Development Application for Zoning By-law Amendment

Complete Application

The application must be completed by the owner or authorized agent. If the application is being submitted by an agent, the owner's written authorization is required. If the lands subject to this application are owned by more than one owner, the authorization of all owners is required. Submission of this application constitutes consent for authorized municipal staff to inspect the subject lands.

It is the responsibility of the applicant to research and evaluate the site and the proposal to ensure that the development will conform to the interests of the health, safety and welfare of future residents. Sufficient studies for the completion of the application should be carried out prior to submission and should be reflected in the application form.

Online Application Process

All applications must be submitted online via the County's CityView Portal. The portal can be accessed here: Welcome - CityView Portal. The applicant will submit the materials required as part of a complete application. Once the County confirms receipt of a complete submission, the applicant will be contacted and provided further directions for payment options.

Pre-Consultation Meeting:

Pre-Consultation is highly recommended for Zoning By-law Amendment applications. The purpose of a Pre-Consultation meeting is to provide the applicant with an opportunity to present the proposed development, discuss potential issues, and for the Norfolk County and external agencies to identify the application requirements. The requirements, as detailed in the Pre-Consultation meeting comments, are valid for one year after the meeting date.

User Fees:

The planning application fee will be determined when the application can be deemed complete according to Norfolk County Community Planning user fees: User Fees | Norfolk County

Additional agency plan review fees may apply. Please see below for more information and forward fees directly to the applicable agency, as required:

Grand River Conservation Authority
Plan Review fees | Grand River Conservation Authority
Long Point Region Conservation Authority
Planning Fees - Long Point Region Conservation Authority

Cash, debit, credit or cheque payable to Norfolk County in the amount set out in the User Fees By-Law that will be accepted and deposited once the application has been deemed complete.

Development Application Process

Norfolk County staff will circulate the complete application to adjacent landowners, public agencies, and internal departments. Planning Act decision timeframes will apply in accordance with the provisions of Section 34 of the Planning Act Norfolk County collects personal information submitted through this form under the authority of the Municipal Freedom of Information and Protection Act. Norfolk County will use this information for the purposes indicated by this form. Questions about collecting personal information can be directed to Norfolk GIS Services at NorfolkGIS@norfolkcounty.ca.

Additional studies required for a complete application along with peer reviews may be required and shall be provided at the applicant's sole expense. In these cases, Norfolk County staff will select the company to complete the peer review.

Norfolk County will refund the original fee if applicants withdraw their applications before circulation. If Norfolk County must recirculate your drawings, there will be an additional fee. If Norfolk County must do more than three reviews of engineering drawings due to revisions by the owner or failure to revise engineering drawings as requested, Norfolk County will charge an additional fee.

Contact Us

For additional information or assistance completing this application, please contact a Planner at 519-426-5870 or planning@norfolkcounty.ca.

Notification Sign Requirements

For public notification, Norfolk County will provide you with a sign to indicate the intent and purpose of the development application. It is your responsibility to:

1. Post one sign per frontage in a conspicuous location on the subject lands.
2. Ensure one sign is posted at the front of the subject lands at least three feet above ground level and not on a tree.
3. Notify the Planner when the sign is in place.
4. Maintain the sign until the development application is finalized and, after that, remove it.

For Office Use Only:

File Number		Public Notice Sign	
Related File Number		Application Fee	
Pre-consultation Meeting		Conservation Authority Fee	
Application Submitted		Well & Septic Info Provided	
Complete Application		Planner	

Check the type of planning application(s) you are submitting.

☐ Zoning By-Law Amendment – Regular

☐ Zoning By-Law Amendment - Major

☐ Zoning By-Law Amendment - Minor

☐ Temporary Use By-law

Property Assessment Roll Number: _____

A. Applicant Information

Note: It is the responsibility of the owner to notify the Planner of any changes in ownership or authorized applicant within 30 days of such a change

Name of Owner _____

Address _____

Town and Postal Code _____

Phone Number _____

Cell Number _____

Email _____

Name of Authorized Applicant _____

Address _____

Town and Postal Code _____

Phone Number _____

Cell Number _____

Email _____

Name of Authorized Agent _____

Address _____

Town and Postal Code _____

Phone Number _____

Cell Number _____

Email _____

Unless otherwise directed, Norfolk County will forward all correspondence and notices regarding this application to both owner and agent noted above.

