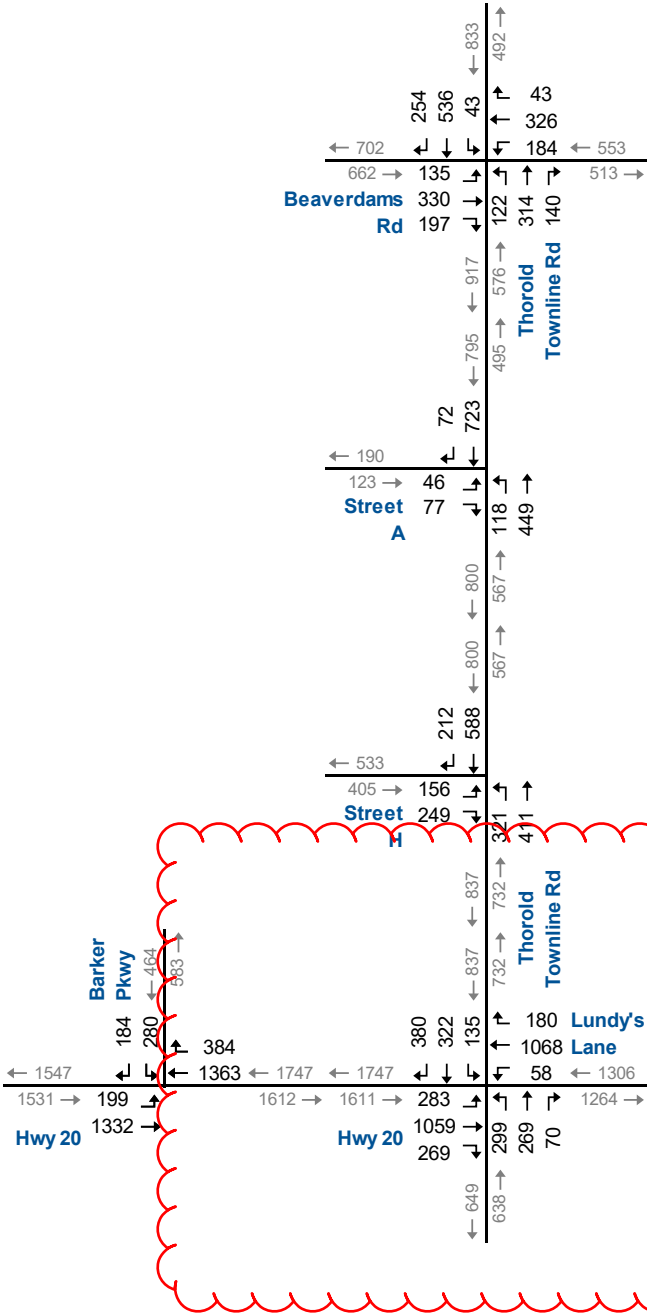
## **Appendix C: Traffic Data**



**AM Peak Hour**



**PM Peak Hour**



**Preliminary  
2045 Total  
Traffic Volumes**

# Hwy 20 @ Thorold Townline Rd

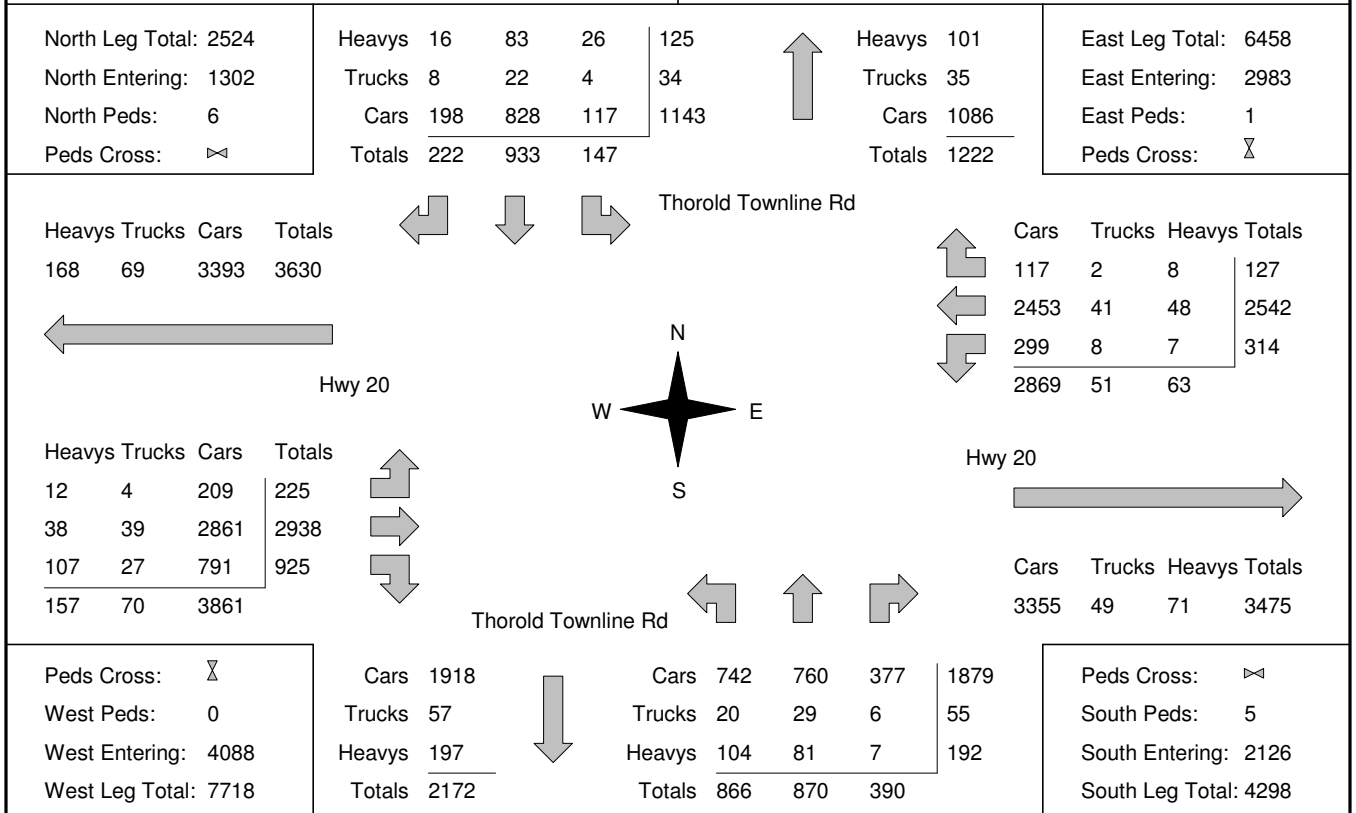
## Total Count Diagram

**Municipality:** Thorold  
**Site #:** 000000001  
**Intersection:** Hwy 20 & Thorold Townline Rd  
**TFR File #:** 1  
**Count date:** 12-Jul-2023

**Weather conditions:**  
 Clear/Dry  
**Person(s) who counted:**  
 Cam

**\*\* Signalized Intersection \*\***

**Major Road:** Hwy 20 runs W/E



### Comments

**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

Legend

— Line Source

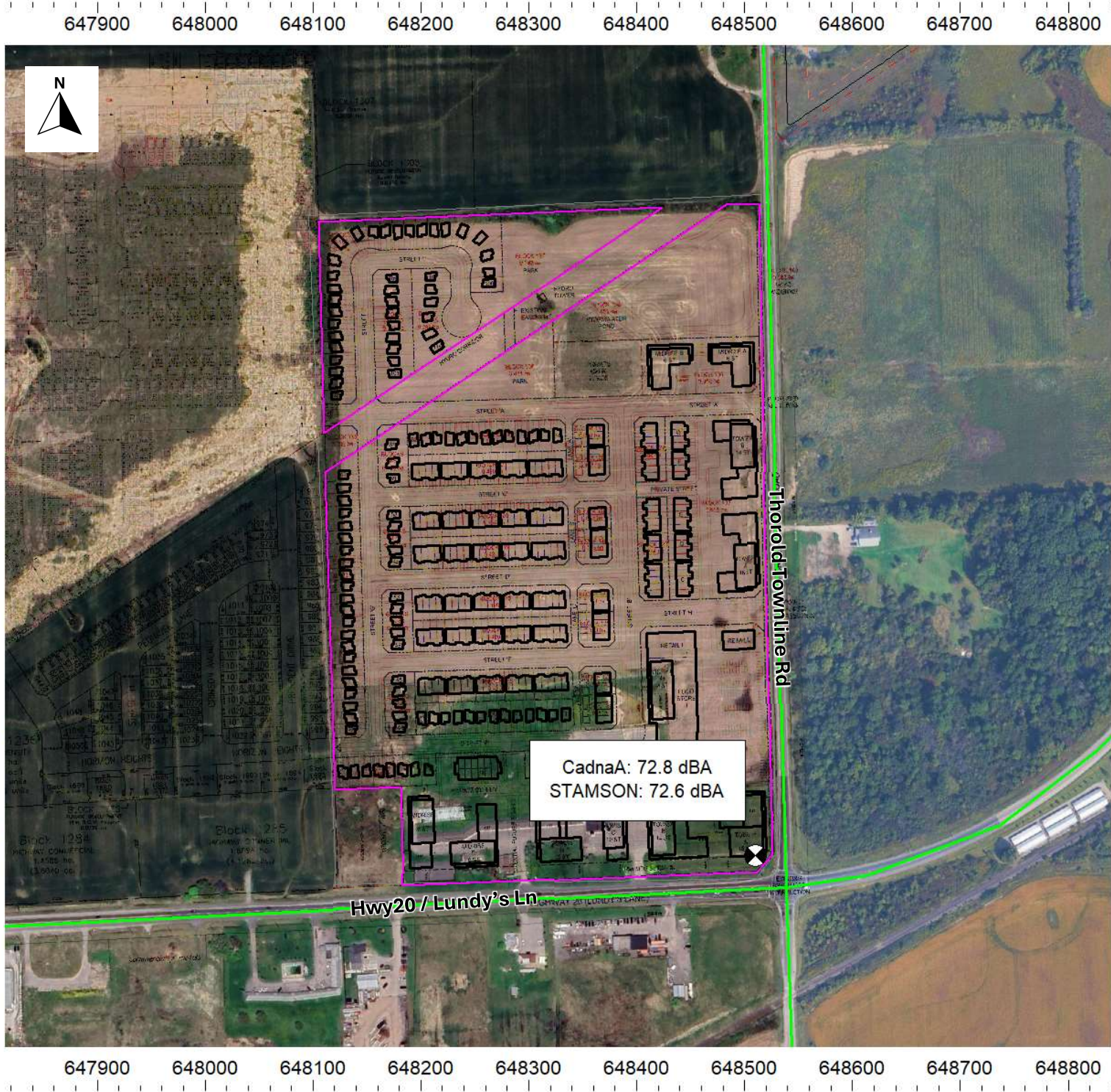
**Figure Title**  
STAMSON Validation File

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

C.1



CadnaA: 72.8 dBA  
STAMSON: 72.6 dBA

Hwy20 / Lundy's Ln

Thorold Townline Rd

647900 648000 648100 648200 648300 648400 648500 648600 648700 648800

4771300 4771400 4771500 4771600 4771700 4771800 4771900 4772000 4772100

4771300 4771400 4771500 4771600 4771700 4771800 4771900 4772000 4772100

647900 648000 648100 648200 648300 648400 648500 648600 648700 648800

Filename: road.te                    Time Period: 16 hours  
Description: Road, Tower A S Facade

Road data, segment # 1: ThrldTwnRd  
-----

Car traffic volume : 13767 veh/TimePeriod  
Medium truck volume : 421 veh/TimePeriod  
Heavy truck volume : 1403 veh/TimePeriod  
Posted speed limit : 80 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: ThrldTwnRd  
-----

Angle1    Angle2                    : 0.00 deg    90.00 deg  
Wood depth                         : 0            (No woods.)  
No of house rows                   : 0  
Surface                             : 2            (Reflective ground surface)  
Receiver source distance           : 29.00 m  
Receiver height                    : 1.50 m  
Topography                         : 1            (Flat/gentle slope; no barrier)  
Reference angle                    : 0.00

Road data, segment # 2: Hwy20\_1  
-----

Car traffic volume : 29623 veh/TimePeriod  
Medium truck volume : 567 veh/TimePeriod  
Heavy truck volume : 1324 veh/TimePeriod  
Posted speed limit : 80 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Hwy20\_1  
-----

Angle1    Angle2                    : -45.00 deg    90.00 deg  
Wood depth                         : 0            (No woods.)  
No of house rows                   : 0  
Surface                             : 2            (Reflective ground surface)  
Receiver source distance           : 30.00 m  
Receiver height                    : 1.50 m  
Topography                         : 1            (Flat/gentle slope; no barrier)  
Reference angle                    : 0.00

Road data, segment # 3: Hwy20\_2  
-----

Car traffic volume : 29623 veh/TimePeriod  
Medium truck volume : 567 veh/TimePeriod  
Heavy truck volume : 1324 veh/TimePeriod  
Posted speed limit : 80 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Hwy20\_2

```

-----
Angle1  Angle2      : -60.00 deg   -15.00 deg
Wood depth      :      0      (No woods.)
No of house rows :      0
Surface         :      2      (Reflective ground surface)
Receiver source distance : 54.00 m
Receiver height  :      1.50 m
Topography      :      1      (Flat/gentle slope; no barrier)
Reference angle  :      0.00
  
```

Results segment # 1: ThrldTwnRd

Source height = 1.73 m

```

ROAD (0.00 + 68.08 + 0.00) = 68.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
      0      90   0.00  73.95   0.00  -2.86  -3.01   0.00   0.00   0.00  68.08
-----
  
```

Segment Leq : 68.08 dBA

Results segment # 2: Hwy20\_1

Source height = 1.43 m

```

ROAD (0.00 + 70.59 + 0.00) = 70.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
     -45      90   0.00  74.85   0.00  -3.01  -1.25   0.00   0.00   0.00  70.59
-----
  
```

Segment Leq : 70.59 dBA

Results segment # 3: Hwy20\_2

Source height = 1.43 m

```

ROAD (0.00 + 63.26 + 0.00) = 63.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
     -60     -15   0.00  74.85   0.00  -5.56  -6.02   0.00   0.00   0.00  63.26
-----
  
```

Segment Leq : 63.26 dBA

Total Leq All Segments: 73.01 dBA

TOTAL Leq FROM ALL SOURCES: 73.01



# Train Count Data

## TRANSMITTAL

*To:* Thornton Tomasetti      *Project :* SFD – 25.4 – Thorold Townline Road, Niagara  
*Destinataire :* 23-366 Revus Avenue,      Falls, ON  
Mississauga ON  
L5G 4S5

*Att'n:* Robert Fuller      *Routing:* RFuller@ThorntonTomasetti.com>

*From:* Sarangan Srikanth      *Date:* 2024/08/15  
*Expéditeur :*      *date :*

*Cc:* Adjacent Development  
CN via e-mail

Urgent    For Your Use    For Review    For Your Information    Confidential

**Re: Train Traffic Data – CN Stamford Subdivision near Lundy’s Lane and Thorold Townline Road in Niagara Falls, ON**

Please find attached the requested Train Traffic Data. The application fee in the amount of **\$500.00** +HST will be invoiced.

Should you have any questions, please do not hesitate to contact the undersigned at Sarangan.srikanth@cn.ca.

Sincerely,

*Sarangan Srikanth*

Sarangan Srikanth  
Officer Public Works- Eastern Canada  
Sarangan.Srikanth@cn.ca

**Date:** 2024/08/15  
ON

**Project Number:** SFD – 25.4 – Thorold Townline Road, Niagara Falls,

Dear Robert:

**Re: Train Traffic Data – CN Stamford Subdivision near Lundy’s Lane and Thorold Townline Road in Niagara Falls, ON**

The following is provided in response to Robert’s 2024/06/21 request for information regarding rail traffic in the vicinity of Lundy’s Lane and Thorold Townline Road in Niagara Falls, Ontario at approximately Mile 25.4 on CN’s Stamford Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

**\*Maximum train speed is given in Miles per Hour**

	0700-2300			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	2	140	40	4
Way Freight	1	25	40	4
Passenger	0	10	40	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	2	140	40	4
Way Freight	1	25	40	4
Passenger	0	10	40	2

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN’s Stamford Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are four (4) at-grade crossings in the immediate vicinity of the study area at Mile 24.10 Barron Road, Mile 25.40 Thorold Townline Road, Mile 26.17 Beachwood Road and Mile 26.37 Lundy’s Lane. Anti-whistling bylaws are in effect at the Mile 26.37 Crossing. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The single mainline track is considered continuously welded rail throughout the study area.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Adjacent Development, Canadian National Railway Properties at Proximity@cn.ca should be contacted directly

I trust the above information will satisfy your current request.

Sincerely,

*Sarangan Srikanth*

Sarangan Srikanth  
Officer Public Works- Eastern Canada  
Sarangan.Srikanth@cn.ca

Table C.1: Railway Source Input Summary

Name	Sel.	M.	ID	Lw'		Train Class	Correct. Track (dB)	Vmax (km(km/h))	Height (m)	Height Ref	Length (m)	Train				
				Day (dBA)	Night (dBA)							Type	Number		Speed (km/h)	Throttle
													Day	Night		
Freight Locomotive		~	!0B00!_F_loco	60.1	63.1	(local)	0		0.6	r	5539	FRA_CONV_FRE_LOC	12	12	64	0
WayFreight Locomotive		~	!0B00!_WF_loco	57.1	60.1	(local)	0		0.6	r	5539	FRA_CONV_FRE_LOC	6	6	64	0
Freight Wheel		~	!0B01!_F_wheel	70.6	70.6	(local)	0		0.6	r	5539	FTA_COMM_CAR	416	416	64	0
WayFreight Wheel		~	!0B01!_WF_wheel	60.1	60.1	(local)	0		0.6	r	5539	FTA_COMM_CAR	37	37	64	0
Freight Horn-Thorold Townline Road EB			!0B02!_F_hornEB	81.4	81.4	(local)	0		0.6	r	400	FRA_HORN	2	2	64	0
WayFreight Horn-Thorold Townline Road EB			!0B02!_WF_hornEB	78.4	78.4	(local)	0		0.6	r	400	FRA_HORN	1	1	64	0
Freight Horn-Thorold Townline Road WB			!0B02!_F_hornWB	81.4	81.4	(local)	0		0.6	r	400	FRA_HORN	2	2	64	0
WayFreight Horn-Thorold Townline Road WB			!0B02!_WF_hornWB	78.4	78.4	(local)	0		0.6	r	400	FRA_HORN	1	1	64	0

## **Appendix D: Quarry Data**

## WALKER AGGREGATES INC.

NIAGARA FALLS, ONTARIO

### UPPER'S QUARRY: ACOUSTIC ASSESSMENT REPORT

RWDI #1603157

August 2, 2023

#### SUBMITTED TO

**Kevin Kehl**  
Environmental Lead | Specialist  
kkehl@walkerind.com

#### Walker Aggregates Inc.

P.O. Box 100  
Thorold, Ontario L2V 3Y8

T: 905.227.4142

F: 905.227.1034

#### SUBMITTED BY

**Brad Bergeron, A.Sc.T., d.E.T.**  
Senior Project Manager | Principal  
Brad.Bergeron@rwdi.com | ext. 2428

**Slavi Grozev, P.Eng.**  
Senior Noise Engineer  
Slavi.Grozev@rwdi.com | ext. 2609

#### RWDI AIR Inc. Consulting Engineers & Scientists

600 Southgate Drive  
Guelph, Ontario N1G 4P6

T: 519.823.1311

F: 519.823.1316



# 1 INTRODUCTION

Walker Aggregates Inc. (WAI) has retained RWDI AIR Inc. (RWDI) to complete an Acoustic Assessment Report (AAR) for the Upper's Quarry (the Quarry) in Niagara Falls, Ontario.

This assessment is completed in respect of an application under the Aggregate Resources Act. Based on the Ministry of Natural Resources Policy #A.R. 2.01.09 (MNR, 2006), a detailed noise assessment is required since there are noise-sensitive lands within 150 m of the Quarry. The Aggregate Resources Act recommends referencing the Ontario Ministry of the Environment and Climate Change (MOECC) guidelines for stationary sources of sound. This AAR is completed using the applicable Ontario Ministry of the Environment, Conservation and Parks (MECP), previously known as the Ministry of the Environment and Climate Change (MOECC), guidance documents (MOECC, 2012 and 1995). Documents in this report still reference the MOECC.

Quarry operations will not include large sources of vibration. Therefore, an assessment of vibration impact is not required. Blasting is outside of the scope of this assessment and is addressed separately in the blast impact analysis by Explotech. The results of the acoustic assessment indicate that sound levels produced at the proposed quarry will comply with the applicable guidelines with the implementation of noise control recommendations summarized in **Section 6**.

## 2 FACILITY DESCRIPTION

The proposed Upper's Quarry is located on Part of Lots 119, 120, 136 and 137, and Part of the Road Allowance between Lots 120 and 136 (geographic township of Stamford) in the City of Niagara Falls, Regional Municipality of Niagara. Sensitive land uses adjacent to Upper's is shown on zoning maps in **Appendix A**.

### 2.1 Proposed Extraction Scenario

The layout of the site and phases for the Proposed Extraction Scenario can be found in **Figure 1**. Two municipal road allowances separate the proposed quarry site into three extraction areas:

- i. North Extraction Area: extraction area north of Upper's Lane;
- ii. Mid Extraction Area: extraction area south of Upper's Lane and north of the unopened road allowance between Township Lots 120 & 136 in the former Township of Stamford, now in the City of Niagara Falls ("unopened road allowance"); and
- iii. South Extraction Area: extraction area south of the unopened road allowance.

The proposed extraction scenario avoids extraction within the road allowances. Operations at the proposed quarry will consist of overburden stripping; berm construction; drilling, blasting, extraction, transportation, processing, washing, stockpiling, and shipping of aggregate; and rehabilitation. The annual production limit will be 1,800,000 tonnes of aggregate per year, however during several phases of operation, the maximum annual tonnage will be lower due to operational constraints.



Clearing of overburden and berm construction will take place prior to drilling and blasting in each phase. At the start of extraction operations, four sinking cuts will be required to allow extraction to begin. Two sinking cuts are required in Phase 1A (one in the Mid Extraction Area, one in the South Extraction Area), one sinking cut is required in 2A.