☐ Owner ☐ Agent ☐ Applicant

Names and addresses of any holder of any mortgagees, charges or other encumbrances on the subject lands:

_____

_____

B. Location, Legal Description and Property Information

1. Legal Description (include Geographic Township, Concession Number, Lot Number, Block Number and Urban Area or Hamlet):

   _____

   _____

   Municipal Civic Address: _____

   Land acquisition date (if known): _____

   Present Official Plan Designation(s): _____

   Present Zoning: _____

2. Is there a site-specific provision on the subject lands?

   Yes ☐ No If yes, please specify the corresponding number:

   _____

3. Present use of the subject lands:

   _____
   _____

4. Please describe **all existing** buildings or structures on the subject lands and whether they will be retained, demolished or removed.

   _____
   _____
   _____

5. If an addition to an existing building is being proposed, please explain the proposed use.

   _____
   _____
   _____

6. Please describe **all proposed** buildings or structures/additions on the subject lands.

   _____
   _____

7. Are any existing buildings on the subject lands designated under the *Ontario Heritage Act* as being of cultural heritage value or interest?

   ☐ Yes ☐ No

   If yes, identify and provide details:

   _____
   _____

8. If known, the length of time the existing uses have continued on the subject lands:

   _____

9. Existing use of abutting properties:

   _____

10. Are there any easements or restrictive covenants affecting the subject lands?

    ☐ Yes ☐ No

    If yes, describe the easement or restrictive covenant and its effect:

    _____

C. Purpose of Development Application

Note: Please complete all that apply.

1. Please describe the proposed development on the subject lands:

   _____
   _____
   _____

2. Please explain why it is not possible to comply with the provisions of the Zoning By-law :

   _____
   _____
   _____

3. Have the subject land or lands within 120 metres ever been and/or currently are the subject of a Planning Act application:
   - Plan of Subdivision ☐ Yes ☐ No
   - Official Plan Amendment ☐ Yes ☐ No
   - Zoning Bylaw, or Zoning Order Amendment ☐ Yes ☐ No
   - Site Plan ☐ Yes ☐ No
   - Consent/Minor Variance ☐ Yes ☐ No

   If yes, indicate the application file number and the status of the application_____
   _____

D. Previous Use of the Property

1. Has there been an industrial or commercial use on the subject lands or adjacent lands?

   ☐ Yes ☐ No ☐ Unknown

If yes, specify the uses (for example: gas station or petroleum storage):

_____
_____

2. Is there reason to believe the subject lands may have been contaminated by former

uses on the site or adjacent sites?

☐ Yes ☐ No ☐ Unknown

3. Provide the information you used to determine the answers to the above questions:

_____

_____

4. If you answered yes to any of the above questions in Section D, a previous land use inventory showing all known former uses of the subject lands, and/or when applicable, the adjacent lands, is required.

   Is the land use inventory of former land uses attached? ☐ Yes ☐ No

E. Provincial Planning Statement

1. Is the requested amendment consistent with the Provincial Planning Statement issued under subsection 3(1) of the *Planning Act, R.S.O. 1990, c. P. 13*?

   ☐ Yes ☐ No

   If no, please explain:

   _____

   _____

   _____

2. It is owner's responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals, including the Endangered Species Act, 2007. Have the subject lands been screened to ensure that development or site alteration will not have any impact on the habitat for endangered or threatened species further to the Provincial Planning Statement?

   ☐ Yes ☐ No

   If no, please explain:

   _____

   _____

   _____

3. Have the subject lands been screened to ensure that development or site alteration will not have any impact on source water protection?

   ☐ Yes ☐ No

   If no, please explain:

   _____

   _____

Note: If in an area of source water Wellhead Protection Area (WHPA) A, B or C, Intake Protection Zone (IP-Z), Issue Contributing Area (ICA), please attach relevant information and approved mitigation measures from the Risk Management Official.

4. Are any of the following uses or features on the subject lands or within 500 metres of the subject lands, unless otherwise specified? Please check boxes, if applicable.