During the sinking cuts and early phases of operation, the primary crusher is integrated into a single processing plant located near the working face. In later phases, the primary crusher will split from the single integrated plant and start to follow the working face. The processing plant, which contains the secondary and tertiary crushers, will remain close to the quarry entrance. The processing plant will be located at varying elevations, beginning at the top of rock during the sinking cut portion of operations, and moving to the first bench and then the final quarry floor as space becomes available.

Shot rock will be loaded by front-end loaders into the primary crusher adjacent of the working face. Conveyors will then transport the products from the primary crusher to the processing plant, where it will be further processed, washed and stockpiled, prior to loading into highway shipping trucks by front-end loaders.

Phases 1A, 2A, and 3 will be extracted in two benches down to the Quarry floor, which is at elevations of 141 to 149 metres above sea level (masl). The quarry floor has a gradual downward slope from the northeast corner (149 masl) to the southwest corner (141 masl). The first bench is between 175 to 178 masl and the second bench is between 160 to 162 masl. Phases 1B and 2B will be extracted to an elevation of 155 masl. They will then be backfilled with clay material up to approximately 176 to 177 masl for the watercourse realignment.

In addition to aggregate extraction and processing, the site will also include an asphalt plant (AP), to be located in mid-extraction area Phase 1A, capable of producing 4,900 tonnes per day of hot-mix asphalt (HMA). Operations include the receipt and drying of washed aggregate, receipt and storage of asphalt cement, mixing and storage of HMA, and loading highway trucks for shipment to the job site. The asphalt plant will become operational once Phases 1A and 1B have been fully extracted. This will allow room for the asphalt plant to be put in place.

The hours of operation at the Quarry for the Proposed Extraction Scenario are:

- Drilling and extraction at the working face: Monday to Saturday 0700 – 1900h;
- Aggregate processing at the primary crusher: Monday to Saturday 0700 – 1900h;
- Conveyor to the mobile crusher plants: Monday to Saturday 0700 – 1900h;
- Aggregate processing at the processing plant: Monday to Saturday 0700 – 1900h;
- Aggregate shipping from processing plant stockpile: 24 hours per day, 7 days a week;
- Hauling aggregates from processing plant stockpiles to the asphalt plant: 24 hours per day, 7 days a week;
- Asphalt plant: 24 hours per day, 7 days a week;
- HMA shipping from asphalt plant: 24 hours per day, 7 days a week; and
- Asphalt cement (AC) and reclaimed asphalt pavement (RAP) receiving at the asphalt plant: 24 hours per day, 7 days a week.



## 2.2 Modelled Phases

The receptors surrounding the Quarry will experience the most impact from the Quarry during different phases. Therefore, the modelled scenarios are selected based on the worst-case extraction location for the different receptors.

The modelled phases for the Proposed Extraction Scenario are:

- **Phase 1A Sinking Cut** (P1A\_Sinkingcut\*):
  - Sinking cut in Mid Extraction Area
- **Phase 1A South Sinking Cut** (P1AS\_Sinkingcut\*):
  - Sinking cut in South Extraction Area
- **Phase 2A Sinking Cut** (P2A\_Sinkingcut\*):
  - Sinking cut in North Extraction Area
- **Phase 3A** (P3A\*):
  - Extraction in northern portion of Phase 3A, with AP operational
- **Phase 3B Northeast** (P3B\_NE\*):
  - Extraction in the northeastern corner of North Extraction Area, with AP operational
- **Phase 4 Southeast** (P4\_SE\*):
  - Extraction in southeastern corner of Mid Extraction Area, with AP operational
- **Phase 5 East** (P5\_E\*):
  - Extraction in eastern corner of South Extraction Area, with AP operational

Sinking cut in Phase 3A was also assessed but was deemed to be less impactful than Phase 2A sinking cut. Phase 3B sinking cut is expected to have similar impacts. Therefore sinking cuts in Phases 3A/3B were not evaluated further. The operation overviews of the modelled scenarios are shown in **Figures 2a** through **2g**.

## 3 NOISE SOURCE SUMMARY

A summary of significant sound sources is provided in **Table 1**, including sound power levels, location, sound characteristics, operating duration, and vehicle route assumptions. Sound power levels for the proposed sources are based on historical measurement data on file at RWDI. The overview of the locations of the modelled sources are shown in **Figures 2a** through **2g**. Detailed examples of the significant source locations are shown in **Figures 2h** and **2i**.



### **3.1 Continuous Sources**

The continuous sources modelled are:

- Working Face (WF) and Primary Crusher (PC) sources (daytime only, 0700 to 1900h):
  - One (1) silenced drill working on the 1<sup>st</sup> bench;
  - One (1) loader working on the 2<sup>nd</sup> bench;
  - Dumping of rocks into primary crusher;
  - One (1) primary crusher; and
  - One (1) primary screen.
- Conveyor from Working Face Primary Crusher to Processing Plant (daytime only, 0700 to 1900h).
- Processing Plant (PP) sources:
  - Two (2) secondary crushers (daytime only, 0700 to 1900h);
  - Two (2) secondary & tertiary screens (daytime only, 0700 to 1900h);
  - Two (2) tertiary crushers (daytime only, 0700 to 1900h);
  - One (1) loader working at piles (24h/day); and
  - Two (2) idling shipping trucks (24h/day).
- Asphalt Plant (AP) sources (operating continuously, 24 hours per day):
  - Two (2) loaders working;
  - Two (2) idling trucks;
  - One (1) compressor vent;
  - One (1) dust collector blower motor;
  - One (1) dust collector blower stack;
  - One (1) elevator motor;
  - One (1) conveyor motor;
  - One (1) oven motor;
  - One (1) pug mill door (pressure relief noise through the door); and
  - One (1) pug mill motor.
- Internal Haul Truck Routes:
  - Haul roads between PP and AP for aggregates (24h/day).
- Shipping Truck Routes (24h/day):
  - Shipping of aggregate from PP stockpiles to offsite;
  - Shipping of HMA from AP to offsite; and
  - Receiving of AC and RAP at AP.

All continuous sources are assumed to be operating constantly in their respective operating periods. During the sinking cut, only one (1) secondary and one (1) tertiary crusher will be deployed. As the Quarry progresses to later phases, two (2) sets of secondary and tertiary crushers will be deployed at the processing plant. Asphalt plant noise sources were based on the existing asphalt plant at Walker Brothers Quarry and Asphalt Plant in Niagara Falls.



Shipping truck traffic modelled using moving point source calculation method. Shipping trucks on site are expected to travel at a mean speed of approximately 20 km/h. The number of vehicle trips per hour are calculated based on peak daily production rate and typical vehicle payload and are shown in **Table 1**.

## **3.2 Impulsive Sources**

The only impulsive source considered in this study is the impulses associated with the asphalt plant silos (ASPH\_imp\_silo), which could operate up to 24 hours a day. As per NPC-300, the sound limits are based on the number of impulses per hour. Nine (9) or more impulses are anticipated to occur at a worst-case hour during daytime, evening, and nighttime.

## **3.3 Construction Sources**

Temporary construction noise from the Quarry is anticipated for short periods throughout its lifespan. Activities considered to be construction noise include overburden removal and berm creation. Details on construction noise assessment are provided in **Section 5**.

## **3.4 Identifiable Source Characteristics**

Continuous sources that warrant adjustment due to tonal, cyclically varying, quasi-steady impulsive or beating sound characteristics receive additional consideration in accordance with MOECC NPC-104 guidelines (MOECC, 1978). These guidelines specify that a penalty is applicable for tonal, cyclically varying, or quasi-steady impulsive sound characteristics. No sources were identified to exhibit tonal, cyclically varying, quasi-steady impulsive or beating sound characteristics per NPC-103.

# **4 POINTS OF RECEPTION**

Sound levels from sources at the Quarry were determined at points of reception (PORs) located on noise sensitive land uses. Noise sensitive land uses are defined in the MOECC's environmental guideline, Publication NPC-300 (MOECC, 2013), as the property of a person that accommodates a dwelling, a noise sensitive commercial building or a noise sensitive institutional building. In some cases, a vacant lot may be considered noise sensitive provided it is zoned to allow a sensitive use.

A noise sensitive land use may have one or more POR. PORs for an acoustic assessment are those locations where sound from the facility is received and assessed against the applicable limits. Sound levels may be assessed at the façade of the building and/or outdoor areas, depending on the type of sensitive land use assessed. Outdoor PORs are only assessed for dwellings and are not assessed for commercial and institutional noise sensitive land uses.



## 6 NOISE CONTROL RECOMMENDATIONS

The following recommendations are provided in order to meet the applicable compliance criteria:

1. Minimum 3 m tall perimeter berms shall be constructed around the Quarry as shown in **Figure 1**. The perimeter berms shall be constructed as soon as possible during site preparation prior to extraction to provide additional noise attenuation, particularly around the north and south perimeters of the site during work near R1 and R6, while also serving to provide for visual screening.
2. The primary crusher shall stay within 30 m of the working face to maximize shielding effect of the Quarry terrain.
3. Material extracted from the South Extraction Area shall be processed in the Mid Extraction Area.
4. While processing in Phase 4, the licensee shall maintain an 8 m tall barrier at a radius of 40 m to the southeast of the processing plant secondary crushers as shown in **Figures 2f** and **2g**. The barrier can be material stockpiles, noise walls, or a combination of both. The barrier shall extend long enough to shield R4 and R5 from the secondary crushers.

Although construction noise is not part of the assessment, RWDI recommends the following best practices to minimize potential for construction noise impacts and complaints:

5. All construction equipment shall meet the sound emission standards defined in MECP Publication NPC-115.
6. Construction will be limited to time periods allowed by the City's applicable by-laws. If construction activities are required outside of these hours, the licensee will seek permits / exemptions directly from the City in advance.
7. All internal combustion engines will be fitted with appropriate muffler systems.
8. The licensee's operating procedures will contain a provision that any initial complaint will trigger verification that the general noise control measures agreed to on this Plan are in effect.
9. In the presences of persistent noise complaints, all construction equipment will be verified to comply with MECP's NPC-115 guidelines.
10. In the presence of persistent noise complaints and subject to the results of a field investigation, alternative noise control measures may be required, where reasonably available. In selecting appropriate noise control and mitigation measures, consideration will be given to the technical, administrative and economic feasibility of the various alternatives.

**Table 1: Noise Source Summary - Proposed Extraction Scenario**

Upper's Quarry, 1603157

Notes to Table:

- Wherever possible, the Source ID matches the identifiers used in the ESDM report.
  - Sound Power Level of Source, in dBA, not including sound characteristic adjustments per NPC-104.
  - Source Location: O = Outside of building, including the roof, I = Inside of building.
  - Sound Characteristic, per NPC-104:  
 - S = Steady  
 - Q = Quasi-Steady Impulsive  
 - I = Impulsive  
 - B = Buzzing  
 - T = Tonal  
 - C = Cyclic
  - Noise control measures currently in place or specified in construction drawings:  
 - S = Silencer/Muffler  
 - A = Acoustic lining, plenum  
 - B = Barrier/Berm  
 - L = Lagging  
 - E = Acoustic enclosure  
 - O = Other  
 - U = Uncontrolled
- Where noise control measures are specified in construction drawings or were found on existing equipment, octave band sound power levels include the effects of the noise control measures. Noise control measures recommended in the mitigation section of this report are not included in this table.

**Table 1: Additional Data**

Upper's Quarry, 1603157

- Source type indicates Cadna/A modelling methodology. For Point, Line, and Area sources, PWLs represent the overall level for the entire source. Where source type is Mobile Equipment, the source is modelled as a moving point source, and PWL is calculated from a single-vehicle passby.
- Sound Power Level Data Source:  
 - Man = Manufacturer's Data  
 - Mea = Measured Directly  
 - Hist = Historical Data on File at RWDI  
 - EC = Engineering Calc based on specifications  
 - Same ### = same type as source no. ###
- For loader dumping into primary crusher, it is assumed each dump takes approximately 10s

Source ID <sup>[1]</sup>	Source Description	Sound Power Level <sup>[2]</sup> (dBA)	Source Location <sup>[3]</sup> (I or O)	Sound Characteristics <sup>[4]</sup> (S,O,I,B,T,C)	Noise Control Measures <sup>[5]</sup> (S,A,B,L,E,O,U)	1/1 Octave Band Sound Power Level Data if available (dB)										Source Type <sup>[6]</sup>	PWL Data Source <sup>[7]</sup>	Height Above Roof (m)	Local Roof Height Ab. Grade (m)	Height Above Grade (m)	Source Co-ordinates for point sources (m)			Operating Time during Worst-case hour for Point Sources, <sup>[8]</sup> OR Vehicle Passby per Hour & Speed for Line Sources		
						31.5	63	125	250	500	1000	2000	4000	8000	X						Y	Z	Daytime	Evening	Nighttime	
<b>Point Sources</b>																										
P1A_Sinkcut_PC_CrusherDump	P1A_Sinkcut, PC loader dumping into crusher	123	O	S	U	115.4	120.3	122.2	120.0	118.3	118.5	116.6	111.1	102.3	Point	Hist	-	-	3.0	648673	4772848	180.0	30 dumps/hr	-	-	
P1A_Sinkcut_PC_Ldr	P1A_Sinkcut, PC Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648672	4772850	179.5	60 min	-	-	
P1A_Sinkcut_PC_PrimaryCrush	P1A_Sinkcut, PC Primary Crusher	118	O	S	U	108.9	119.8	115.0	118.7	114.6	112.2	109.6	104.4	99.6	Point	Hist	-	-	3.0	648675	4772847	180.0	60 min	-	-	
P1A_Sinkcut_PC_PrimaryScreen	P1A_Sinkcut, PC Primary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648676	4772845	180.0	60 min	-	-	
P1A_Sinkcut_PP_Ldr	P1A_Sinkcut, PP Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648802	4772799	179.5	60 min	60 min	60 min	
P1A_Sinkcut_PP_SecondaryCrush	P1A_Sinkcut, PP Secondary Crusher	115	O	S	U	102.3	108.9	111.7	110.8	109.6	110.5	107.4	104.6	99.0	Point	Hist	-	-	3.0	648791	4772793	180.0	60 min	-	-	
P1A_Sinkcut_PP_SecondaryTertiaryScreen	P1A_Sinkcut, PP Secondary & Tertiary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648793	4772792	180.0	60 min	-	-	
P1A_Sinkcut_PP_TertiaryCrush	P1A_Sinkcut, PP Tertiary Crusher	99	O	S	U	103.4	106.7	97.1	99.9	96.0	92.8	91.3	88.6	83.9	Point	Hist	-	-	3.0	648794	4772790	180.0	60 min	-	-	
P1A_Sinkcut_PP_Trk1	P1A_Sinkcut, PP Idling Truck	96	O	S	U	101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	Point	Hist	-	-	3.0	648804	4772810	180.0	60 min	60 min	60 min	
P1A_Sinkcut_PP_Trk2	P1A_Sinkcut, PP Idling Truck	96	O	S	U	101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	Point	Hist	-	-	3.0	648807	4772811	180.0	60 min	60 min	60 min	
P1A_Sinkcut_WF_Drill	P1A_Sinkcut, WF Drill	110	O	S	U	96.8	101.2	99.3	96.9	102.5	104.3	104.4	102.0	99.5	Point	Hist	-	-	2.5	648631	4772870	179.5	60 min	-	-	
P1AS_Sinkcut_PC_CrusherDump	P1AS_Sinkcut, PC loader dumping into crusher	123	O	S	U	115.4	120.3	122.2	120.0	118.3	118.5	116.6	111.1	102.3	Point	Hist	-	-	3.0	648618	4772517	180.0	30 dumps/hr	-	-	
P1AS_Sinkcut_PC_Ldr	P1AS_Sinkcut, PC Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648618	4772516	179.5	60 min	-	-	
P1AS_Sinkcut_PC_PrimaryCrush	P1AS_Sinkcut, PC Primary Crusher	118	O	S	U	108.9	119.8	115.0	118.7	114.6	112.2	109.6	104.4	99.6	Point	Hist	-	-	3.0	648619	4772520	180.0	60 min	-	-	
P1AS_Sinkcut_PC_PrimaryScreen	P1AS_Sinkcut, PC Primary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648619	4772523	180.0	60 min	-	-	
P1AS_Sinkcut_PP_Ldr	P1AS_Sinkcut, PP Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648705	4772726	179.5	60 min	60 min	60 min	
P1AS_Sinkcut_PP_SecondaryCrush	P1AS_Sinkcut, PP Secondary Crusher	115	O	S	U	102.3	108.9	111.7	110.8	109.6	110.5	107.4	104.6	99.0	Point	Hist	-	-	3.0	648705	4772706	180.0	60 min	-	-	
P1AS_Sinkcut_PP_SecondaryTertiaryScreen	P1AS_Sinkcut, PP Secondary & Tertiary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648705	4772708	180.0	60 min	-	-	
P1AS_Sinkcut_PP_TertiaryCrush	P1AS_Sinkcut, PP Tertiary Crusher	99	O	S	U	103.4	106.7	97.1	99.9	96.0	92.8	91.3	88.6	83.9	Point	Hist	-	-	3.0	648706	4772710	180.0	60 min	-	-	
P1AS_Sinkcut_PP_Trk1	P1AS_Sinkcut, PP Idling Truck	96	O	S	U	101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	Point	Hist	-	-	3.0	648703	4772742	180.0	60 min	60 min	60 min	
P1AS_Sinkcut_PP_Trk2	P1AS_Sinkcut, PP Idling Truck	96	O	S	U	101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	Point	Hist	-	-	3.0	648707	4772743	180.0	60 min	60 min	60 min	
P1AS_Sinkcut_WF_Drill	P1AS_Sinkcut, WF Drill	110	O	S	U	96.8	101.2	99.3	96.9	102.5	104.3	104.4	102.0	99.5	Point	Hist	-	-	2.5	648633	4772485	179.5	60 min	-	-	
P2A_Sinkcut_PC_CrusherDump	P2A_Sinkcut, PC loader dumping into crusher	123	O	S	U	115.4	120.3	122.2	120.0	118.3	118.5	116.6	111.1	102.3	Point	Hist	-	-	3.0	648657	4773006	180.0	30 dumps/hr	-	-	
P2A_Sinkcut_PC_Ldr	P2A_Sinkcut, PC Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648657	4773005	179.5	60 min	-	-	
P2A_Sinkcut_PC_PrimaryCrush	P2A_Sinkcut, PC Primary Crusher	118	O	S	U	108.9	119.8	115.0	118.7	114.6	112.2	109.6	104.4	99.6	Point	Hist	-	-	3.0	648657	4773007	180.0	60 min	-	-	
P2A_Sinkcut_PC_PrimaryScreen	P2A_Sinkcut, PC Primary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648657	4773008	180.0	60 min	-	-	
P2A_Sinkcut_PP_Ldr	P2A_Sinkcut, PP Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648692	4773095	179.5	60 min	60 min	60 min	
P2A_Sinkcut_PP_SecondaryCrush	P2A_Sinkcut, PP Secondary Crusher	115	O	S	U	102.3	108.9	111.7	110.8	109.6	110.5	107.4	104.6	99.0	Point	Hist	-	-	3.0	648685	4773094	180.0	60 min	-	-	
P2A_Sinkcut_PP_SecondaryTertiaryScreen	P2A_Sinkcut, PP Secondary & Tertiary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648685	4773095	180.0	60 min	-	-	
P2A_Sinkcut_PP_TertiaryCrush	P2A_Sinkcut, PP Tertiary Crusher	99	O	S	U	103.4	106.7	97.1	99.9	96.0	92.8	91.3	88.6	83.9	Point	Hist	-	-	3.0	648686	4773095	180.0	60 min	-	-	
P2A_Sinkcut_PP_Trk1	P2A_Sinkcut, PP Idling Truck	96	O	S	U	101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	Point	Hist	-	-	3.0	648698	4773094	180.0	60 min	60 min	60 min	
P2A_Sinkcut_PP_Trk2	P2A_Sinkcut, PP Idling Truck	96	O	S	U	101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	Point	Hist	-	-	3.0	648696	4773094	180.0	60 min	60 min	60 min	
P2A_Sinkcut_WF_Drill	P2A_Sinkcut, WF Drill	110	O	S	U	96.8	101.2	99.3	96.9	102.5	104.3	104.4	102.0	99.5	Point	Hist	-	-	2.5	648630	4773018	179.5	60 min	-	-	
P3A_PC_CrusherDump	P3A_PC loader dumping into crusher	123	O	S	U	115.4	120.3	122.2	120.0	118.3	118.5	116.6	111.1	102.3	Point	Hist	-	-	3.0	648874	4773392	164.0	60 dumps/hr	-	-	
P3A_PC_Ldr	P3A_PC Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648872	4773395	163.5	60 min	-	-	
P3A_PC_PrimaryCrush	P3A_PC Primary Crusher	118	O	S	U	108.9	119.8	115.0	118.7	114.6	112.2	109.6	104.4	99.6	Point	Hist	-	-	3.0	648875	4773391	164.0	60 min	-	-	
P3A_PC_PrimaryScreen	P3A_PC Primary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648875	4773391	164.0	60 min	-	-	
P3A_PP_Ldr	P3A_PP Loader	106	O	S	U	102.4	111.2	104.7	101.4	99.9	99.2	97.5	97.7	98.5	Point	Hist	-	-	2.5	648708	4773140	147.5	60 min	60 min	60 min	
P3A_PP_SecondaryCrush1	P3A_PP Secondary Crusher	115	O	S	U	102.3	108.9	111.7	110.8	109.6	110.5	107.4	104.6	99.0	Point	Hist	-	-	3.0	648709	4773151	148.0	60 min	-	-	
P3A_PP_SecondaryCrush2	P3A_PP Secondary Crusher	115	O	S	U	102.3	108.9	111.7	110.8	109.6	110.5	107.4	104.6	99.0	Point	Hist	-	-	3.0	648710	4773151	148.0	60 min	-	-	
P3A_PP_SecondaryTertiaryScreen1	P3A_PP Secondary & Tertiary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648710	4773149	148.0	60 min	-	-	
P3A_PP_SecondaryTertiaryScreen2	P3A_PP Secondary & Tertiary Screen	114	O	S	U	111.4	113.6	111.5	111.1	110.9	106.9	106.5	105.2	101.7	Point	Hist	-	-	3.0	648710	4773149	148.0	60 min	-	-	

**Table 1: Noise Source Summary - Proposed Extraction Scenario**

Upper's Quarry, 1603157

Notes to Table:

1. Wherever possible, the Source ID matches the identifiers used in the ESDM report.
  2. Sound Power Level of Source, in dBA, not including sound characteristic adjustments per NPC-104.
  3. Source Location: O = Outside of building, including the roof, I = Inside of building.
  4. Sound Characteristic, per NPC-104:  
 - S = Steady  
 - Q = Quasi-Steady Impulsive  
 - I = Impulsive  
 - B = Buzzing  
 - T = Tonal  
 - C = Cyclic
  5. Noise control measures currently in place or specified in construction drawings:  
 - S = Silencer/Muffler  
 - A = Acoustic lining, plenum  
 - B = Barrier/Berm  
 - L = Lagging  
 - E = Acoustic enclosure  
 - O = Other  
 - U = Uncontrolled
- Where noise control measures are specified in construction drawings or were found on existing equipment, octave band sound power levels include the effects of the noise control measures. Noise control measures recommended in the mitigation section of this report are not included in this table.