Livestock facility or stockyard

☐ On the subject lands or ☐ within 500 meters – distance _____

Significant Woodland

☐ On the subject lands or ☐ within 500 meters – distance _____

Municipal Landfill

☐ On the subject lands or ☐ within 500 meters – distance _____

Sewage treatment plant or waste stabilization plant

☐ On the subject lands or ☐ within 500 meters – distance _____

Provincially significant wetland or other environmental feature

☐ On the subject lands or ☐ within 500 meters – distance _____

Floodplain

☐ On the subject lands or ☐ within 500 meters – distance _____

Rehabilitated mine site

☐ On the subject lands or ☐ within 500 meters – distance _____

Non-operating mine site within one kilometre

☐ On the subject lands or ☐ within 500 meters – distance _____

Active mine site within one kilometre

☐ On the subject lands or ☐ within 500 meters – distance _____

Industrial or commercial use (specify the use(s))

☐ On the subject lands or ☐ within 500 meters – distance _____

Active railway line

☐ On the subject lands or ☐ within 500 meters – distance _____

Seasonal wetness of lands

☐ On the subject lands or ☐ within 500 meters – distance _____

Erosion

☐ On the subject lands or ☐ within 500 meters – distance _____

Abandoned gas wells

☐ On the subject lands or ☐ within 500 meters – distance _____

F. Servicing and Access

1. Indicate what services are available or proposed:

Water Supply		**Storm Drain**	
Municipal piped water	☐	Storm sewers	☐
Individual wells	☐	Open ditches	☐
Communal wells	☐	Other (describe below): _____	☐
Other (describe below): _____	☐		

Sewage Treatment		**Existing or proposed access to subject lands**	
Municipal sewers	☐	Municipal road	☐
Communal system	☐	Provincial highway	☐
Septic tank and tile bed in good working order	☐	Unopened road	☐
Other (describe below): _____	☐	Name of road/street:_____	
		Other (describe below): _____	☐

2. Does the application require development on privately owned and operated individual or communal septic systems, and more than 4500 litres of effluent produced per day as a result of the development being completed?

   ☐ Yes ☐ No

   If yes, provide (i) Servicing Options Report and (ii) hydrogeological report with submission.

G. Other Information

1. Does the application involve a local business?

   ☐ Yes ☐ No If yes, how many people are employed on the subject lands?

_____

2. Indicate below or on a separate attachment, the applicant's proposed strategy for consulting with the public on the request for a zoning by-law amendment.

_____
_____

3. Is there any other information that you think may be useful in the review of this application? If so, explain below or attach on a separate page.

_____
_____
_____

H. Supporting Material to be submitted by Applicant

In order for your application to be considered complete, folded hard copies and an electronic version of the site plan drawings, additional plans, studies and reports will be required in addition to a sketch plan in accordance with Ontario Regulation 545/06.

A sketch showing, in metric units:

a) the boundaries and dimensions of the subject land;

b) the location, size and type of all existing and proposed buildings and structures on the subject land, indicating their distance from the front lot line, rear lot line and side lot lines;

c) the approximate location of all natural and artificial features (*for example, buildings, railways, roads, watercourses, drainage ditches, banks of rivers or streams, wetlands, wooded areas, wells and septic tanks*) that,

   i. are located on the subject land and on land that is adjacent to it, and

   ii. in the applicant's opinion, may affect the application;

d) the current uses of land that is adjacent to the subject land;

e) the location, width and name of any roads within or abutting the subject land, indicating whether it is an unopened road allowance, a public travelled road, a private road or a right of way;

f) if access to the subject land will be by water only, the location of the parking and docking facilities to be used; and

g) the location and nature of any easement affecting the subject land

The following additional plans, studies and reports, including but not limited to, **may** be required as part of a complete application submission:

- ☐ On-Site Sewage Disposal System Evaluation Form (to verify location and condition)
- ☐ Cut and Fill Plan
- ☐ Erosion and Sediment Control Plan
- ☐ Grading and Drainage Control Plan (around perimeter and within site) (existing and proposed)
- ☐ Plan and Profile Drawings
- ☐ Site Servicing Plan
- ☐ Storm water Management Plan
- ☐ Street Sign and Traffic Plan
- ☐ Street Tree Planting Plan
- ☐ Tree Preservation Plan
- ☐ Archaeological Assessment
- ☐ Environmental Impact Study
- ☐ Functional Servicing Report
- ☐ Agricultural Impact Assessment
- ☐ Geotechnical Study / Hydrogeological Review
- ☐ Minimum Distance Separation Calculations
- ☐ Noise or Vibration Study
- ☐ Record of Site Condition
- ☐ Stormwater Management Report
- ☐ Traffic Impact Study

The approval of the proposed development might be subject to additional federal or provincial legislation, municipal by-laws or other agency approvals.