**Table 1: Additional Data**

Upper's Quarry, 1603157

6. Source type indicates Cadna/A modelling methodology. For Point, Line, and Area sources, PWLs represent the overall level for the entire source. Where source type is Mobile Equipment, the source is modelled as a moving point source, and PWL is calculated from a single-vehicle passby.
7. Sound Power Level Data Source:  
 - Man = Manufacturer's Data  
 - Mea = Measured Directly  
 - Hist = Historical Data on File at RWDI  
 - EC = Engineering Calc based on specifications  
 - Same ### = same type as source no. ###
8. For loader dumping into primary crusher, it is assumed each dump takes approximately 10s

Source ID <sup>[1]</sup>	Source Description	Sound Power Level <sup>[2]</sup>	Source Location <sup>[3]</sup>	Sound Characteristics <sup>[4]</sup>	Noise Control Measures <sup>[5]</sup>
		(dBA)	(I or O)	(S,Q,I,B,T,C)	(S,A,B,L,E,O,U)
ASPH_comp	Asphalt Plant - Compressor Vent	96	O	S	U
ASPH_DC_m	Asphalt Plant - Dust Collector Blower (motor)	105	O	S	U
ASPH_DC_s	Asphalt Plant - Dust Collector Blower (stack)	110	O	S	U
ASPH_elev	Asphalt Plant - Elevator Motor	100	O	S	U
ASPH_IDLE_TRK1	Asphalt Plant - Idling Truck	96	O	S	U
ASPH_IDLE_TRK2	Asphalt Plant - Idling Truck	96	O	S	U
ASPH_imp_silo	Asphalt Plant - Silo - Impulsive	127	O	I	U
ASPH_Ldr_Act1	Asphalt Plant - Loader Activity	102	O	S	U
ASPH_Ldr_Act2	Asphalt Plant - Loader Activity	102	O	S	U
ASPH_motor	Asphalt Plant - Conveyor motor, gravel hitting metal plate	107	O	S	U
ASPH_oven	Asphalt Plant - Oven Motor	102	O	S	U
ASPH_pugdoor	Asphalt Plant - Pug Mill door (pressure relief noise)	107	O	S	U
ASPH_pugmill	Asphalt Plant - Pug Mill Motor	105	O	S	U

1/1 Octave Band Sound Power Level Data if available (dB)									
31.5	63	125	250	500	1000	2000	4000	8000	
91.4	88.5	99.4	96.2	93.0	90.2	87.4	84.9	81.3	
110.8	113.6	105.4	104.1	102.2	99.8	94.9	93.4	91.5	
125.3	126.2	117.0	110.0	105.8	103.5	98.5	93.6	86.1	
95.7	97.7	95.1	95.2	97.8	95.5	91.5	87.3	77.2	
101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	
101.7	98.9	94.6	90.2	90.5	92.8	90.1	81.6	73.8	
122.0	127.9	114.5	107.6	106.6	108.5	117.9	122.3	123.2	
103.6	109.2	104.1	99.2	97.3	95.8	94.2	93.1	88.0	
103.6	109.2	104.1	99.2	97.3	95.8	94.2	93.1	88.0	
100.5	102.5	94.2	95.5	98.9	103.0	102.0	95.1	91.4	
111.4	110.7	104.0	100.1	98.3	97.8	93.9	91.9	89.9	
114.6	112.8	109.9	106.3	105.2	101.2	96.8	94.9	93.4	
0.0	105.0	104.6	100.8	94.8	94.7	96.6	99.5	99.3	

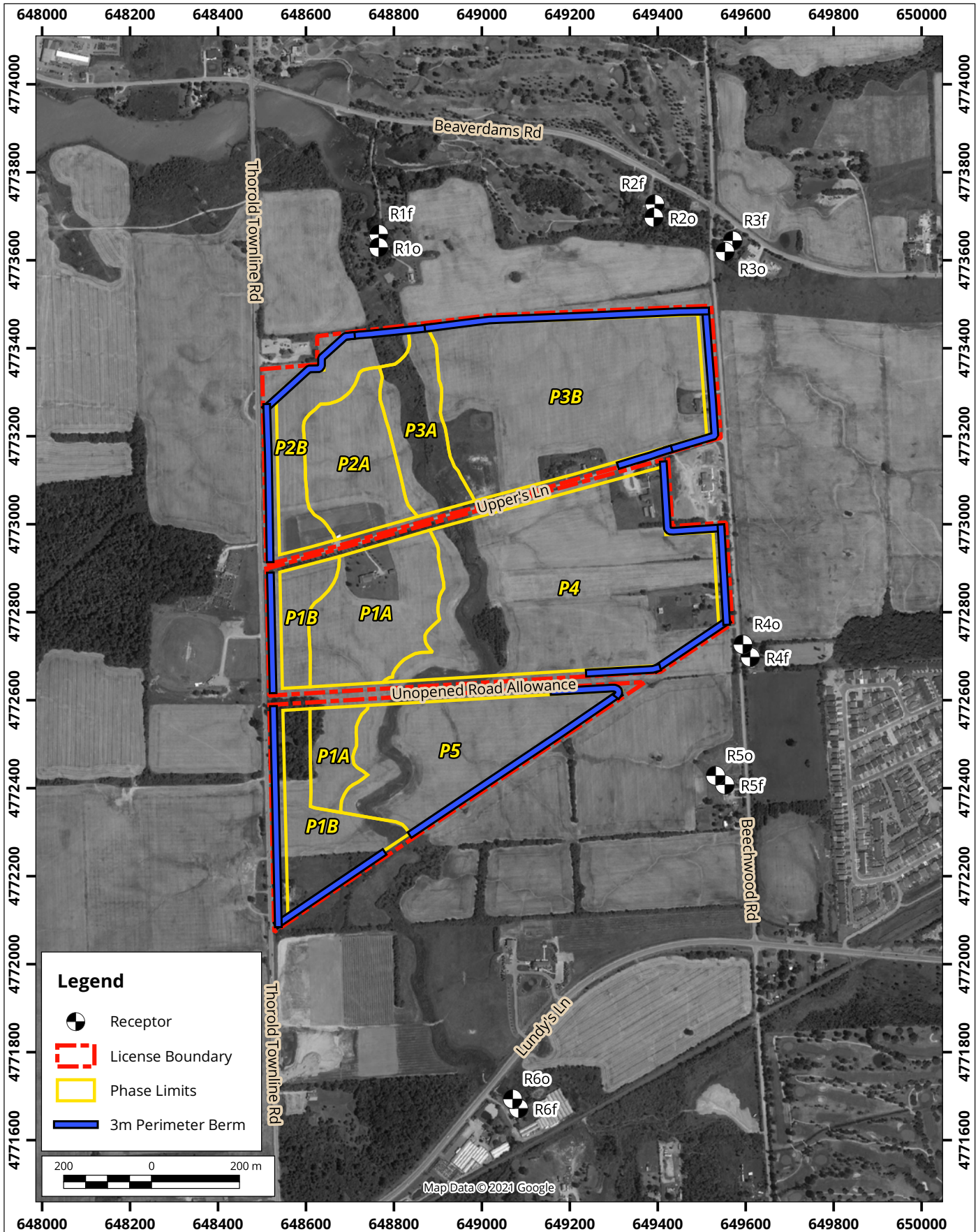
Source Type <sup>[6]</sup>	PWL Data Source <sup>[7]</sup>	Height Above Roof (m)	Local Roof Height Ab. Grade (m)	Height Above Grade (m)	Source Co-ordinates for point sources (m)			Operating Time during Worst-case hour for Point Sources, <sup>[8]</sup> OR Vehicle Passby per Hour & Speed for Line Sources		
		(m)	(m)	(m)	X	Y	Z	Daytime	Evening	Nighttime
Point	Hist	-	-	0.6	648875	4772829	143.6	60 min	60 min	60 min
Point	Hist	-	-	2.0	648856	4772826	145.0	60 min	60 min	60 min
Point	Hist	0.1	20.0	20.1	648855	4772826	163.1	60 min	60 min	60 min
Point	Hist	-	-	19.0	648861	4772835	162.0	60 min	60 min	60 min
Point	Hist	-	-	3.5	648880	4772826	146.5	60 min	60 min	60 min
Point	Hist	-	-	3.5	648880	4772825	146.5	60 min	60 min	60 min
Point	Hist	1.0	21.0	22.0	648888	4772842	165.0	60 min	60 min	60 min
Point	Hist	-	-	2.5	648870	4772830	145.5	60 min	60 min	60 min
Point	Hist	-	-	2.5	648864	4772827	145.5	60 min	60 min	60 min
Point	Hist	-	-	4.0	648854	4772834	147.0	60 min	60 min	60 min
Point	Hist	-	-	5.8	648858	4772832	148.8	60 min	60 min	60 min
Point	Hist	-	-	4.0	648863	4772834	147.0	60 min	60 min	60 min
Point	Hist	-	-	5.0	648870	4772837	148.0	60 min	60 min	60 min

**Line Sources**

P1A_Sinkcut_Conveyor	P1A_Sinkcut, Conveyor	83	O	S	U
P1A_Sinkcut_RD_SHP_Aggr_Em	P1A_Sinkcut, Aggregate Shipping from PP, Empty	104	O	S	U
P1A_Sinkcut_RD_SHP_Aggr_Fu	P1A_Sinkcut, Aggregate Shipping from PP, Full	104	O	S	U
P1AS_Sinkcut_Conveyor	P1AS_Sinkcut, Conveyor	83	O	S	U
P1AS_Sinkcut_RD_SHP_Aggr_Em	P1AS_Sinkcut, Aggregate Shipping from PP, Empty	104	O	S	U
P1AS_Sinkcut_RD_SHP_Aggr_Fu	P1AS_Sinkcut, Aggregate Shipping from PP, Full	104	O	S	U
P2A_Sinkcut_Conveyor	P2A_Sinkcut, Conveyor	83	O	S	U
P2A_Sinkcut_RD_SHP_Aggr_Em	P2A_Sinkcut, Aggregate Shipping from PP, Empty	104	O	S	U
P2A_Sinkcut_RD_SHP_Aggr_Fu	P2A_Sinkcut, Aggregate Shipping from PP, Full	104	O	S	U
P3A_Conveyor	P3A, Conveyor	83	O	S	U
P3A_RD_Haul_PP_AP_Em	P3A, Aggregate Haul road b/w PP and AP, Empty	108	O	S	U
P3A_RD_Haul_PP_AP_Fu	P3A, Aggregate Haul road b/w PP and AP, Full	112	O	S	U
P3A_RD_SHP_Aggr_Em	P3A, Aggregate Shipping from PP, Empty	104	O	S	U
P3A_RD_SHP_Aggr_Fu	P3A, Aggregate Shipping from PP, Full	104	O	S	U
P3B_NE_Conveyor	P3B_NE, Conveyor	83	O	S	U
P3B_NE_RD_Haul_PP_AP_Em	P3B_NE, Aggregate Haul road b/w PP and AP, Empty	108	O	S	U
P3B_NE_RD_Haul_PP_AP_Fu	P3B_NE, Aggregate Haul road b/w PP and AP, Full	112	O	S	U
P3B_NE_RD_SHP_Aggr_Em	P3B_NE, Aggregate Shipping from PP, Empty	104	O	S	U
P3B_NE_RD_SHP_Aggr_Fu	P3B_NE, Aggregate Shipping from PP, Full	104	O	S	U
P4_SE_Conveyor	P4_SE, Conveyor	83	O	S	U
P4_SE_RD_Haul_PP_AP_Em	P4_SE, Aggregate Haul road b/w PP and AP, Empty	108	O	S	U
P4_SE_RD_Haul_PP_AP_Fu	P4_SE, Aggregate Haul road b/w PP and AP, Full	112	O	S	U
P4_SE_RD_SHP_Aggr_Em	P4_SE, Aggregate Shipping from PP, Empty	104	O	S	U
P4_SE_RD_SHP_Aggr_Fu	P4_SE, Aggregate Shipping from PP, Full	104	O	S	U
P5_E_Conveyor	P5_E, Conveyor	83	O	S	U
P5_E_RD_Haul_PP_AP_Em	P5_E, Aggregate Haul road b/w PP and AP, Empty	108	O	S	U
P5_E_RD_Haul_PP_AP_Fu	P5_E, Aggregate Haul road b/w PP and AP, Full	112	O	S	U
P5_E_RD_SHP_Aggr_Em	P5_E, Aggregate Shipping from PP, Empty	104	O	S	U
P5_E_RD_SHP_Aggr_Fu	P5_E, Aggregate Shipping from PP, Full	104	O	S	U
AP_RD_SHP_AC_RAP_Em	AP, AC and RAP shipped from Offsite, Empty	104	O	S	U
AP_RD_SHP_AC_RAP_Fu	AP, AC and RAP shipped from Offsite, Full	104	O	S	U
AP_RD_SHP_HMA_Em	AP, HMA product shipping, Empty	104	O	S	U
AP_RD_SHP_HMA_Fu	AP, HMA product shipping, Full	104	O	S	U

74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
110.2	113.9	109.7	105.1	104.6	102.7	101.6	92.5	89.4
108.8	108.3	109.9	109.0	106.2	108.2	104.3	98.4	94.8
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
110.2	113.9	109.7	105.1	104.6	102.7	101.6	92.5	89.4
108.8	108.3	109.9	109.0	106.2	108.2	104.3	98.4	94.8
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
110.2	113.9	109.7	105.1	104.6	102.7	101.6	92.5	89.4
108.8	108.3	109.9	109.0	106.2	108.2	104.3	98.4	94.8
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
110.2	113.9	109.7	105.1	104.6	102.7	101.6	92.5	89.4
108.8	108.3	109.9	109.0	106.2	108.2	104.3	98.4	94.8
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
74.5	75.5	79.0	77.3	78.8	79.2	75.6	69.1	58.5
110.2	113.9	109.7	105.1	104.6	102.7	101.6	92.5	89.4
108.8	108.3	109.9	109.0	106.2	108.2	104.3	98.4	94.8
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6
107.7	110.2	108.3	99.9	99.4	98.6	96.7	93.6	91.6

Line	Hist	-	-	3.5	-	-	-	60 min	-	-
Line	Hist	-	-	3.5	-	-	-	4/hr, 20kph	4/hr, 20kph	4/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	4/hr, 20kph	4/hr, 20kph	4/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	60 min	-	-
Line	Hist	-	-	3.5	-	-	-	4/hr, 20kph	4/hr, 20kph	4/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	4/hr, 20kph	4/hr, 20kph	4/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	60 min	-	-
Line	Hist	-	-	3.5	-	-	-	4/hr, 20kph	4/hr, 20kph	4/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	60 min	-	-
Line	Hist	-	-	3.5	-	-	-	4/hr, 20kph	4/hr, 20kph	4/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	60 min	-	-
Line	Hist	-	-	3.5	-	-	-	3/hr, 20kph	3/hr, 20kph	3/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	3/hr, 20kph	3/hr, 20kph	3/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	12/hr, 20kph	12/hr, 20kph	12/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	12/hr, 20kph	12/hr, 20kph	12/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	60 min	-	-
Line	Hist	-	-	3.5	-	-	-	3/hr, 20kph	3/hr, 20kph	3/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	3/hr, 20kph	3/hr, 20kph	3/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	12/hr, 20kph	12/hr, 20kph	12/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	12/hr, 20kph	12/hr, 20kph	12/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	60 min	-	-
Line	Hist	-	-	3.5	-	-	-	3/hr, 20kph	3/hr, 20kph	3/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	3/hr, 20kph	3/hr, 20kph	3/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	12/hr, 20kph	12/hr, 20kph	12/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	12/hr, 20kph	12/hr, 20kph	12/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	6/hr, 20kph	6/hr, 20kph	6/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	6/hr, 20kph	6/hr, 20kph	6/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	6/hr, 20kph	6/hr, 20kph	6/hr, 20kph
Line	Hist	-	-	3.5	-	-	-	6/hr, 20kph	6/hr, 20kph	6/hr, 20kph



## Site Overview and Sensitive Receptor Locations Proposed Extraction Scenario

True North



Drawn by: RNL | Figure: 1

Approx. Scale: 1:12000

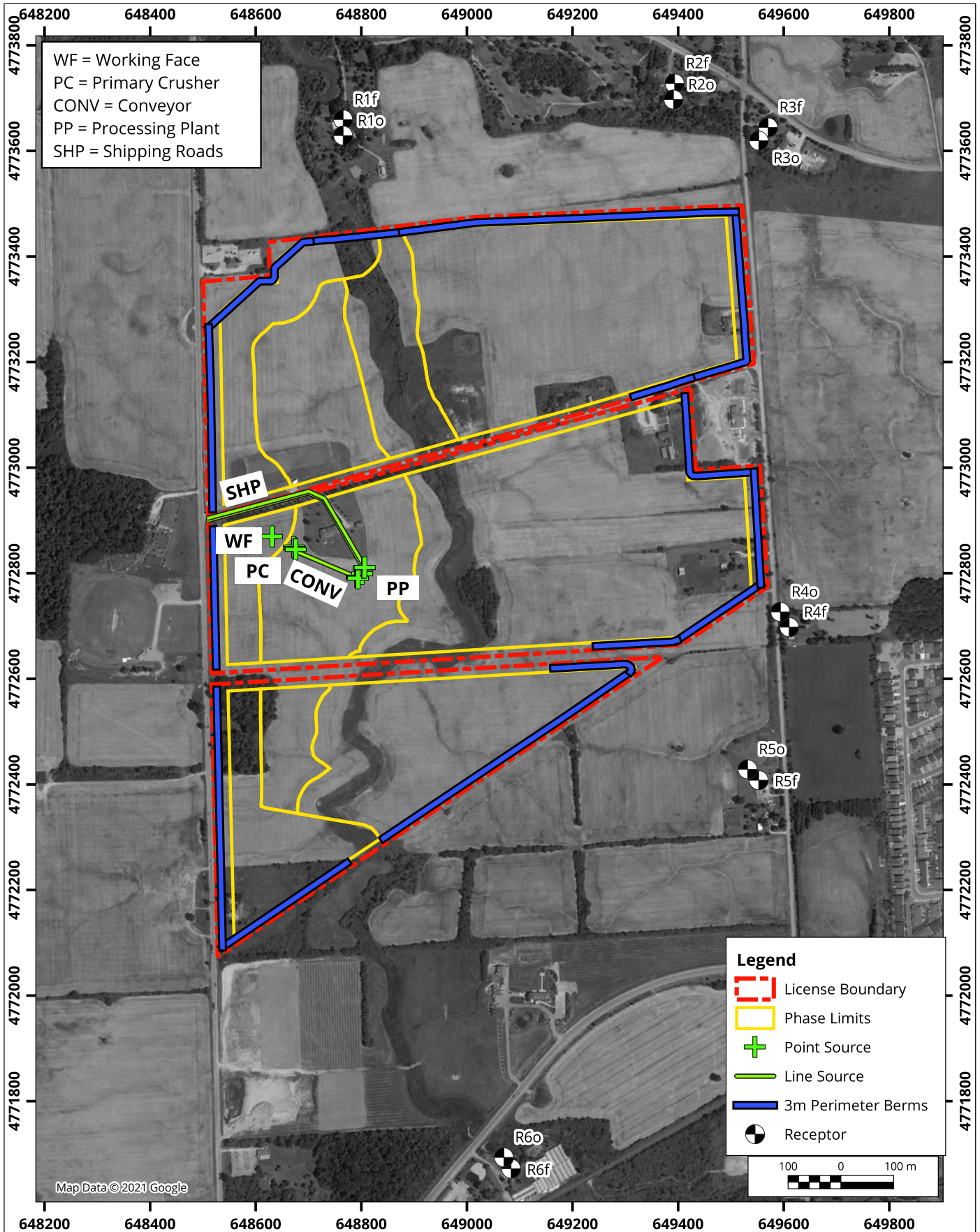
Date Revised: Sep 22, 2021



Map Projection: NAD 1983 UTM Zone 17N

Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

Project #: 1603157



# Proposed Phase 1A Sinking Cut Operation Overview

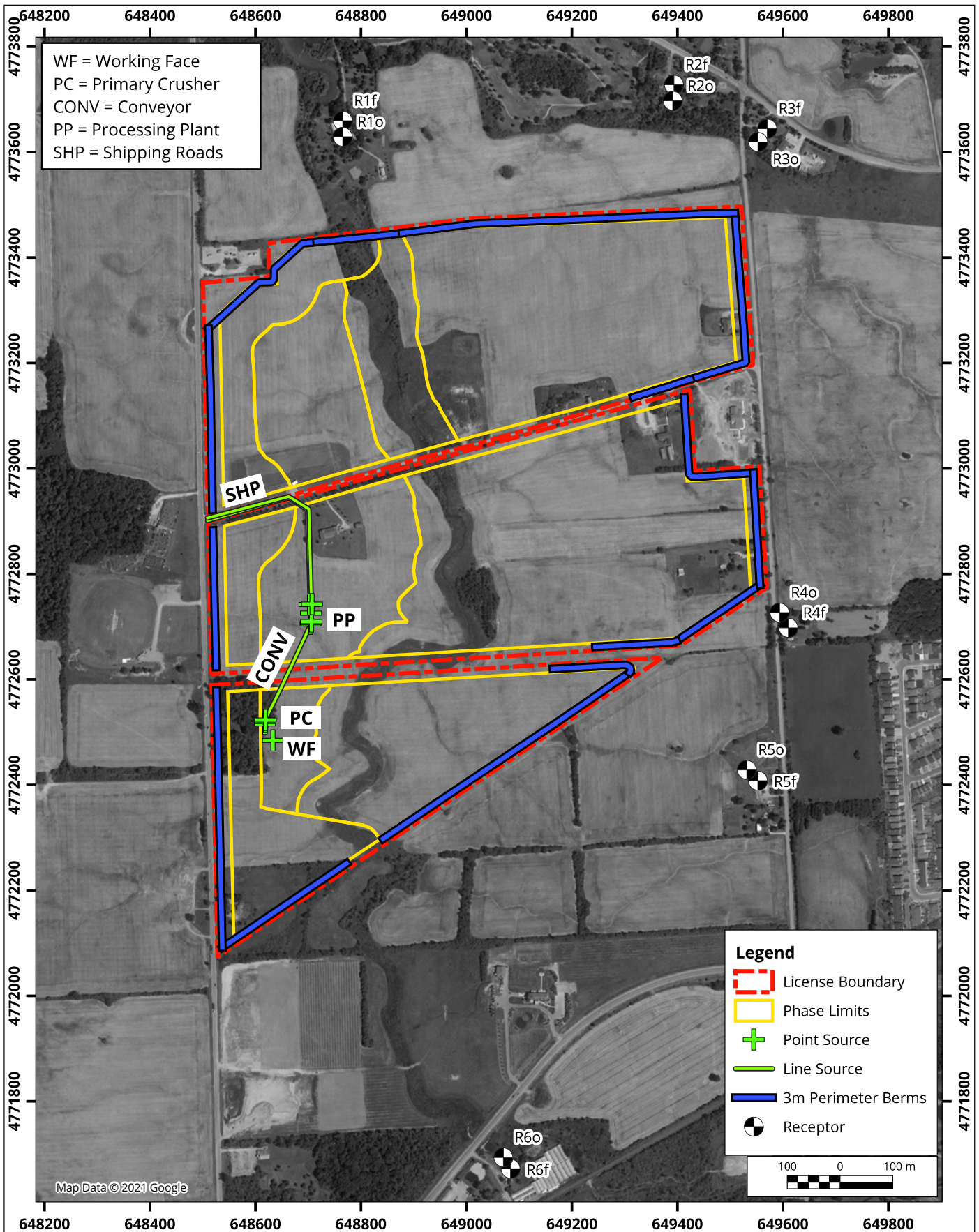
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: DJK	Figure: 2a
Approx. Scale: 1:10,000	
Date Revised: Jul 13, 2023	