I. Transfers, Easements and Postponement of Interest

The owner acknowledges and agrees that if required, it is their solicitor's responsibility on behalf of the owner to disclose the registration of all transfer(s) of land and/or easement in favour of the County and/or utilities. Also, the owner further acknowledges and agrees that it is their solicitor's responsibility on behalf of the owner to undertake the registration of postponements of any charges in favour of the County.

J. Permission to Enter Subject Lands

Permission is hereby granted to Norfolk County officers, employees or agents, to enter the premises subject to this application for the purpose of making inspections associated with this application, during normal and reasonable working hours.

K. Freedom of Information

For the purposes of the *Municipal Freedom of Information and Protection of Privacy Act*, I authorize and consent to the use by or the disclosure to any person or public body any information that is collected under the authority of the *Planning Act, R.S.O. 1990, c. P. 13* for the purpose of processing this application.

_____ _____

Owner/Authorized Applicant Signature Date

L. Owner's Authorization

If the authorized applicant/agent is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We _____ am/are the registered and authorized owner(s) of the lands that is the subject of this application.

_____ _____

I/We authorize _____ to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application. Moreover, this shall be your good and sufficient authorization for so doing.

Owner Date

_____ _____

Owner Date

M. Declaration

I,_____of _____

solemnly declare that:

all of the above statements and the statements contained in all of the exhibits transmitted herewith are true and I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of *The Canada Evidence Act*.

Declared before me at:

_____ _____

Owner/Authorized Applicant Signature

In _____

This _____day of _____

A.D., 20____

_____

Pre-Submission Consultation Meeting Notes

Date: July 18th, 2023.

Description of Proposal: Category 3 – Class A, Aggregate Resource Extraction

Property Location: 364 St. John's Road East (Roll Number: 3310337030080000000)

Please read all the information in this document on the requirements for future development planning applications. As a result of the information shared at the pre-consultation meeting dated July 5th, 2023, the following applications and qualified professional documents/reports are required as part of a complete application. Please include all listed items with the application to ensure a complete application. The County reserves the right to change, reduce or add requirements for a complete application, particularly if the submission does not match the proposal as reviewed during the pre-submission consultation meeting.

Please note that various fees are associated with each application, and there are also costs for qualified professionals retained to complete various documents/reports. All requirements identified are minimum and determined as of the date of the pre-consultation meeting, with the information available at that time. As the proposal proceeds, more information is made public, additional applications, studies, reports, etc., may be required. The information in this document is applicable for a maximum of one (1) year from the meeting date.

Before you submit your application, please contact the assigned Planner to confirm submission requirements and the applicable fee.

As part of a complete application, a signed version of these meeting notes is required.

Proponent / Agent Name	Signature	Date

Attendance List

Proponent	Allen Gee (Owner) Peter Penner, P.Eng (Cjdeng) Trevor Benjamins, Planner (Cjdeng)
Community Development – Planning and Agreement	Tricia Givens, Director, Planning (Chair) Fabian Serra, Planner
Community Development –	Scott Northcott, Senior Building Inspector

Building and Zoning	Jonathan Weir, Building Inspector Roxanne Lambrecht, Zoning Administrator
Environment & Infrastructure Services – Development Engineering	Stephen Gradish, Development Technologist
Community Services – Fire	Katie Ballantyne, Community Safety Officer
Community Development – Economic Development	Chris Garwood, Economic Development Supervisor
Paramedic Services	Stuart Burnett, Deputy Chief
Operations – Forestry	Adam Biddle, Supervisor of Forestry
Operations – Parks and Facilities	Todd Shoemaker, Director, Parks
Corporate Support Services – Realty Services	Kelly Darbishire, Specialist, Realty Services Karen Lambrecht, Corporate Support Generalist
Corporate Support Services – Accessibility	Sam McFarlane, Manager, Accessibility and Special Projects
Haldimand Norfolk Health Unit	Stephanie Rice
Long Point Regional Conservation Authority	Leigh-Anne Mauthe, Supervisor of Planning Services Isabel Johnson, Resource Planner
Community Development – Heritage and Culture	Melissa Collver, Director Heritage and Culture
Community Development – Recreation	Nikki Slote, Director Recreation

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Proposal Summary

Proposal of Aggregate Extraction of a Category 3 – Class A license at 364 St. John's Road East in Norfolk County.

List of Application Requirements* and General Comments

Planning Department

Planning application(s) required to proceed	**Required**
Official Plan Amendment Application	x
Zoning By-law Amendment Application	x
Site Plan Application	
Draft Plan of Subdivision Application	
Draft Plan of Condominium Application	
Part Lot Control Application	
Consent / Severance Application	
Minor Variance Application	
Removal of Holding Application	
Temporary Use By-Law Application	
Other - Click here to enter text.	

Planning requirements for a complete application The items below are to be submitted as part of the identified Planning Application(s). ** electronic/PDF copies of all plans, studies and reports are required**	**Required at OPA/ Zoning Stage**	**Required at Site Plan Stage**
Agricultural Impact Assessment		
Air Treatment Control Study		
Archeological Assessment		
Contaminated Site Study		
Dust, Noise and Vibration Study including truck haul route (can be included in PJR)	x	
Elevation Plan		
Environmental Impact Study (Scoped)	x	
Geotechnical Study		
Heritage Impact Assessment		
Hydrogeological Study		
Landscaping Plan		
Market Impact Analysis		
Minimum Distance Separation Schedule		
MOE D-Series Guidelines Analysis		
Neighbourhood Plan		
Odour Mitigation Plan		
Parking Assessment		

Planning Justification Report/Impact Analysis	x	
Photometrics (Lighting) Plan		
Record of Site Condition		
Rehabilitation Plan	x	
Restricted Land Use Screening Form		
Site Plan/Drawing	x	
Topographical Study	x	
Additional Planning requirements		**Required**
Development Agreement		
Parkland Dedication/Cash-in-lieu of Parkland		

* Any changes to a proposal may necessitate changes to Planning Department submission requirements. Reports and studies are subject to peer review.

Community Development fees, applications, and helpful resources can be found can be found by visiting https://www.norfolkcounty.ca/government/planning/

Planning Comments

Bedrock Resource Areas, and Sand and Gravel Resource Areas, as identified by the Ministry of Natural Resources and Forestry, are illustrated on Schedule “J” in the County’s Official Plan. The extraction of aggregate, mineral or petroleum resources is permitted in agricultural lands. However, an Official Plan amendment may be required to identify the proposed site as an “Aggregate Resource Areas” to update Schedule “J” in consultation with Ministry of Natural Resources and Forestry. The proposal of Aggregate extraction is subject to section 4.6.1 of the OP related to Mineral Aggregates.

4.6.1 Mineral Aggregates.

The following shall be the policy of the County:

a) Exploration and extraction of mineral resources shall be undertaken in accordance with Federal and Provincial legislation, as well as municipal regulation.

b) Aggregate Resource Areas shall be protected for future use. More precise boundaries of the Aggregate Resource Areas may be established through consultation with the Ministry of Natural Resources and Forestry. Subject to consultation with the Ministry, minor modifications to the boundaries of the Aggregate Resource Areas shall not require an amendment to this Plan.

f) The County shall not permit new pits and quarries in Provincially Significant Wetlands, as identified in Section 3.5 (Natural Heritage Systems) and shown on Schedule “B”” of this Plan. Prior to the development of new pits and quarries on lands adjacent to Provincially Significant Wetlands, as identified on Schedule “C”, or on lands that are on or adjacent to the habitat of endangered species and threatened species, an Environmental Impact Study

shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study) demonstrating to the satisfaction of the County and any other required approval agency that the proposed pit or quarry will have no negative impact on the natural features or their ecological functions.

g) The County shall generally not permit new pits and quarries in Natural Heritage Features, as identified on Schedule "J" to this Plan and listed on Table 2 of Section 3.5.2. Prior to the development of new pits and quarries within or adjacent to a Natural Heritage Feature, an Environmental Impact Study shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study).