# Proposed Phase 1A South Sinking Cut Operation Overview

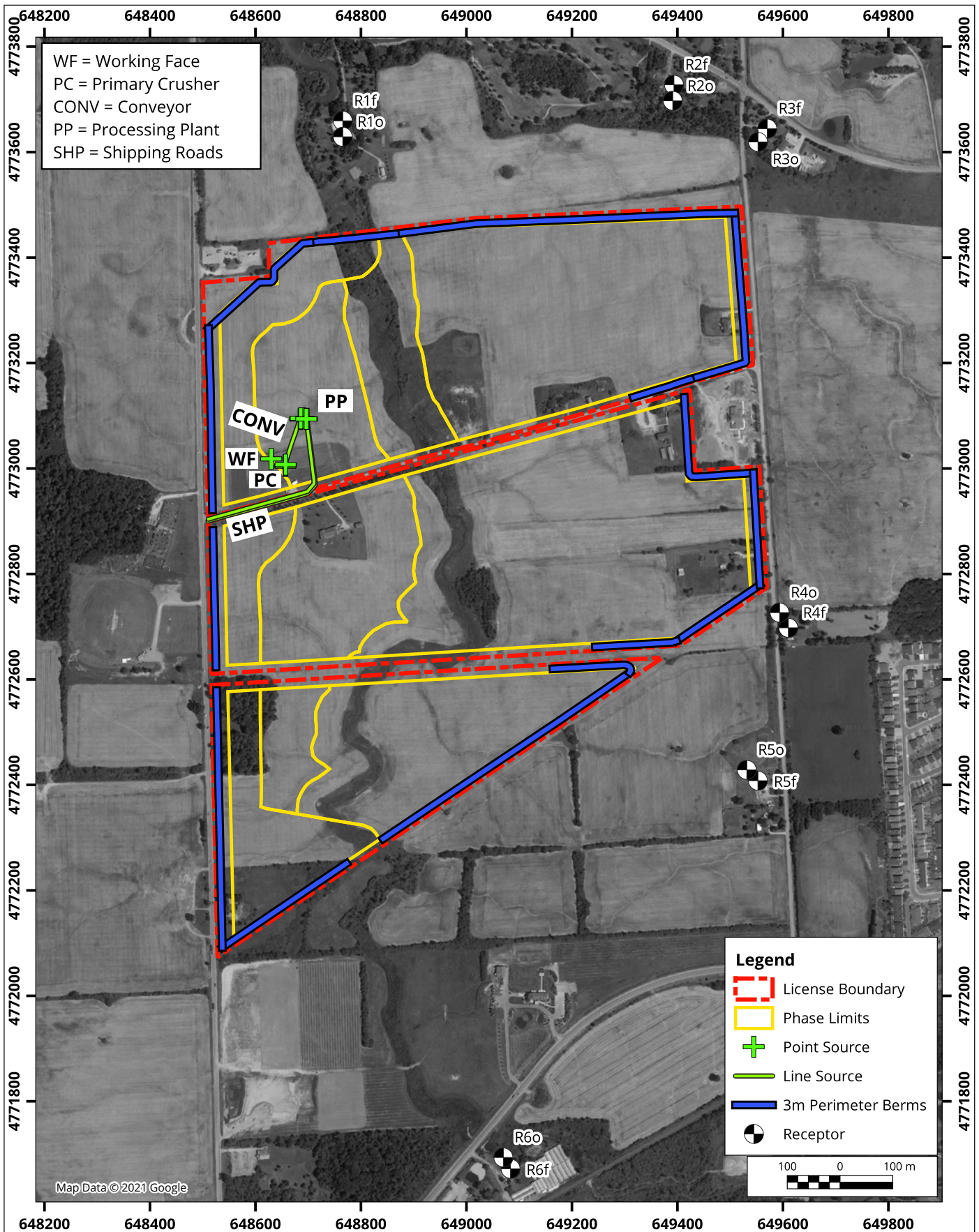
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: DJK	Figure: 2b
Approx. Scale: 1:10,000	
Date Revised: Jul 13, 2023	





# Proposed Phase 2A Sinking Cut Operation Overview

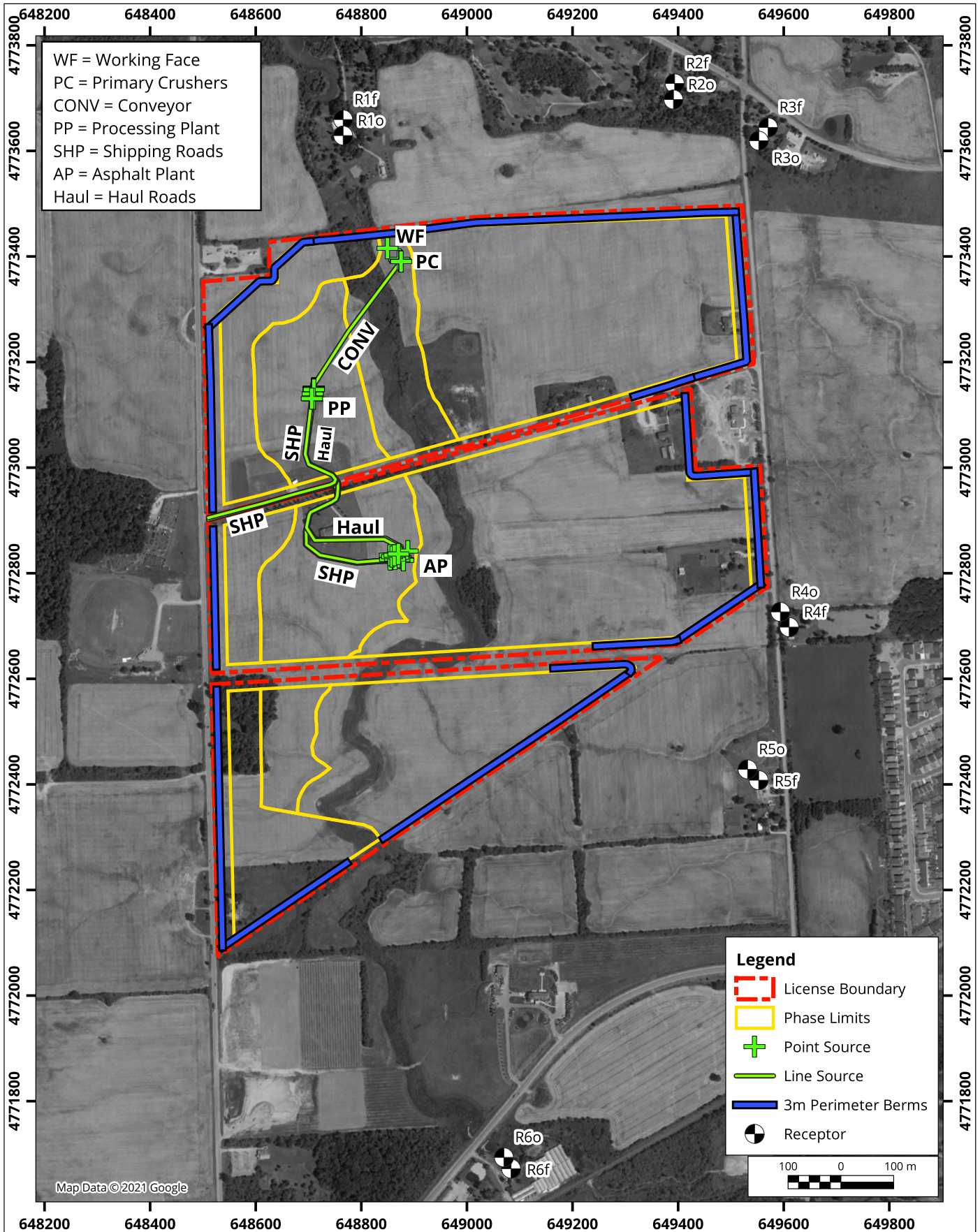
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: DJK	Figure: 2c
Approx. Scale: 1:10,000	
Date Revised: Jul 13, 2023	





# Proposed Phase 3A Operation Overview

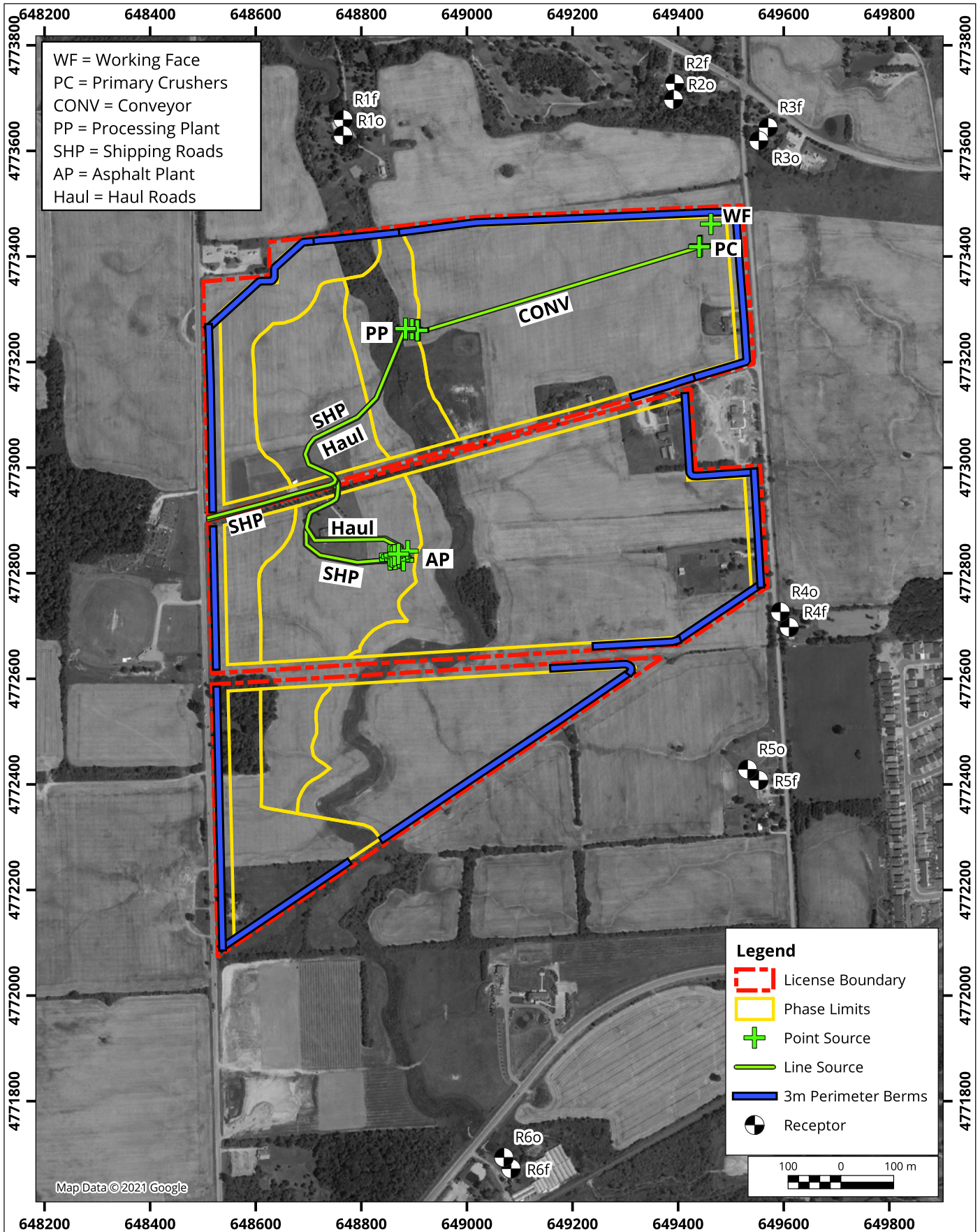
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: DJK	Figure: 2d
Approx. Scale: 1:10,000	
Date Revised: Jul 13, 2023	





## Proposed Phase 3B Northeast Operation Overview

Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

True North



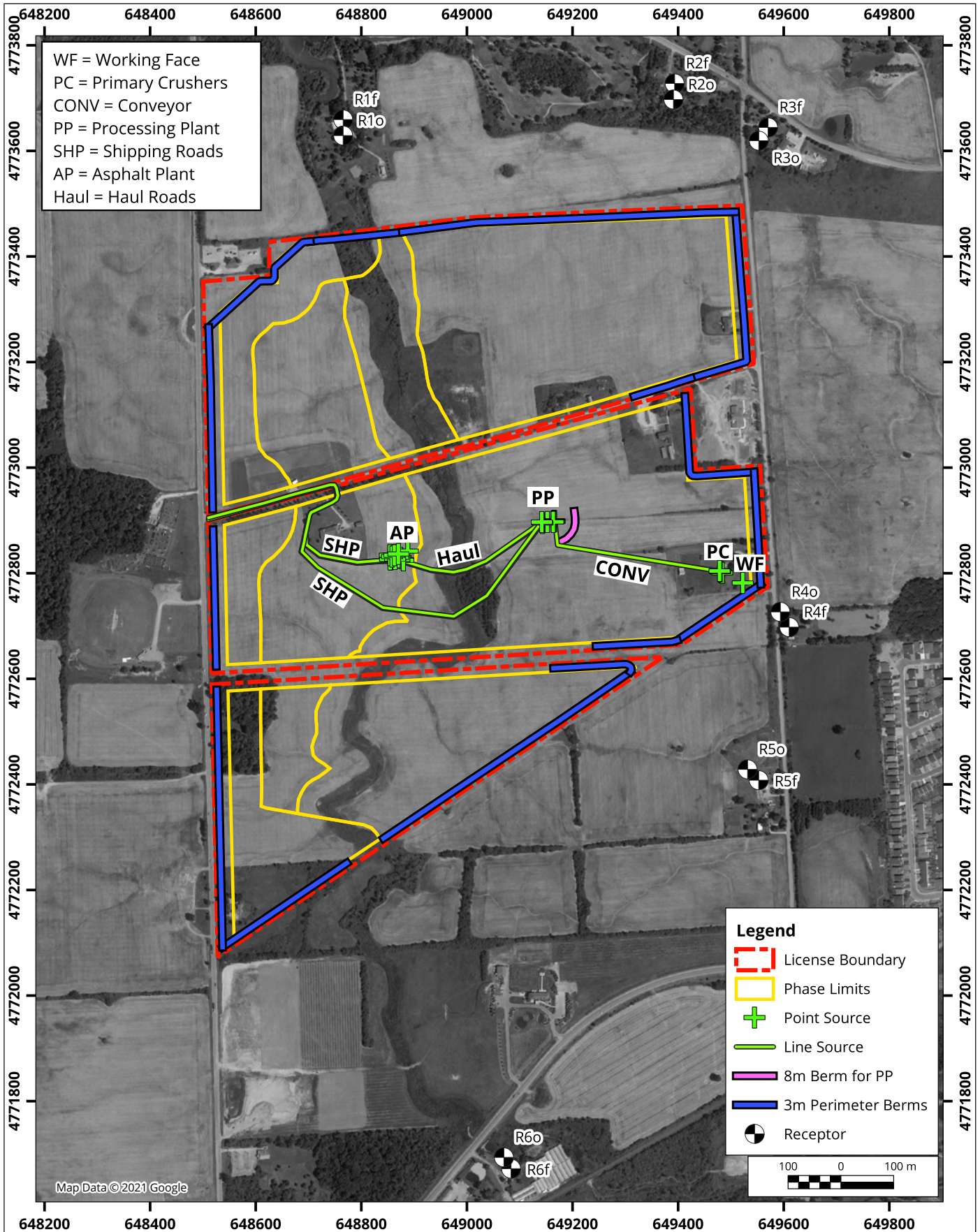
Drawn by: DJK | Figure: 2e

Approx. Scale: 1:10,000

Date Revised: Jul 13, 2023

Project #: 1603157





## Proposed Phase 4 Southeast Operation Overview

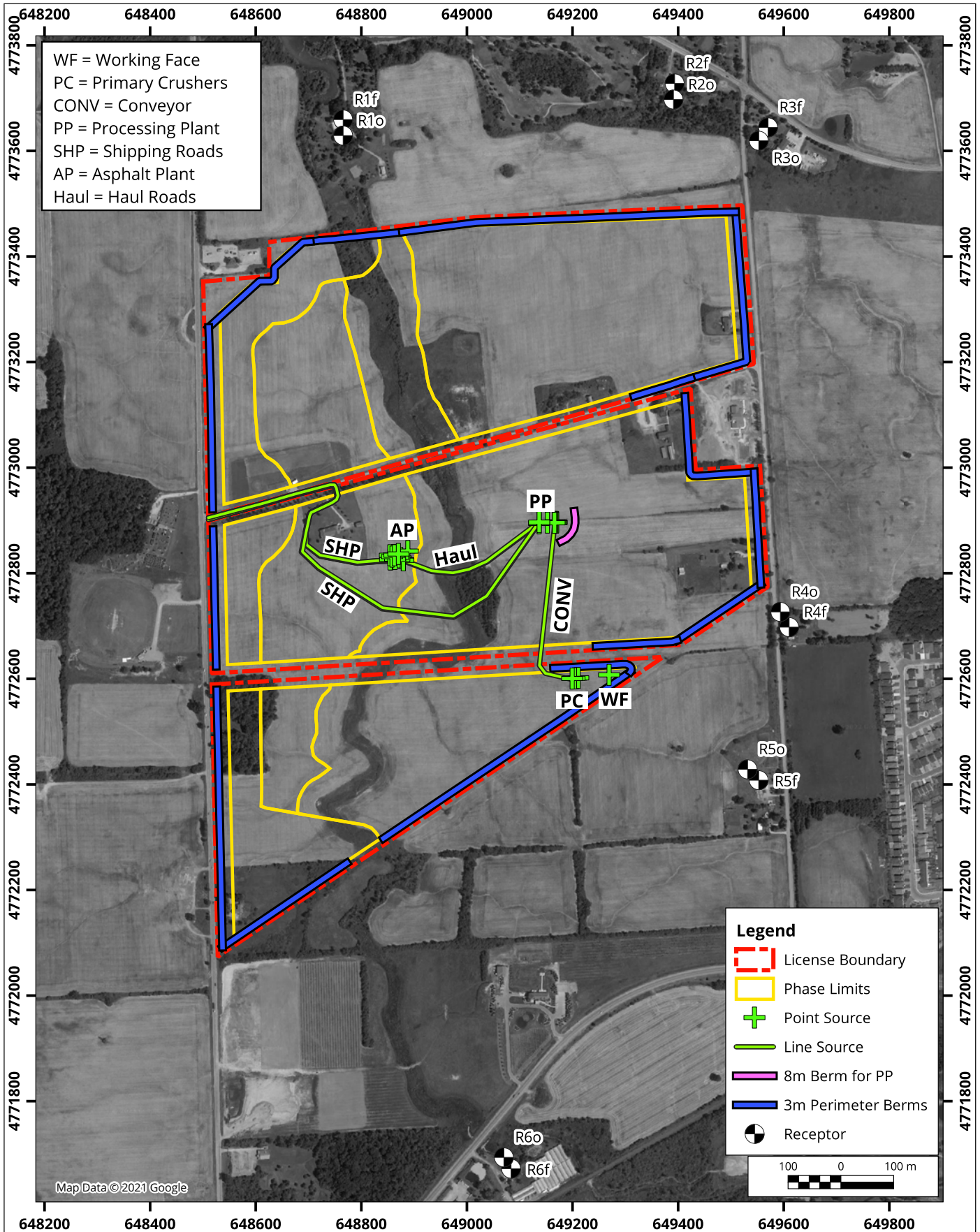
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: DJK	Figure: 2f
Approx. Scale: 1:10,000	
Date Revised: Jul 13, 2023	