l) New pits and quarries or expansion of legally existing pits or quarries in Aggregate Resource Areas identified on Schedule "J" shall be permitted without an amendment to this Plan. New pits and quarries or the expansion of legally existing pits or quarries shall require an amendment to the Zoning By-law.

k) Applications for Official Plan and/or Zoning By-law amendments, as referenced in Subsections i) and j) shall be reviewed on the basis of the following:

i. the feasibility of aggregate extraction proposed;
ii. compatibility with the surrounding land uses;
iii. impact of the proposed haulage routes;
iv. potential impact on groundwater quality and quantity, Provincially Significant Features, Natural Heritage Features, and the broad natural environment;
v. rehabilitation plans;
vi. potential impacts to cultural heritage resources;
vii. matters raised by the province or the appropriate Conservation Authority; and
viii. whether approval will be granted under the Aggregate Resources Act.

l) Where extraction is proposed below the water table, the following criteria shall be satisfied:

i) a hydrogeological study shall be conducted for aggregate operations that intend to use groundwater resources to wash their aggregate and will use greater than 50,000 litres per day during this washing process;

ii) a substantial quantity of mineral aggregate is located below the water table warranting extraction below the water table;

Endangered and threatened species and their habitat are protected under the provinces Endangered Species Act, 2007 (ESA), O. Reg. 242/08 & O. Reg. 830/21. The Act prohibits development or site alteration within areas of significant habitat for endangered or threatened species without demonstrating that no negative impacts will occur. The Ministry of Environment, Conservation and Parks provides the service of responding to species at risk information requests and project screenings. The proponent is responsible for discussing the proposed activity and having their project screened with MECP.

Iii) other alternatives have been considered by the applicant and have been found unsuitable. Other alternatives include resources on land committed to future urban uses, and resources in the Rural Area where rehabilitation to agricultural uses is possible; and

iv) in those areas remaining above the water table following extraction, agricultural rehabilitation shall be maximized.

O) Rehabilitation of mineral aggregate extraction sites shall be required in accordance with the requirements of the Aggregate Resources Act. Progressive rehabilitation shall be encouraged.

The subject lands are designated Agricultural in the Norfolk County Official Plan. **Significant Woodlands are also overlaid on a small portion of the subject lands to the south. A Buffer is to be provided between the significant and the aggregate pit. A buffer is to be further explored in the scoped EIS.** The extraction of aggregate, mineral or petroleum resources is permitted in agricultural lands, in accordance with the following policies:

1. Section 7.2.1 related to permitted use in agricultural lands states that The extraction of aggregate, mineral or petroleum resources shall be permitted in accordance with the Aggregate Resources Act, the Mining Act or the Oil, Gas and Salt Resources Act, as appropriate, subject to the policies of Section 4.6(Natural Resources) of this Plan.
2. Section 4.6.1 (i) states that new pits and quarries or expansion of legally existing pits or quarries in Aggregate Resources Areas identified on Schedule “J”(appendix D) shall be permitted without an amendment to this Plan. New pits and quarries or the expansion of legally existing pits or quarries shall require an amendment to the Zoning By-law.
3. Applications for Official Plan and/or Zoning By-law amendments, as referenced in section 4.6.1 (i) shall be reviewed on the basis of the following:
    i. the feasibility of aggregate extraction proposed;
    ii. compatibility with the surrounding land uses;
    iii. impact of the proposed haulage routes;
    iv. potential impact on groundwater quality and quantity, Provincially Significant Features, Natural Heritage Features, and the broad natural environment;
    v. rehabilitation plans;
    vi. potential impacts to cultural heritage resources;
    vii. matters raised by the Province or the appropriate Conservation Authority;
    viii. whether approval will be granted under the Aggregate Resources Act.
4. Rehabilitation of mineral aggregate extraction sites shall be required in accordance with the requirements of the Aggregate Resources Act.
5. In the Agricultural Area, complete agricultural rehabilitation is not required if;
    i. Extraction is permitted below the water table;
    ii. Other alternatives have been considered and found unsuitable; and

iii. Agricultural rehabilitation in remaining areas is maximized.

Category 3 Class A

The site plan accompanying an application for a Class A pit license which is restricted to extracting aggregate material no closer than 1.5 meters above the established groundwater table must show the standard information required by Aggregate Resources of Ontario: Provincial Standards on the site plan submitted.