## Proposed Phase 5 East Operation Overview

Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

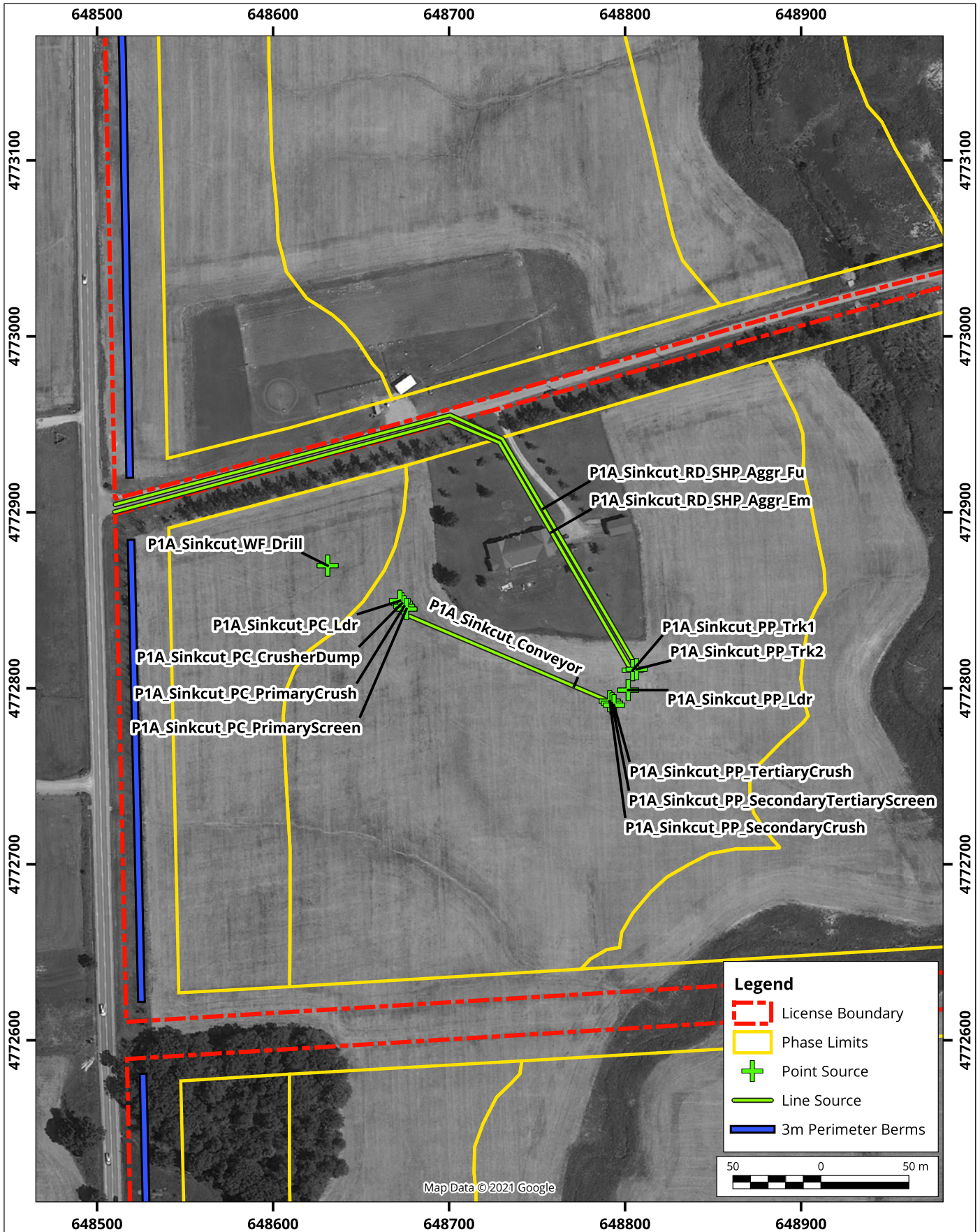
True North



Drawn by: DJK	Figure: 2g
Approx. Scale: 1:10,000	
Date Revised: Jul 13, 2023	

Project #: 1603157





## Significant Source Locations (Detailed Example) Proposed Phase 1A Sinking Cut

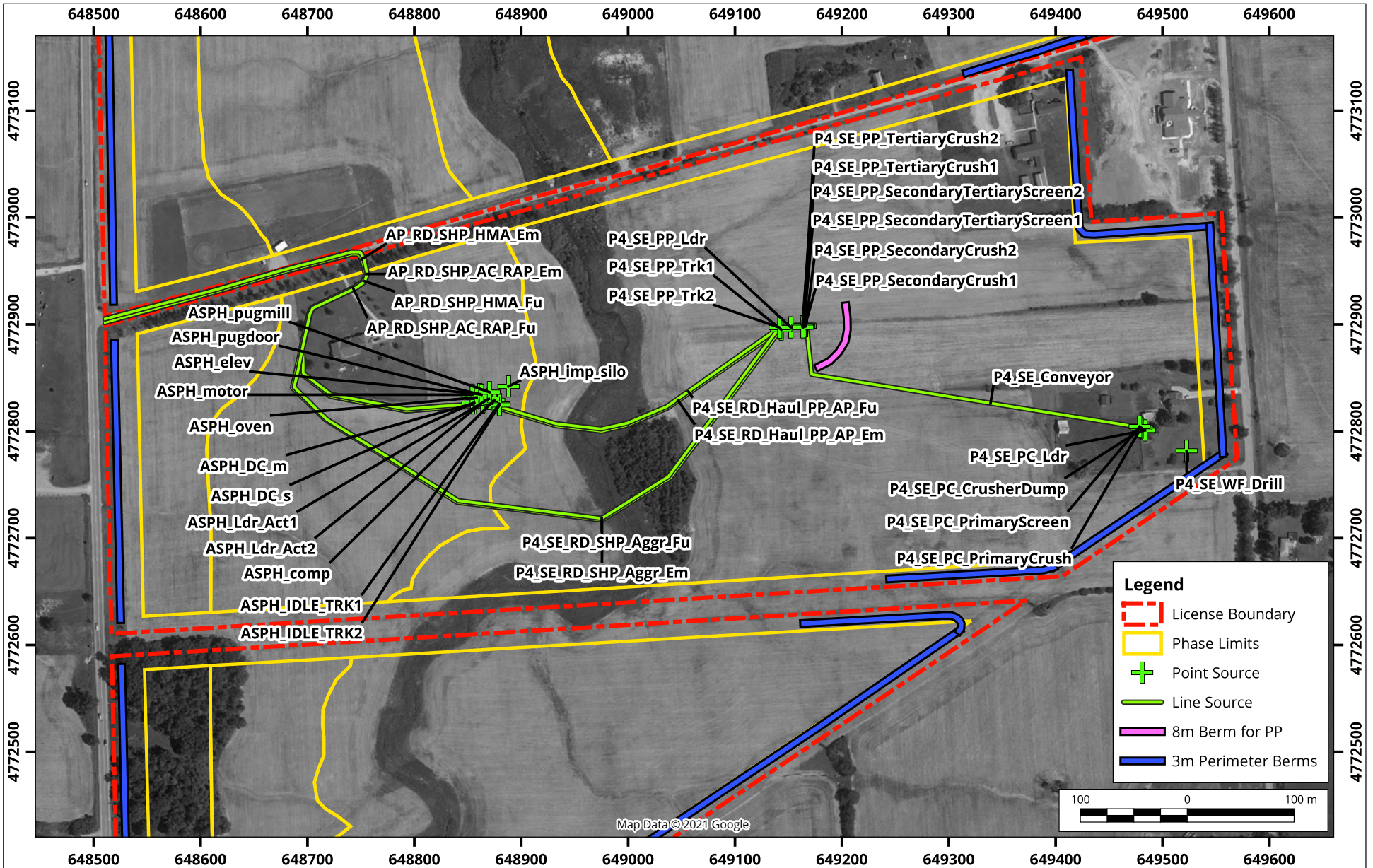
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

Project #: 1603157



Drawn by: DJK	Figure: 2h
Approx. Scale: 1:3,000	
Date Revised: Jul 13, 2023	





## Significant Source Locations (Detailed Example) Proposed Phase 4 Southeast

Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

True North



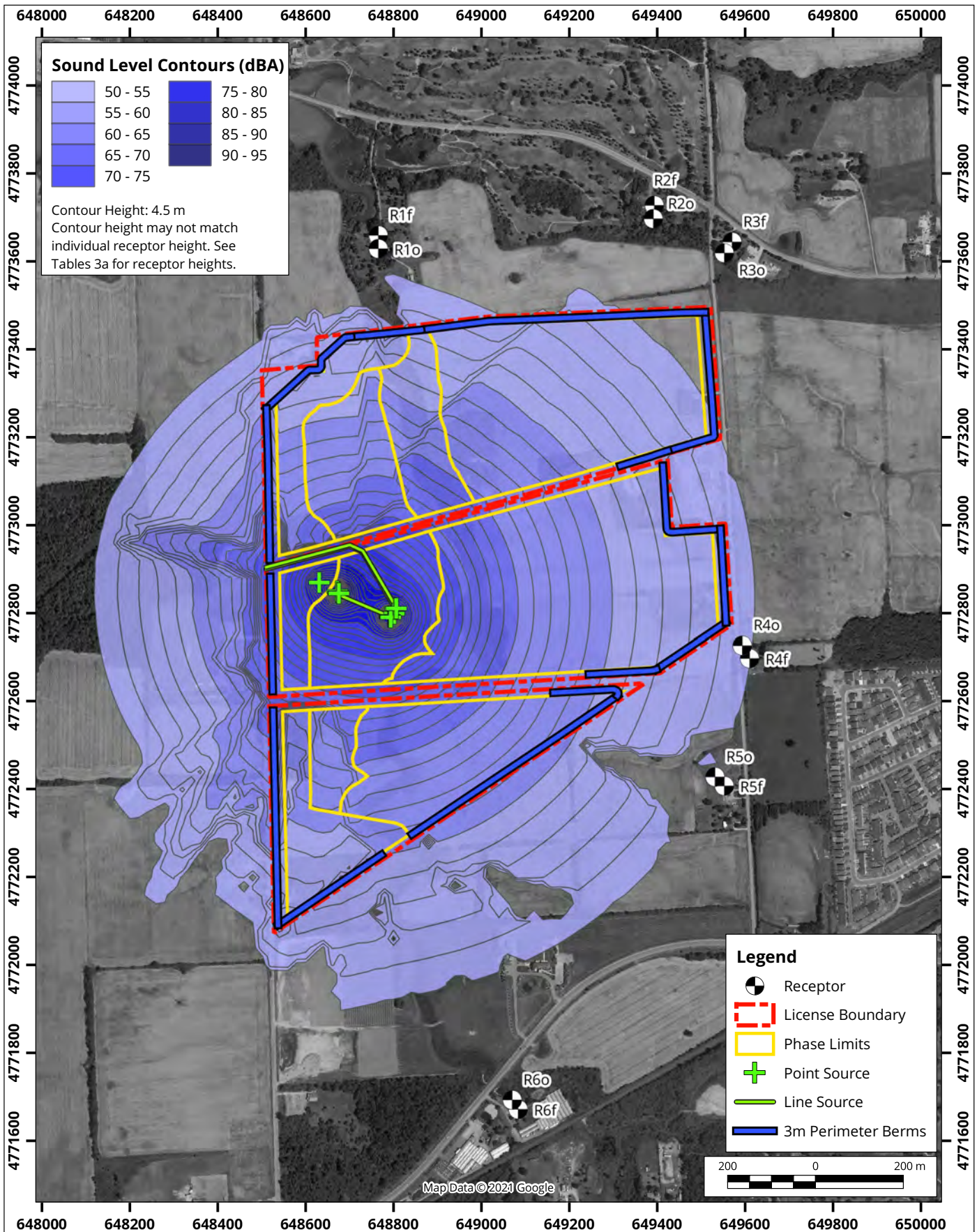
Drawn by: DJK | Figure: 2i

Approx. Scale: 1:5,000

Date Revised: Jul 13, 2023


Project #: 1603157





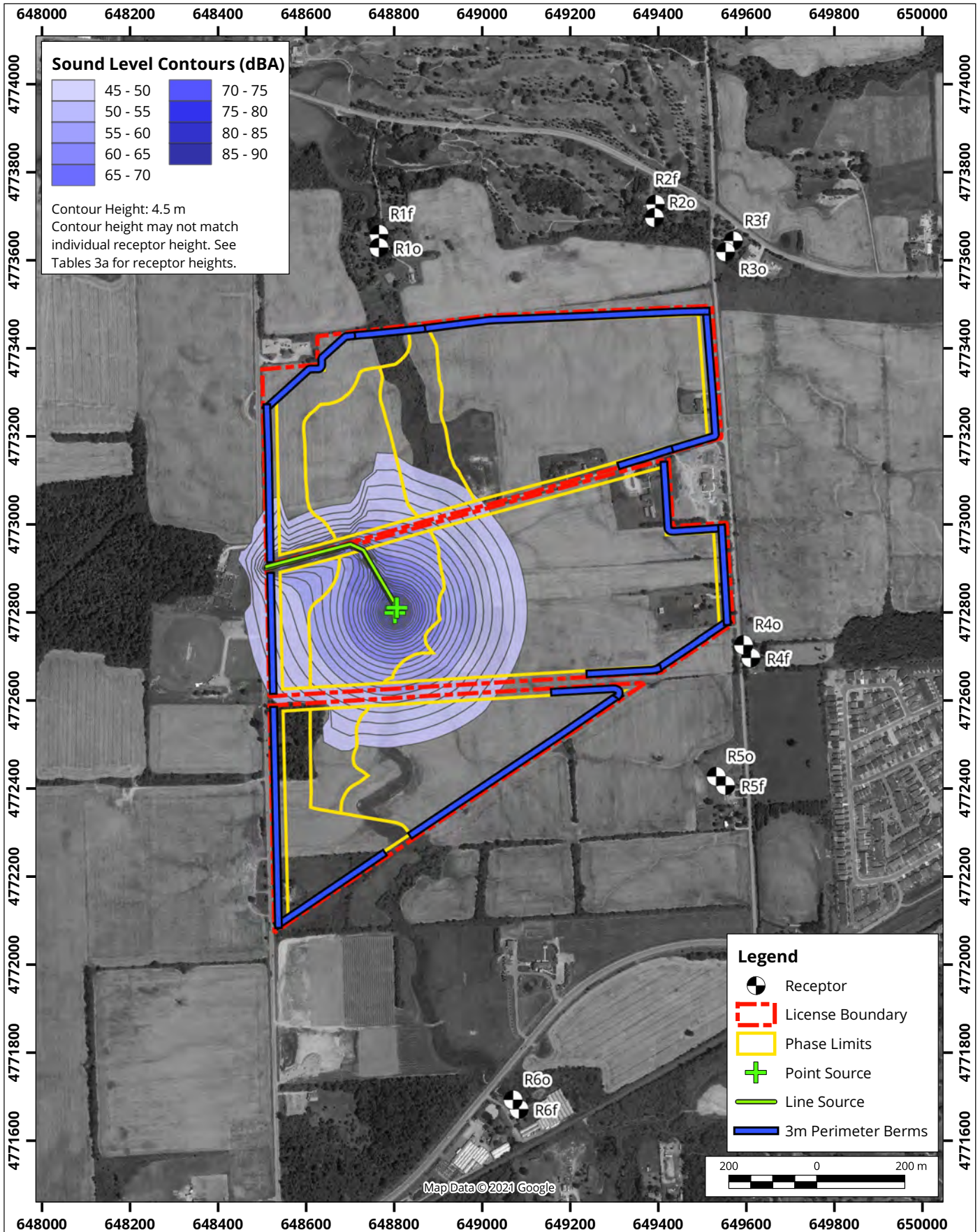
# Sound Level Contours Proposed Phase 1A Sinking Cut, Daytime

Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

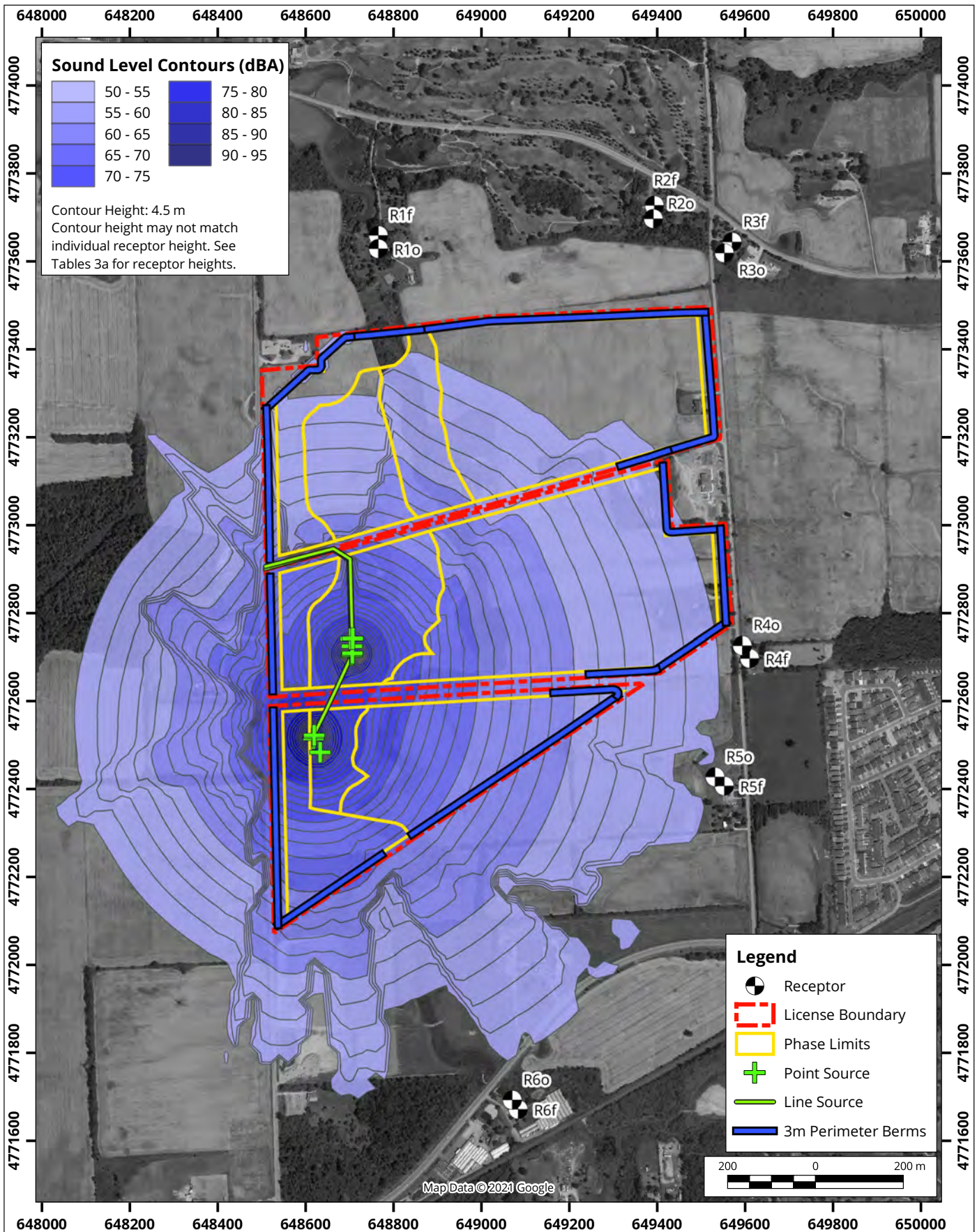
True North  
  
 Project #: 1603157

Drawn by: RNL	Figure: 3a
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	






<b>Sound Level Contours</b> <b>Proposed Phase 1A Sinking Cut, Evening/Nighttime</b> Map Projection: NAD 1983 UTM Zone 17N Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario	True North 	Drawn by: RNL   Figure: 3b	
		Approx. Scale: 1:12000	
		Date Revised: Sep 22, 2021	
Project #: 1603157			



# Sound Level Contours

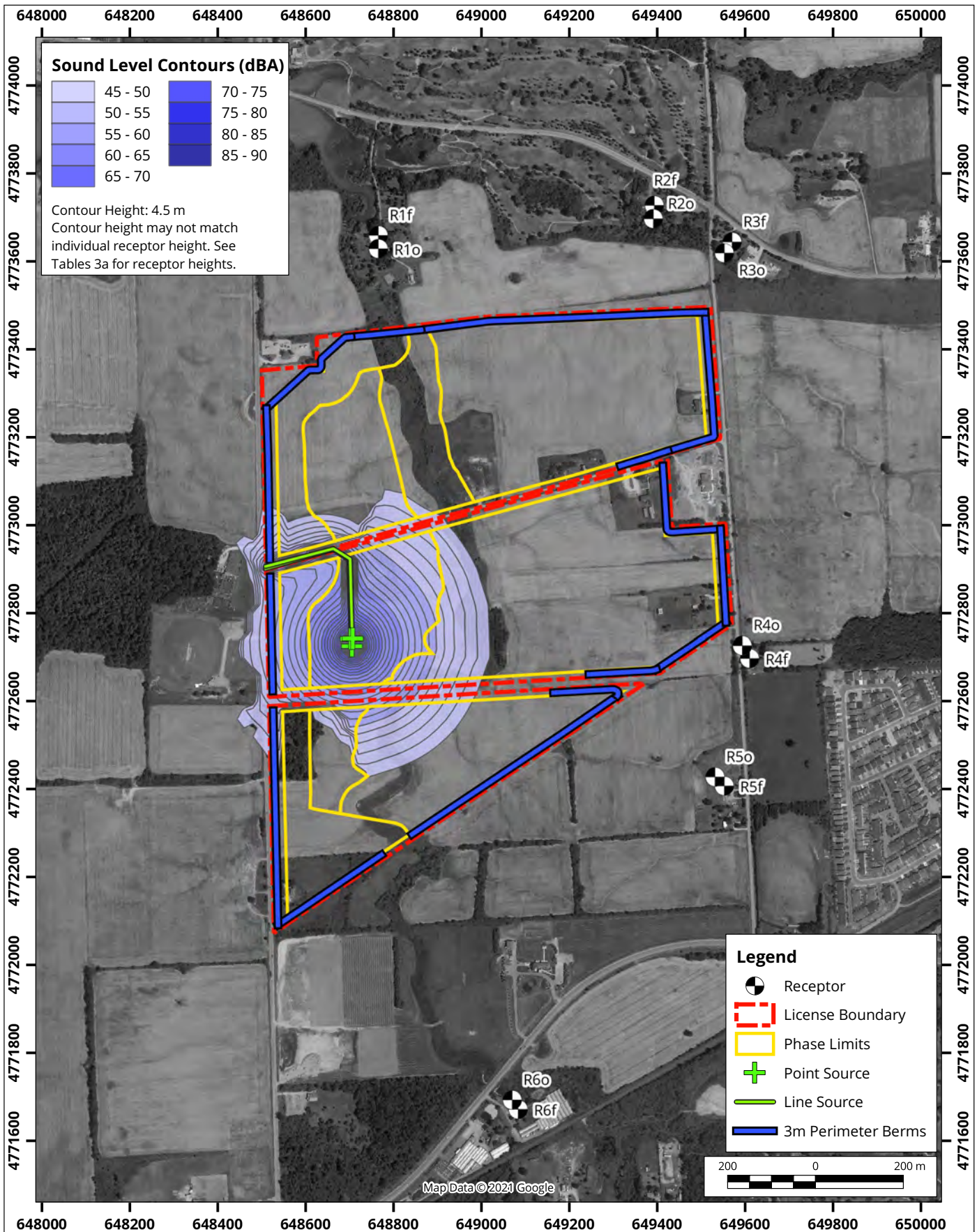
## Proposed Phase 1A South Sinking Cut, Daytime

Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

True North  
  
 Project #: 1603157

Drawn by: RNL	Figure: 3c
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





**Sound Level Contours**  
**Proposed Phase 1A South Sinking Cut, Evening/Nighttime**



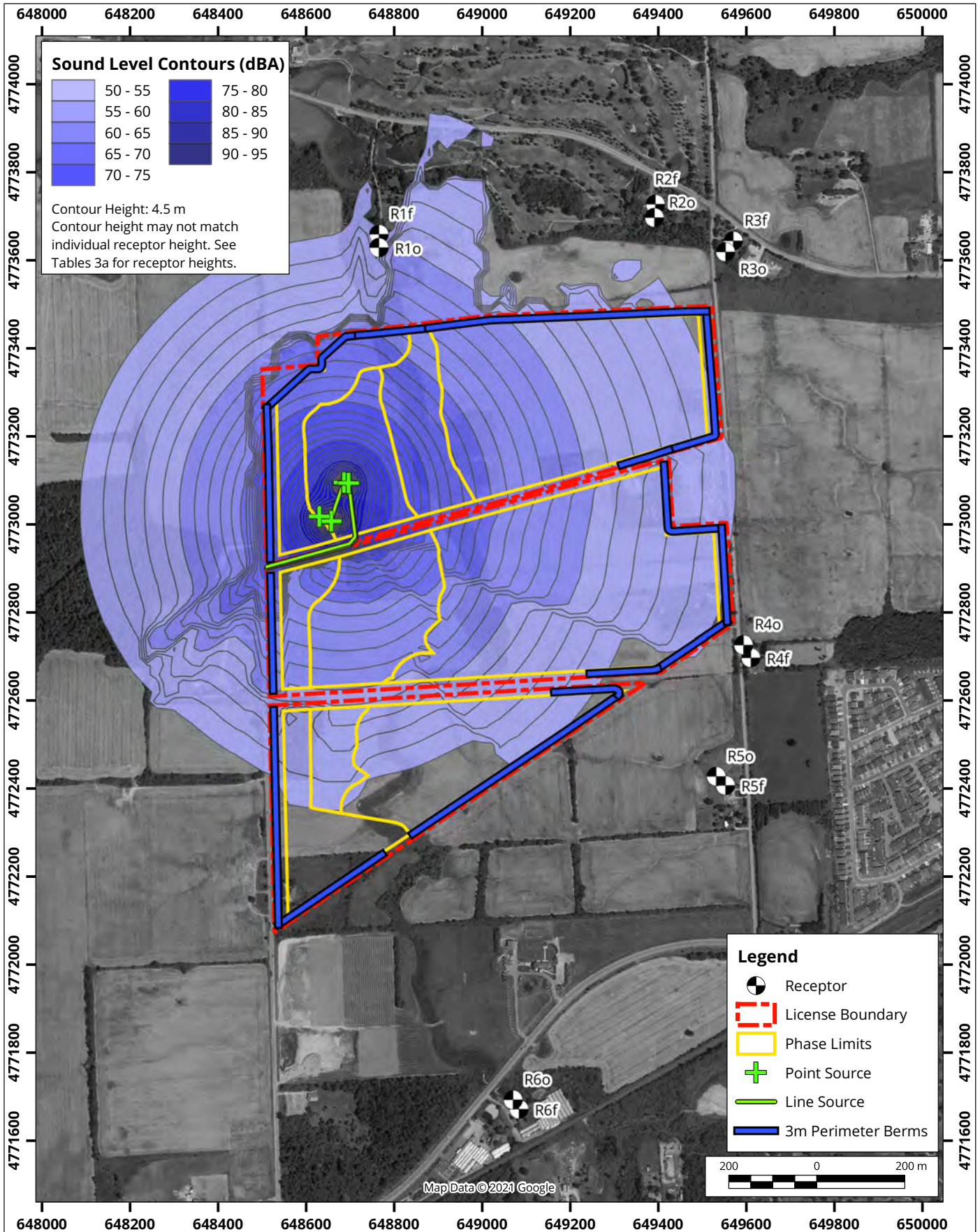
Drawn by: RNL	Figure: 3d
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	



Map Projection: NAD 1983 UTM Zone 17N

Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

Project #: 1603157



# Sound Level Contours Proposed Phase 2A Sinking Cut, Daytime

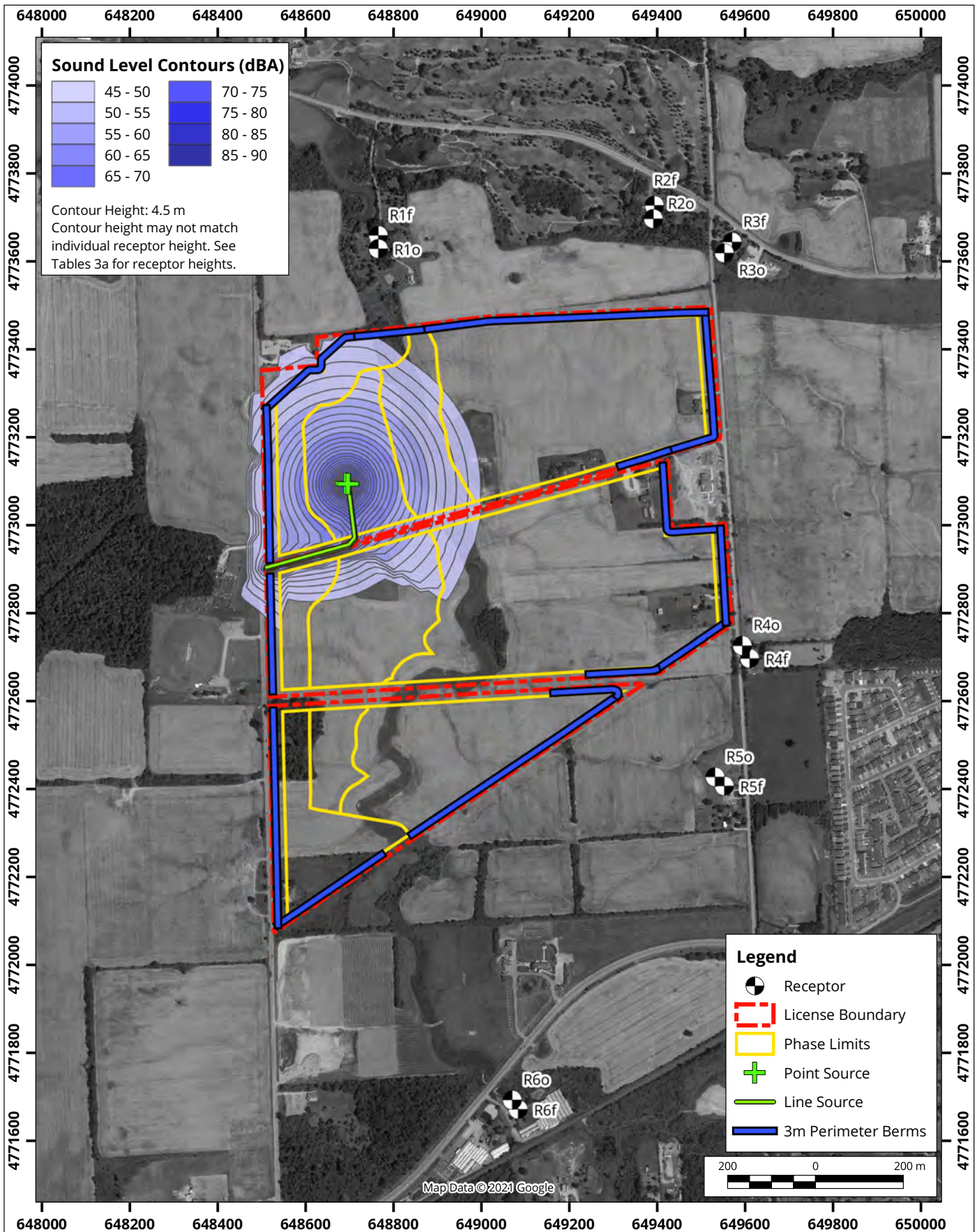
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: RNL	Figure: 3e
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





# Sound Level Contours

## Proposed Phase 2A Sinking Cut, Evening/Nighttime

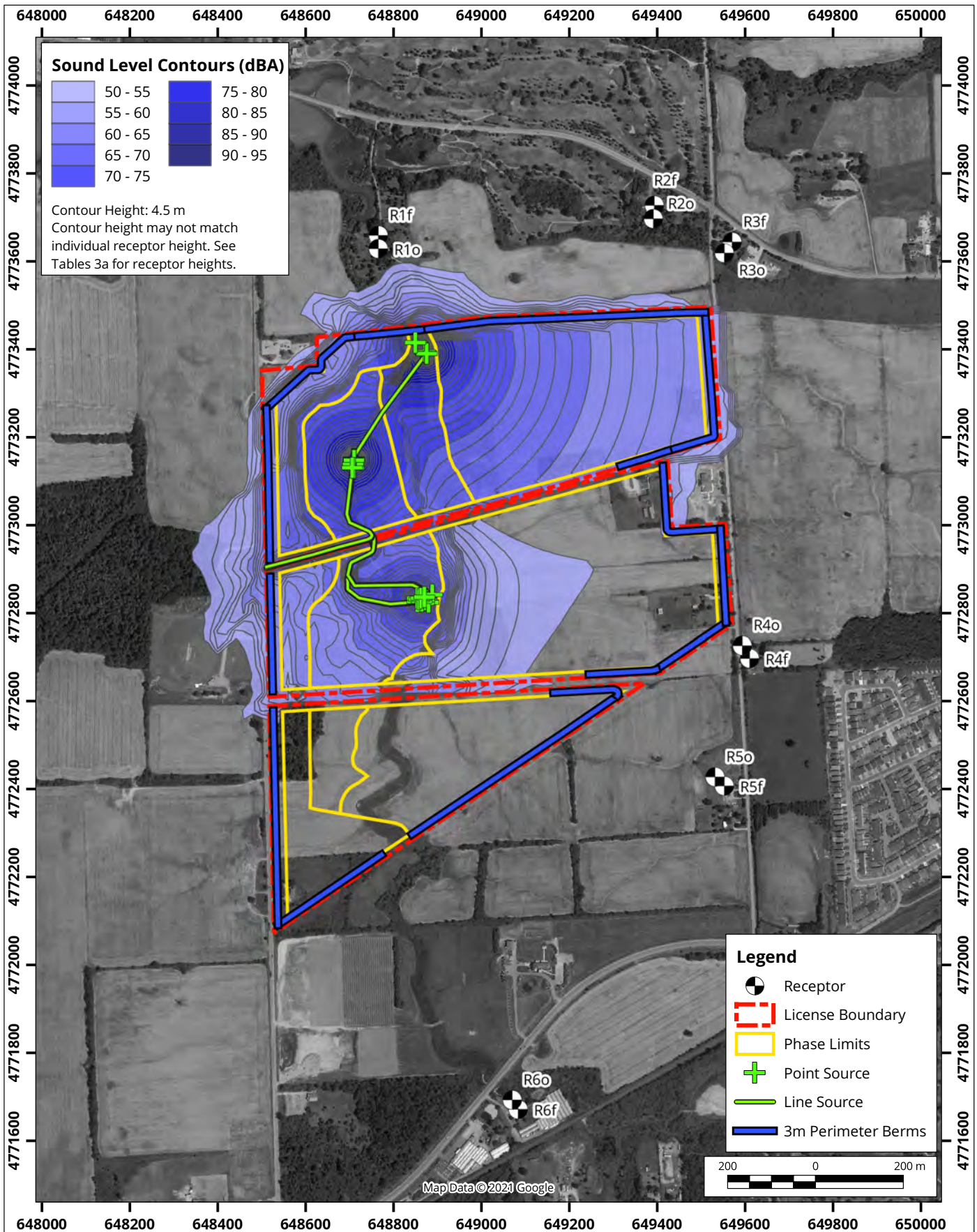


Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

Project #: 1603157

Drawn by: RNL	Figure: 3f
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





## Sound Level Contours Proposed Phase 3A, Daytime

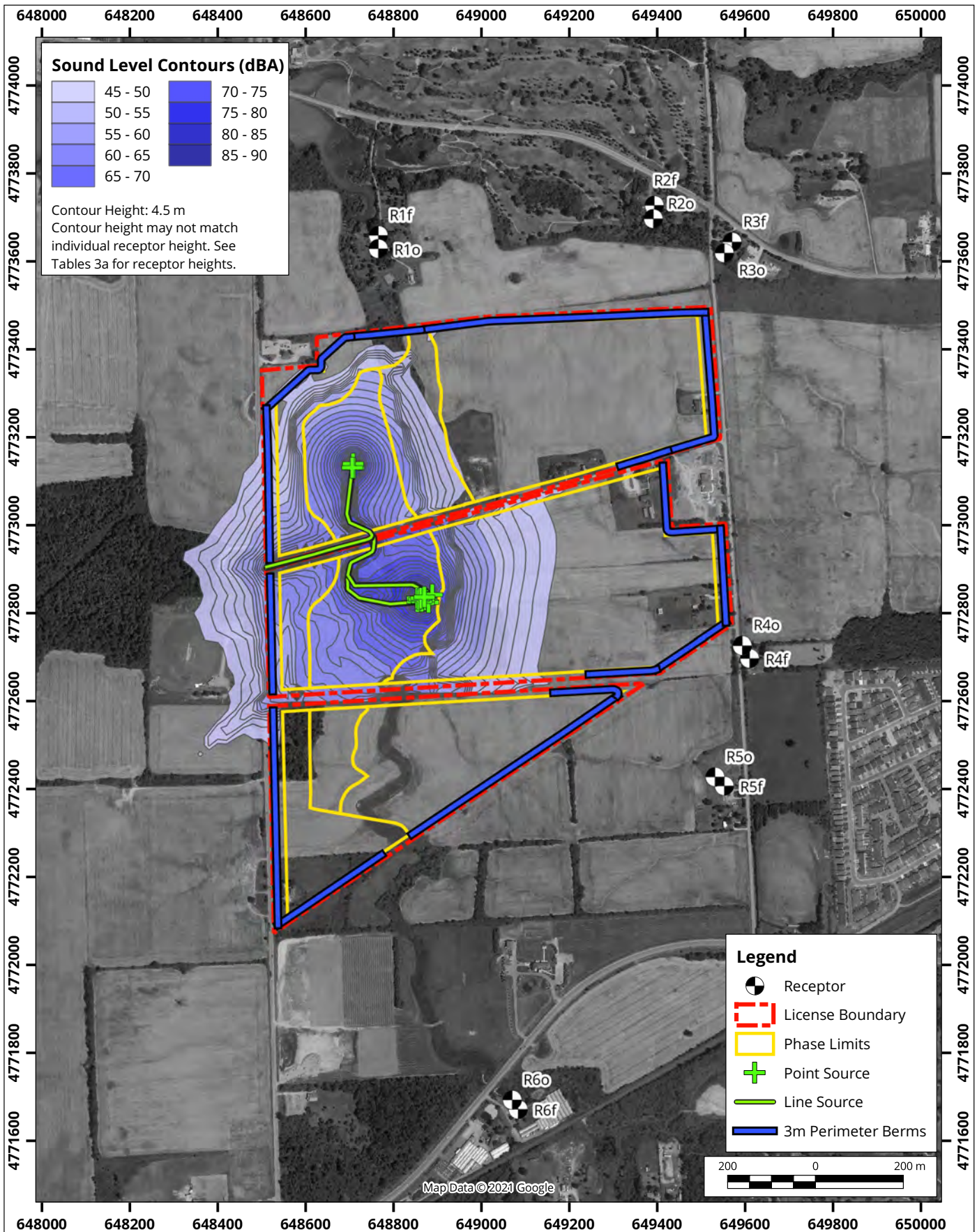
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: RNL	Figure: 3g
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





## Sound Level Contours Proposed Phase 3A, Evening/Nighttime

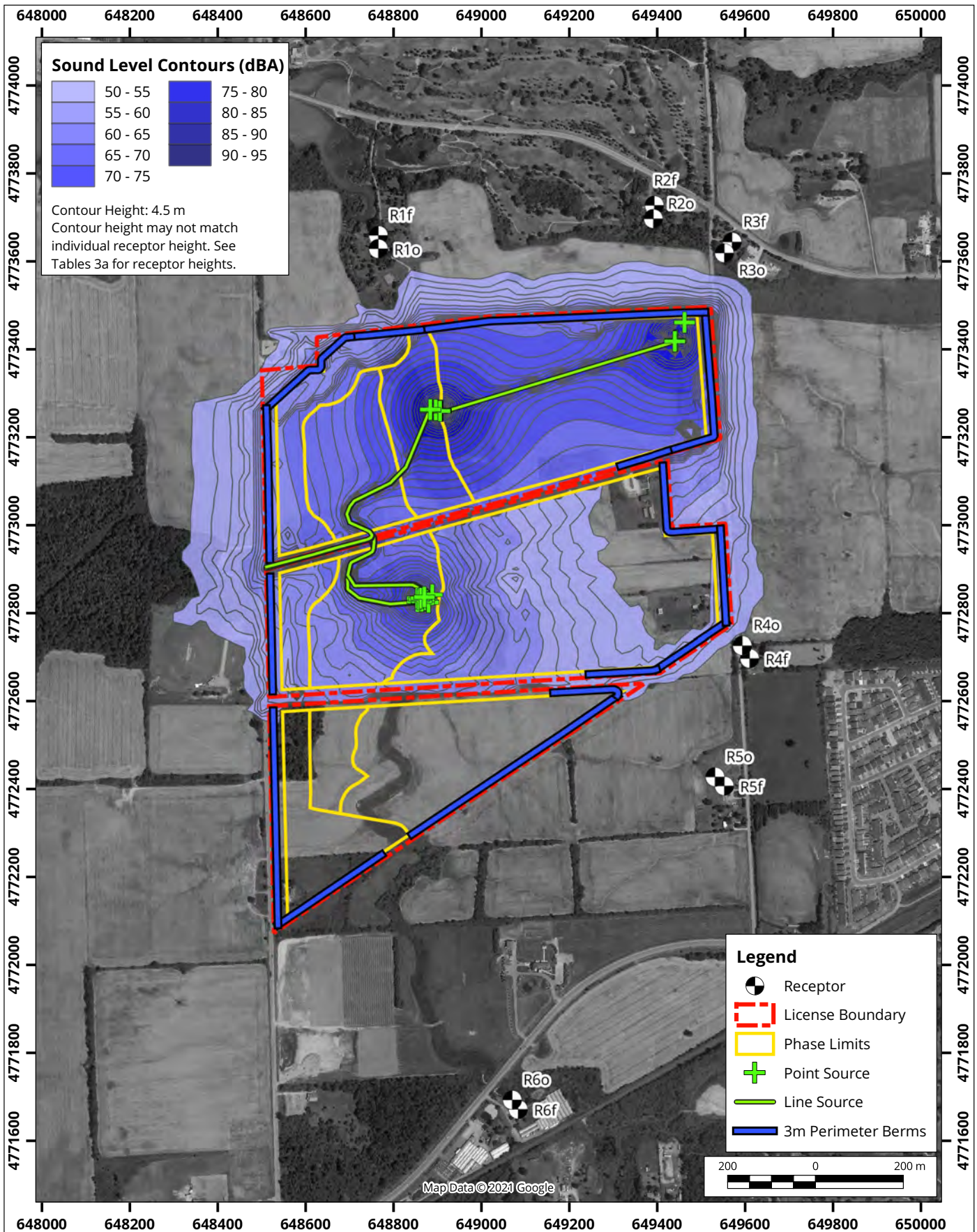
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: RNL	Figure: 3h
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





## Sound Level Contours Proposed Phase 3B Northeast, Daytime

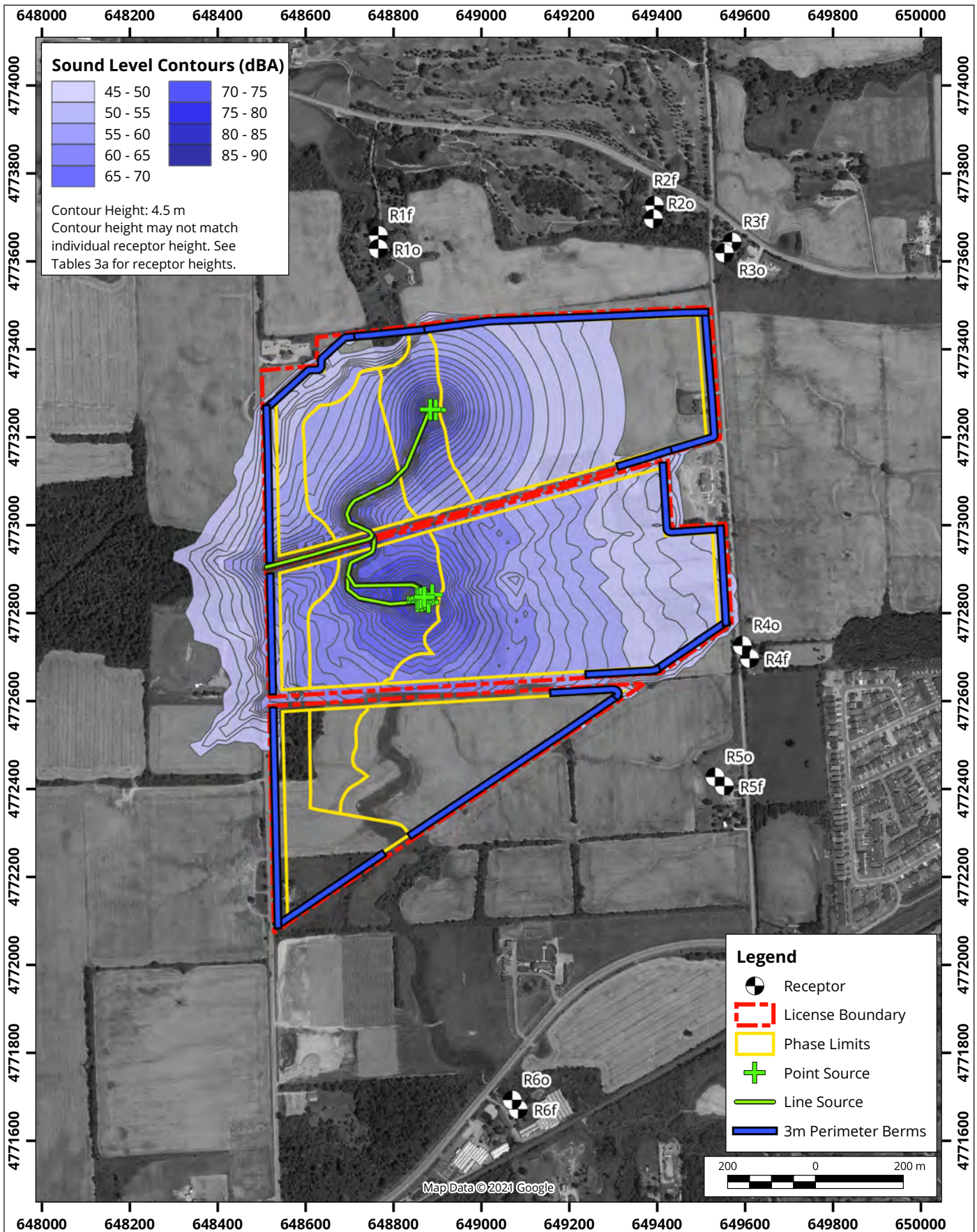
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: RNL	Figure: 3i
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





# Sound Level Contours Proposed Phase 3B Northeast, Evening/Nighttime

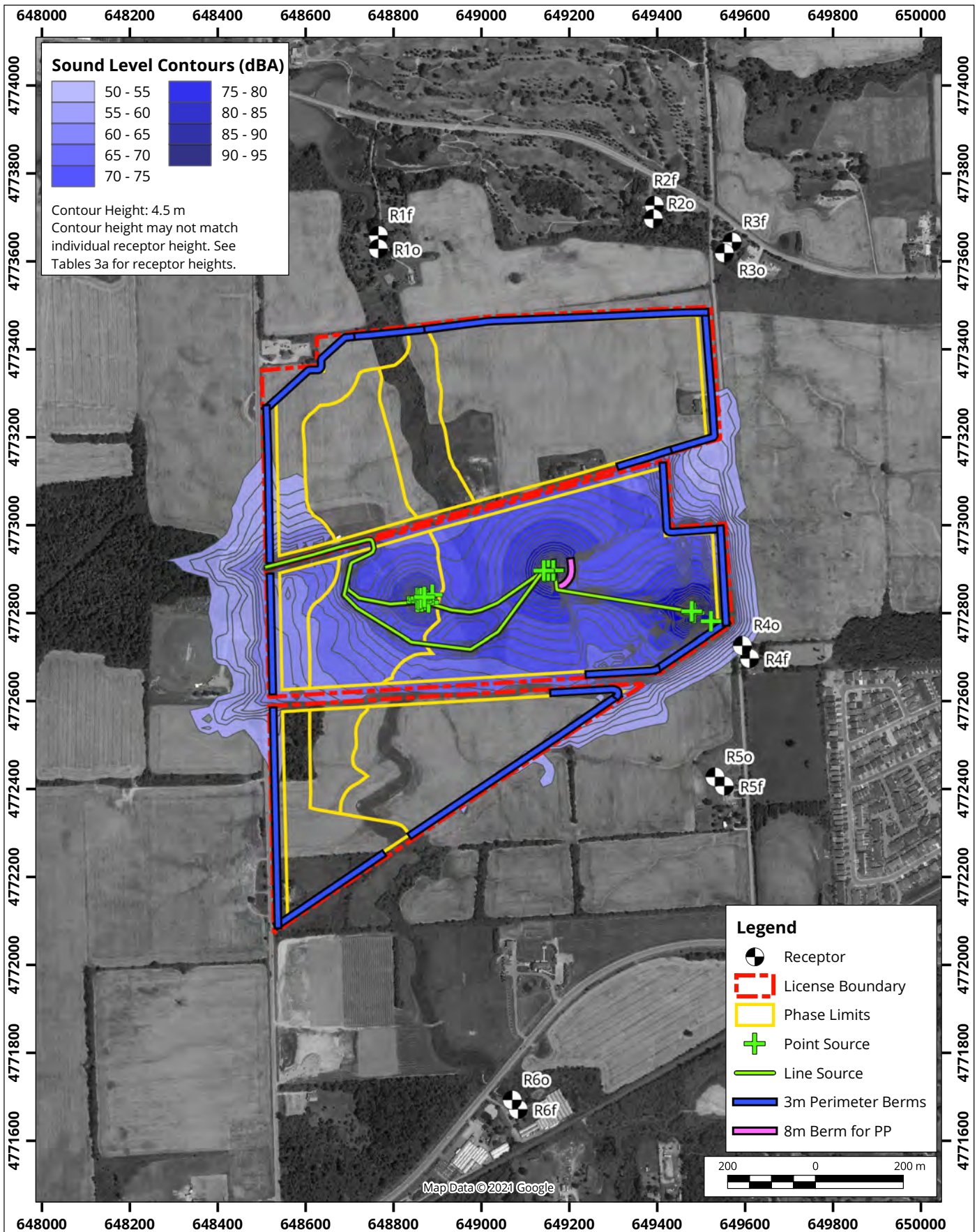


Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

Project #: 1603157

Drawn by: RNL	Figure: 3j
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





# Sound Level Contours Proposed Phase 4 Southeast, Daytime

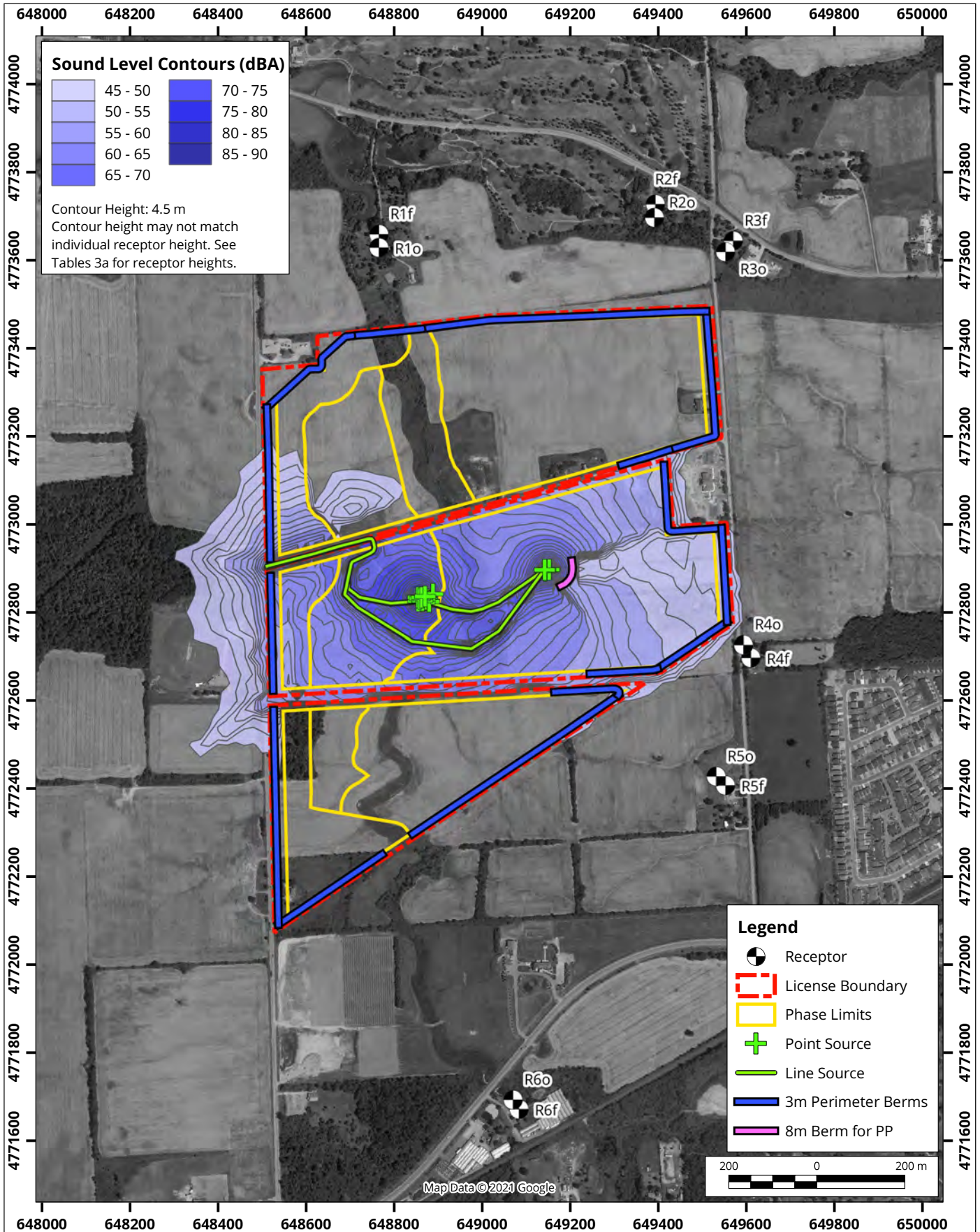
Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: RNL	Figure: 3k
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





# Sound Level Contours

## Proposed Phase 4 Southeast, Evening/Nighttime

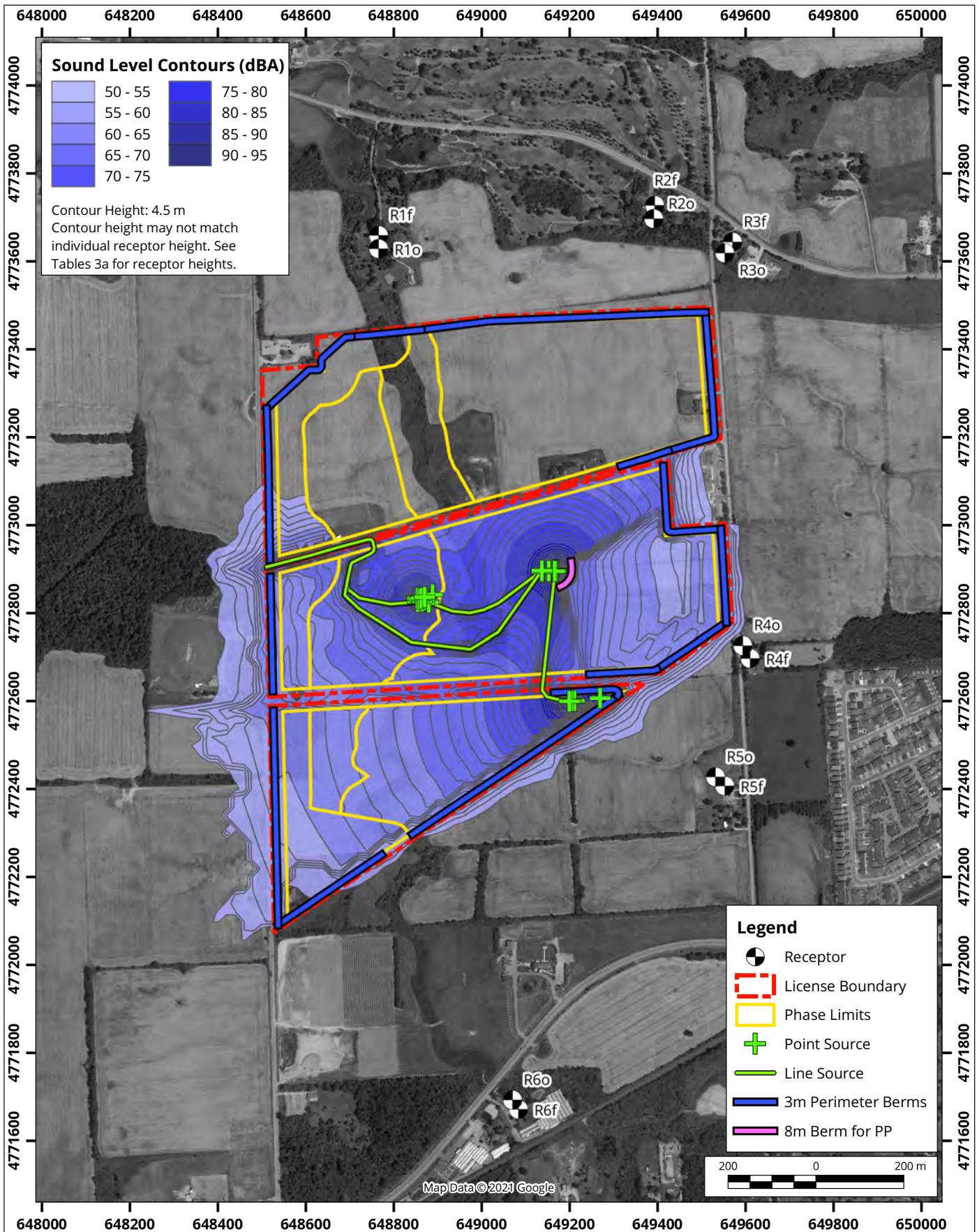


Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

Project #: 1603157


Drawn by: RNL	Figure: 31
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	





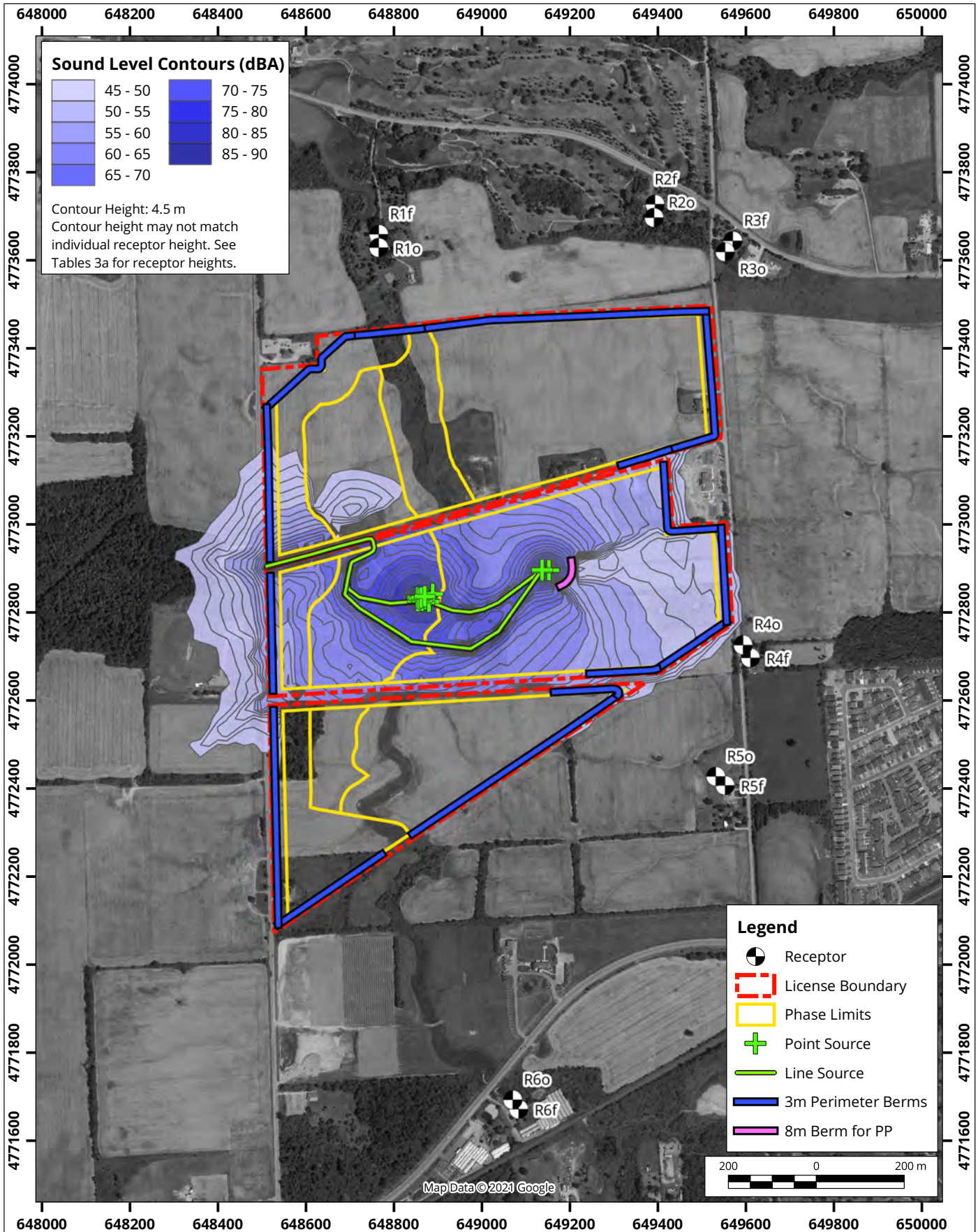
## Sound Level Contours Proposed Phase 5 East, Daytime

Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario

True North  
  
 Project #: 1603157

Drawn by: RNL	Figure: 3m
Approx. Scale:	1:12000
Date Revised:	Sep 22, 2021





# Sound Level Contours Proposed Phase 5 East, Evening/Nighttime

Map Projection: NAD 1983 UTM Zone 17N  
Walker Aggregates Inc., Upper's Quarry - Niagara Region, Ontario



Project #: 1603157

Drawn by: RNL	Figure: 3n
Approx. Scale: 1:12000	
Date Revised: Sep 22, 2021	



**Client Name**  
Rudanco Hospitality Corp.

**Project Name**  
13030 Lundy's Lane

**Notes:**

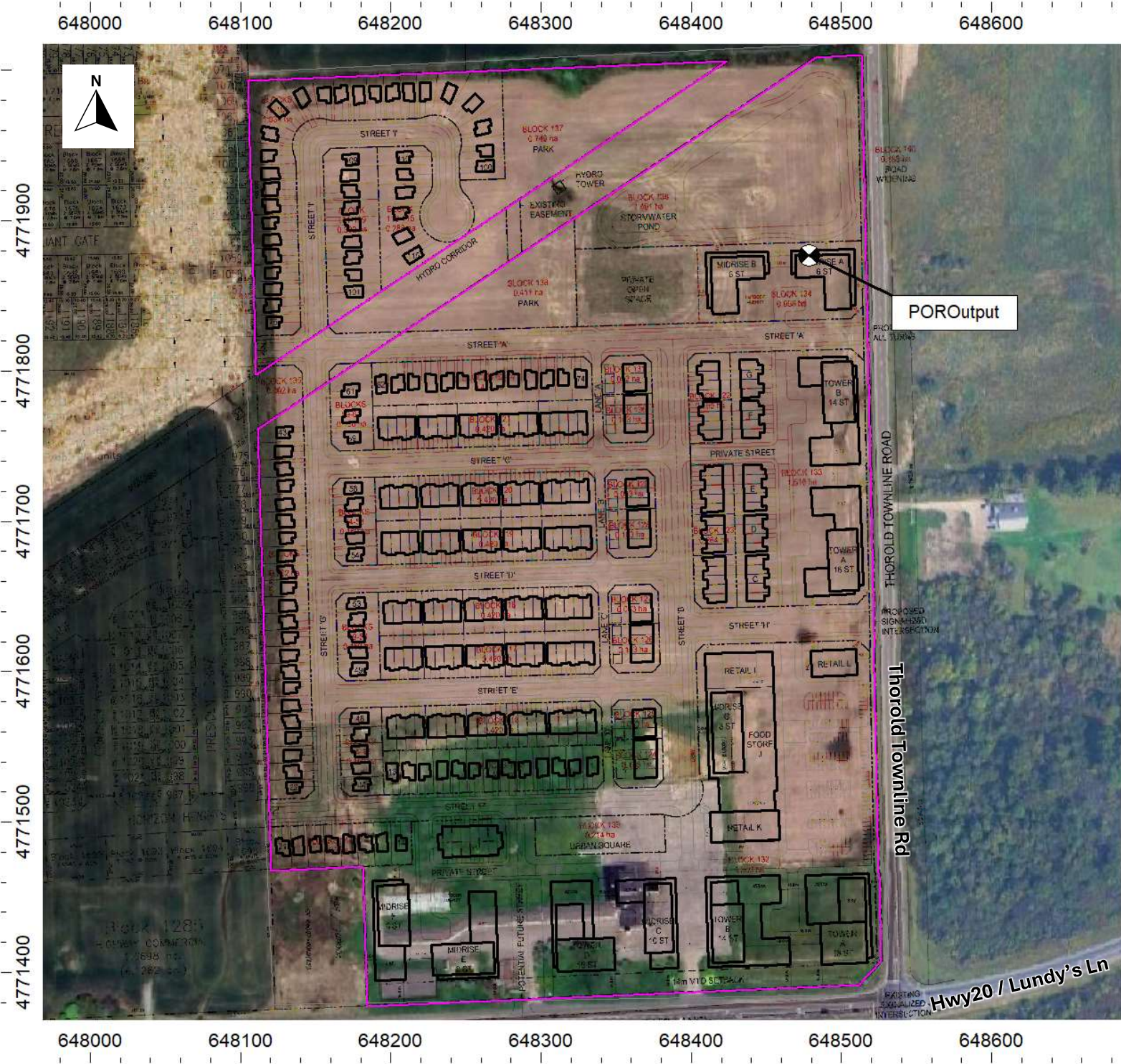
**Figure Title**  
CadnaA Output File Location

**Produced By**  
MTL

**TT Project #**  
SW21382

**Date**  
Aug 24, 2025

**D.1**









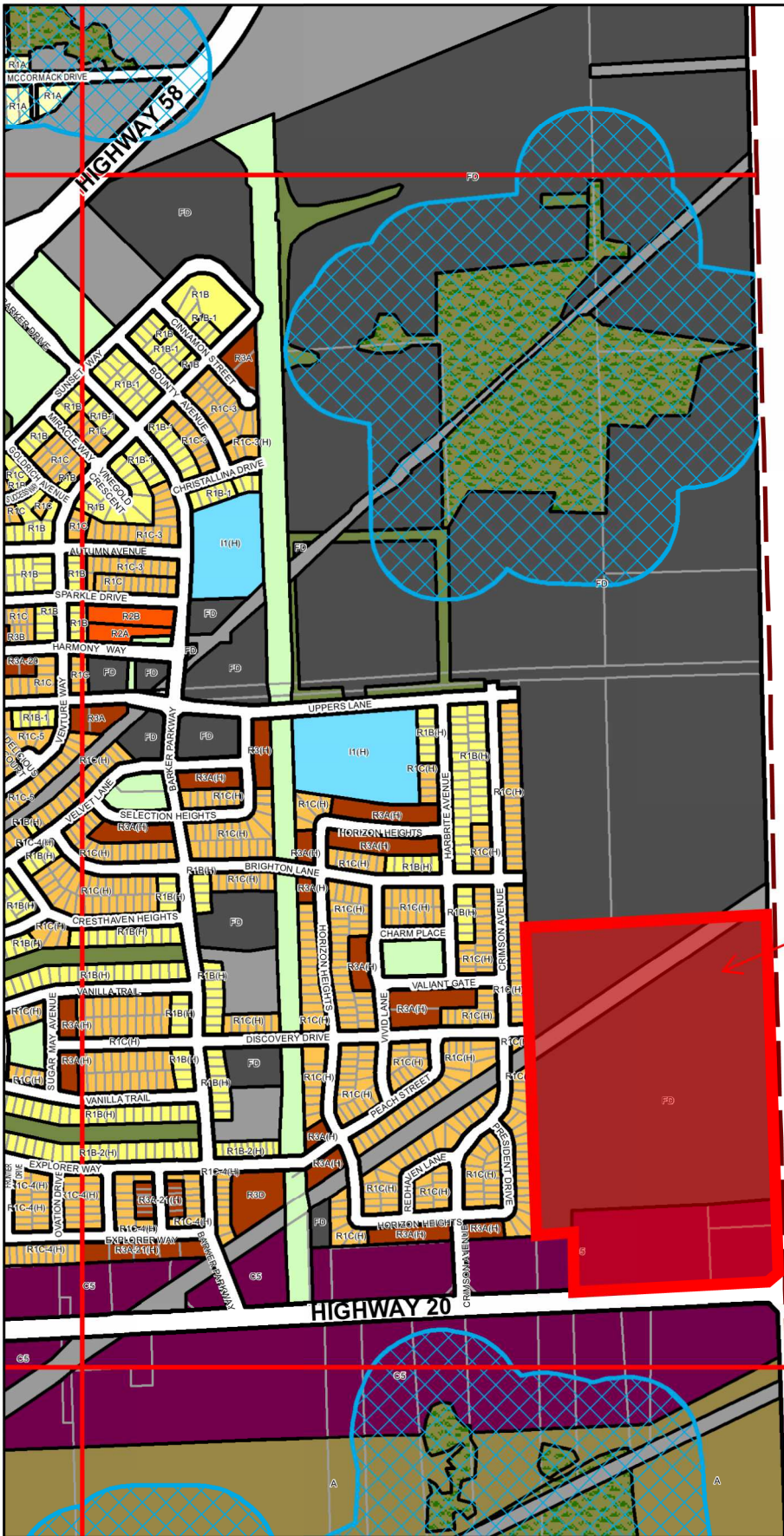








## **Appendix E: Zoning and Official Plan**



City of  
Niagara  
Falls

Project Site

<p><b>City of Thorold Boundary</b></p> <p><b>Community Zones</b></p> <ul style="list-style-type: none"> <li>I1 - Major Institutional</li> <li>I2 - Minor Institutional</li> <li>OS1 - Parks and Recreation</li> <li>OS2 - Open Space Conservation</li> </ul> <p><b>Countryside Zones</b></p> <ul style="list-style-type: none"> <li>A - Agricultural</li> <li>AS - Specialty Crop</li> <li>RU - Rural</li> </ul>		<p><b>Employment Zones</b></p> <ul style="list-style-type: none"> <li>M1 - Prestige Industrial</li> <li>M2 - General Industrial</li> <li>M3 - Employment Mixed Use</li> <li>M4 - Rural Industrial</li> </ul> <p><b>Environmental Zones</b></p> <ul style="list-style-type: none"> <li>EP1 - Environmental Protection One</li> <li>EP2 - Environmental Protection Two</li> <li>EP3 - Environmental Protection Three</li> </ul>		<p><b>Other Zones</b></p> <ul style="list-style-type: none"> <li>FD - Future Development</li> <li>U - Utility</li> </ul> <p><b>Commercial Zones</b></p> <ul style="list-style-type: none"> <li>C1 - Downtown Main Street</li> <li>C2 - Downtown Mixed Use</li> <li>C3 - General Commercial</li> <li>C4 - Neighbourhood Commercial</li> <li>C5 - Highway Commercial</li> <li>C6 - Mixed Use Commercial</li> </ul>		<p><b>Residential Zones</b></p> <ul style="list-style-type: none"> <li>R1A - Single Detached</li> <li>R1B - Single Detached, Duplex</li> <li>R1C - Single Detached, Duplex</li> <li>R1D - Single Detached</li> <li>R2A, R2B - Semi Detached</li> <li>R3A, R3B, R3C, R3D - Townhouse (Street or Stacked), Triplex, Fourplex, and Private Street Development</li> <li>R4A, R4B - Apartment and Long Term Care Facility</li> </ul>		<ul style="list-style-type: none"> <li>Greenbelt Natural Heritage Area</li> <li>Source Water Protection Area (area specific provisions apply)</li> <li>Niagara Escarpment Plan</li> <li>Former Waste Disposal Site</li> <li>Solid Waste Disposal Assessment Area (area specific provisions apply)</li> <li>Natural Heritage Feature Buffer Area</li> <li>Water Feature</li> </ul>		<p>City of Thorold Zoning By-law</p> <p>Schedule A13</p> <table border="1"> <tr> <td>A6B</td> <td>A7A</td> <td>A7B</td> <td>A8</td> </tr> <tr> <td>A6D</td> <td>A7C</td> <td>A7D</td> <td>A8</td> </tr> <tr> <td>11</td> <td>A12</td> <td>A13</td> <td>A14</td> </tr> <tr> <td>16</td> <td>A17</td> <td>A18</td> <td>A19</td> </tr> </table> <p>May 2019</p> <p>1:11,000</p>	A6B	A7A	A7B	A8	A6D	A7C	A7D	A8	11	A12	A13	A14	16	A17	A18	A19
A6B	A7A	A7B	A8																							
A6D	A7C	A7D	A8																							
11	A12	A13	A14																							
16	A17	A18	A19																							

# CITY OF THOROLD

## Official Plan

### SCHEDULE 'A-3'

### THE NEIGHBOURHOODS OF ROLLING MEADOWS SECONDARY PLAN

#### Land Use

See Schedule 'A'

LOT 47

LOT 46

LOT 45

LOT 44



LOT 43

See Schedule 'A2'




#### Legend

-  Municipal Boundary
-  Urban Area Boundary
-  Built Boundary
-  Greenfield Overlay
-  Open Space & Parks
-  Employment - Prestige Industrial
-  Employment - Light Industrial
-  Employment - Dry Industrial
-  Highway Commercial
-  Village Square Commercial
-  Institutional
-  Residential
-  Environmental Protection Two
-  Waterbody
-  Aggregate Impact Area

#### Road Classification

-  Highway
-  Arterial
-  Local

#### Trails

-  Eco-Trail
-  Off-Road Multi-Use Trail
-  On-Road Cycling Trail

LOT 70

LOT 69

LOT 68

LOT 67

LOT 66

THOROLD TOWNLINE RD

City of Niagara Falls

58

70

UPPERS LANE

See Schedule 'A2'

LOT 94

LOT 95

LOT 92

LOT 91

LOT 90

LOT 89

**Project**

LUNDY'S LANE

20

LOT 117

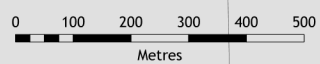
LOT 115

LOT 114

LOT 113

LOT 112

See Schedule 'A'



Adopted April 21, 2015

# ZONING BY-LAW 79-200

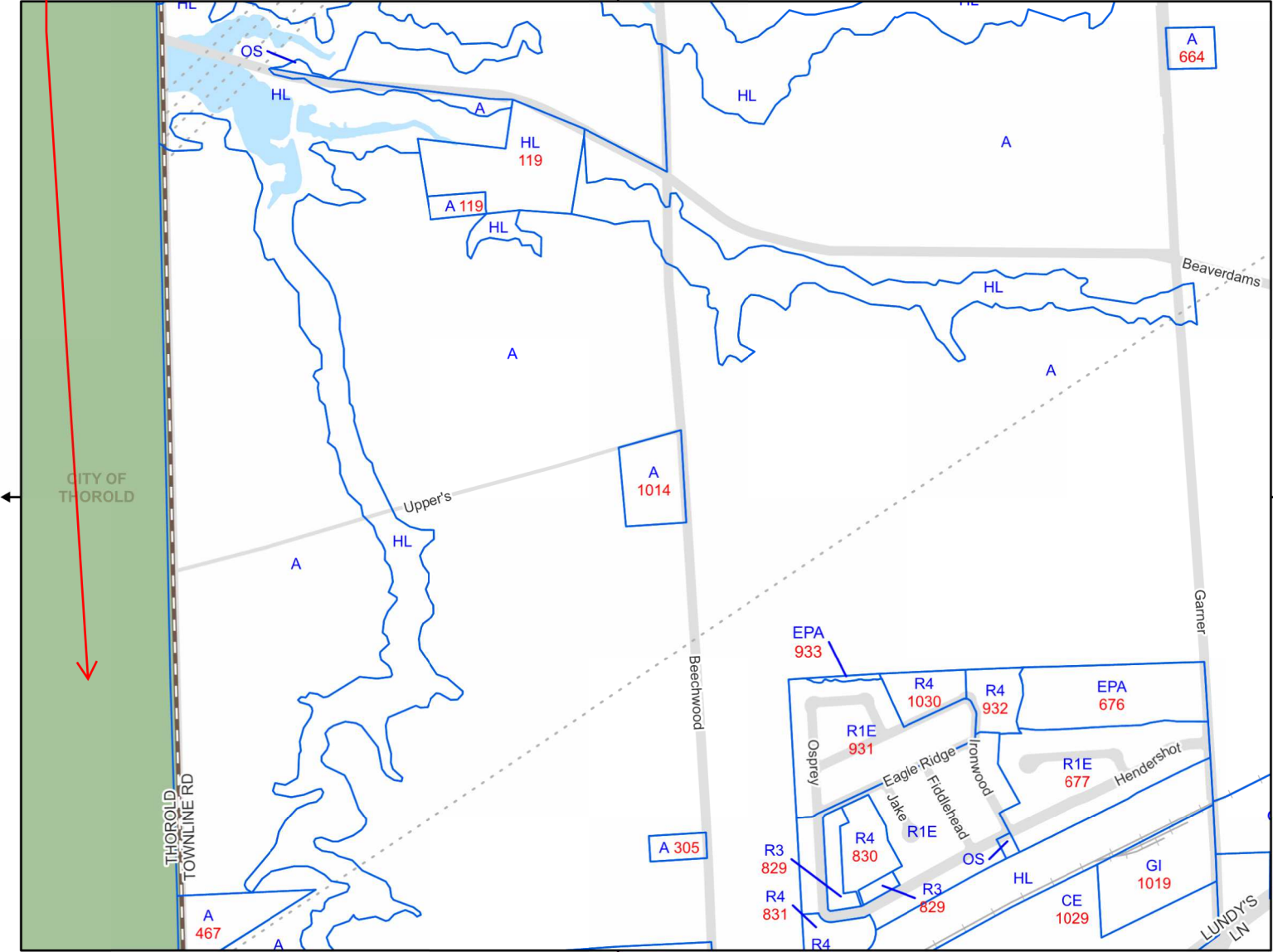


— ZONE LINES

EXCEPTIONS & SPECIAL PROVISION NO.  
SEE SECTION 19

- 99-48
- 04-133
- 04-157
- 08-099
- 11-004
- 15-124
- 16-028
- 16-095
- 16-096

Project



CITY OF THOROLD

THOROLD  
TOWNLINE RD

A3

A5

B4

CITY OF NIAGARA FALLS  
Planning & Development Department



Scale 1:13,000

	A	B	C	D	E	F
1						
2						
3						
4						
5						F
6						
7						
8						



CONSOLIDATION  
DECEMBER 2022

**SHEET A4**

# ZONING BY-LAW 79-200



— ZONE LINES

EXCEPTIONS & SPECIAL PROVISION NO.  
SEE SECTION 19

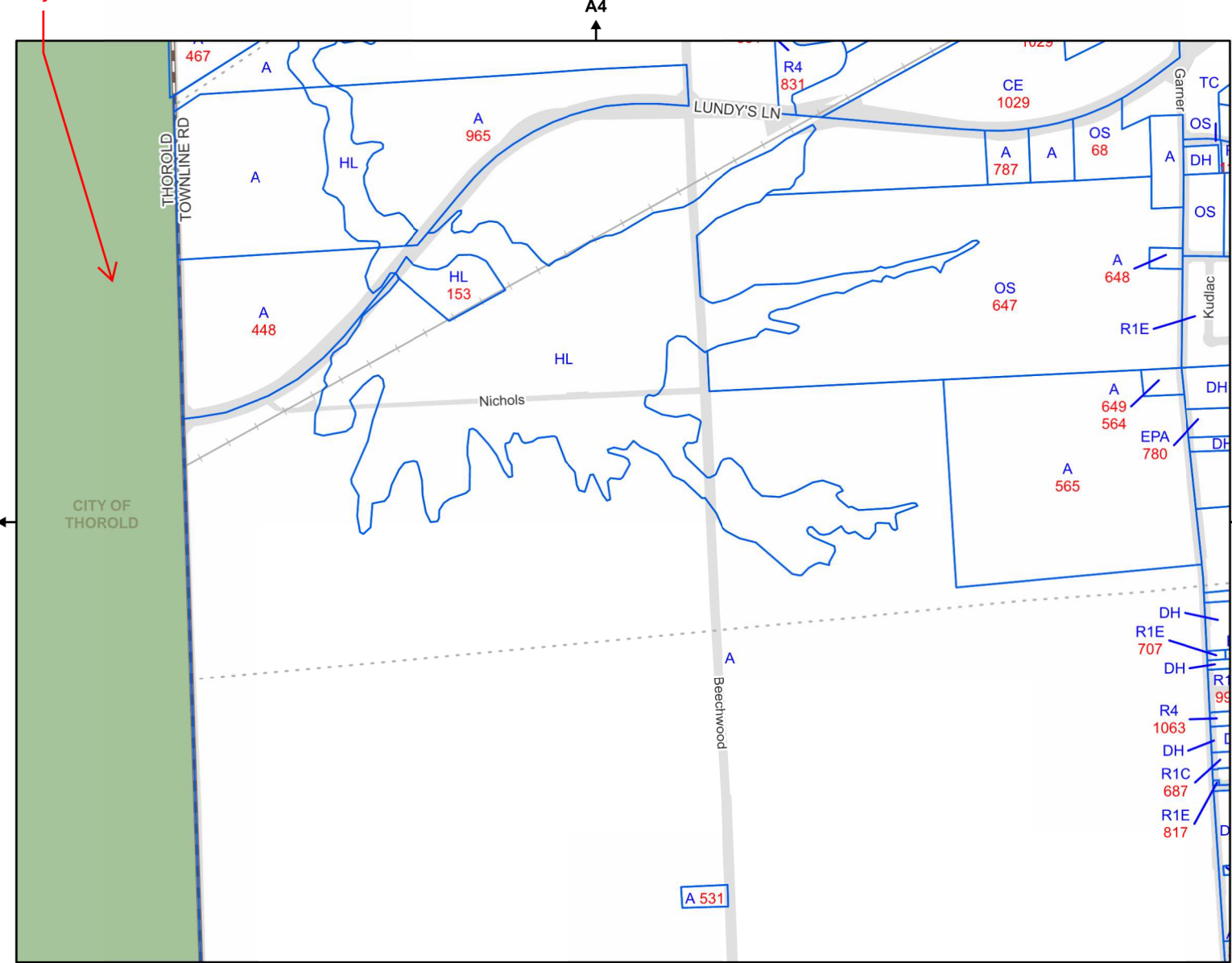
- 95-116
- 99-048
- 98-244
- 04-046
- 04-090
- 05-084
- 04-157
- 07-090
- 07-130
- 08-099
- 12-068
- 16-095



CONSOLIDATION  
DECEMBER 2022

## SHEET A5

Project



CITY OF THOROLD

CITY OF NIAGARA FALLS  
Planning & Development Department



Scale 1:13,000

	A	B	C	D	E	F
1						
2						
3						
4						
5						F
6						
7						
8						

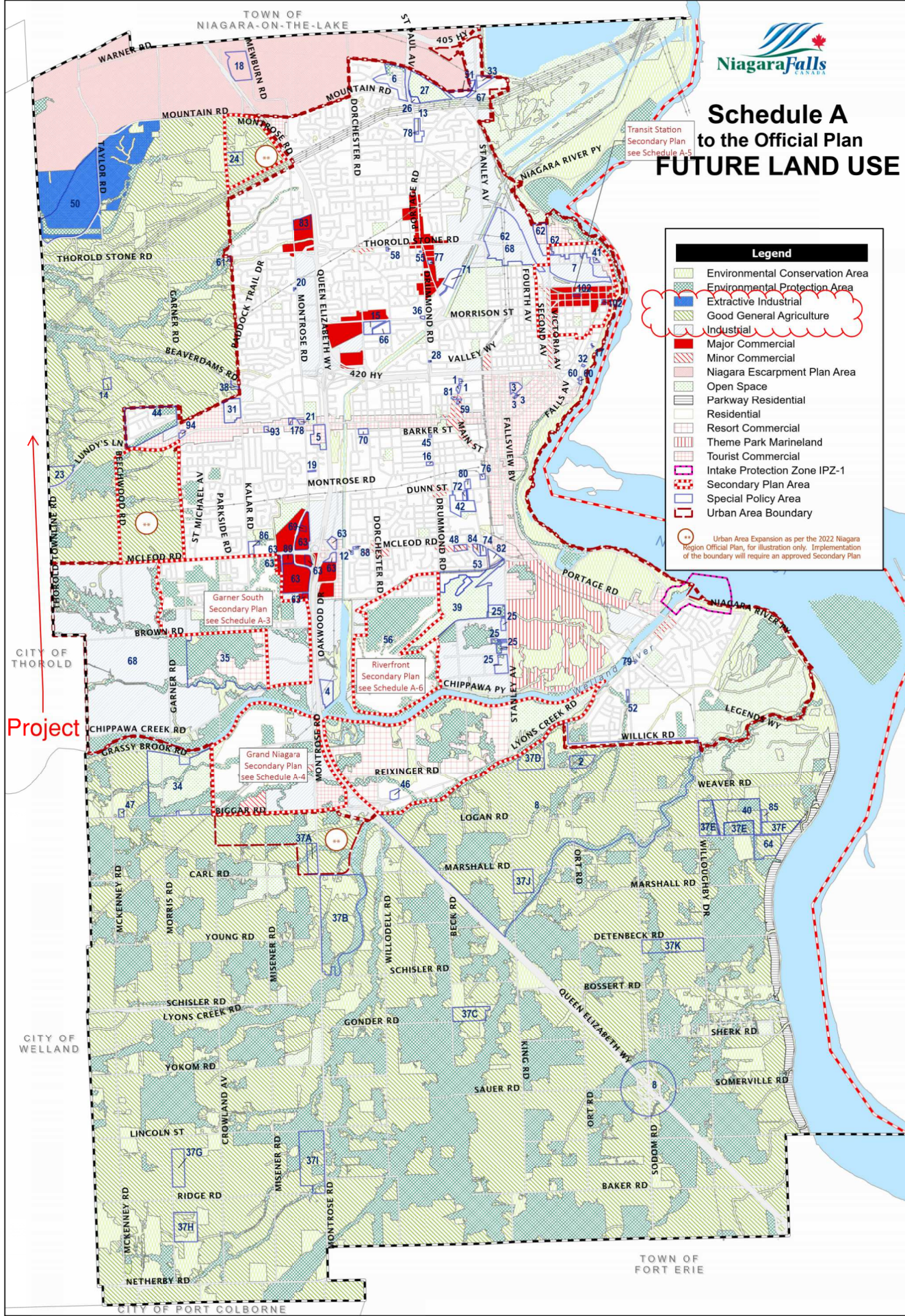
# Schedule A to the Official Plan FUTURE LAND USE

Transit Station  
Secondary Plan  
see Schedule A-5

**Legend**

- Environmental Conservation Area
- Environmental Protection Area
- Extractive Industrial
- Good General Agriculture
- Industrial
- Major Commercial
- Minor Commercial
- Niagara Escarpment Plan Area
- Open Space
- Park Space Residential
- Residential
- Resort Commercial
- Theme Park Marineland
- Tourist Commercial
- Intake Protection Zone IPZ-1
- Secondary Plan Area
- Special Policy Area
- Urban Area Boundary

Urban Area Expansion as per the 2022 Niagara Region Official Plan, for illustration only. Implementation of the boundary will require an approved Secondary Plan



NOTE: THIS MAP MUST BE READ IN CONJUNCTION WITH THE WRITTEN TEXT OF THE OFFICIAL PLAN APPROVED OCTOBER 1993 UPDATED TO MARCH 2025