A progressive Rehabilitation Plan and Cross Sections of existing and after rehabilitation conditions are required.

Public Consultation:

It would be the applicants responsibility to provide any required notifications and public consultations as per Ministry's guidelines within the required timeframe. The County will confirm its own notification as per the Planning Act once an application is deemed complete.

Zoning By-Law Amendment: A zoning by-law amendment will be required to allow aggregate extraction on the subject lands.

If agricultural rehabilitation is appropriate as per the Official Plan policies and Aggregate resource Act, the change of use will be added as a special provision in Agricultural zone. If other alternatives have been considered and found unsuitable and an agricultural rehabilitation is not feasible then the zoning by-law amendment will change the zoning from Agriculture Zone (A) to Extractive Industrial zone (MX).

Endangered and threatened species and their habitat are protected under the provinces Endangered Species Act, 2007 (ESA), O. Reg. 242/08 & O. Reg. 830/21. The Act prohibits development or site alteration within areas of significant habitat for endangered or threatened species without demonstrating that no negative impacts will occur. The Ministry of Environment, Conservation and Parks provides the service of responding to species at risk information requests and project screenings. The proponent is responsible for discussing the proposed activity and having their project screened with MECP (Ministry of Environment, Conservation and Parks).

Please be advised that it is the owner's responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws, or other agency approvals.

[see Appendix A for additional comments]

Assigned Planner:
Fabian Serra
Planner
Extension 8046
Fabian.serra@norfolkcounty.ca

Development Engineering

Development Engineering – 364 St Johns Road E (OPA, ZBA, SPA Aggregate extraction)

Development Engineering requirements to proceed The below requirements are to be submitted as part of the Formal Development Planning application.	**Required at OPA/ Zoning Stage**	**Required at Site Plan Stage**	**Potentially Required (See Notes Section)**
General Requirements			
Concept Plan	X		
Area Rough Grading Plan			X[12]
Siltation and Erosion Control Plan			X[13]
Geotechnical Report	X[7]		
Storm Water Servicing Requirements – Section 7.0 and Section 8 Norfolk County Design Criteria and ISMP Section 4.0			
Storm Water Management Design Report (including calculations)	X[7]		
Storm Water Drainage Plan			X[14]
Establish/Confirm Legal and Adequate Outlet			X[15]
Anticipated Flow/Analysis to Receiving Collection System			X[15]
Transportation Requirements – Section 6.0 Norfolk County Design Criteria, ISMP Section 5.0, Section 6.0 and Appendix J			
Traffic Impact Study	X[8, 9]		
Improvements to Existing Roads & Sidewalk (urbanization, pavement structure, widening sidewalk replacement, upgrades, extension and accessibility)	X[10, 11]		

General Notes:

1. All reports and drawings are to adhere to Norfolk County's Design Criteria and Integrated Sustainable Master Plan (ISMP).
2. Recommendations from all reports must be incorporated into the design. All reports

and drawings must be signed and stamped by a P.Eng.

3. The required plans will be addressed through the Aggregate Resource Plan
4. Securities will be required if a site plan is to be registered. 10% of site works and 100% of works within the right-of-way. This is to be provided in a security schedule. A copy of Norfolk County's template can be provided. This can be provided at time of Site Plan
5. Any new or additional entrances to the property are subject to the terms of Norfolk County By-Law 2016-32, Entrance Installation will require an "Application for Entrance" permit. The form can be found on the Norfolk County Website at https://www.norfolkcounty.ca/government/clerk-council-services/forms-permits-and-licence-applications/

Required at OPA / ZBA Stage:

6. Concept Plan
7. It is the understanding of Development Engineering that the required Storm Water, Geotechnical, & Hydrological Reports will be addressed through the Aggregate Resource Plan submission. Development Engineering will review all associated files to ensure the proposal meets Norfolk County Design Criteria and standards.
8. As per Norfolk County's Integrated Sustainable Master Plan (ISMP) – Appendix J: Traffic Impact Study (TIS) Guidelines, a Traffic Impact Study will be required.
    a. Special attention must be addressed to Section A1.10 HEAVY VEHICLE TRIPS.
9. Norfolk County will review all "Truck Hauling Routes". During the County review it may be necessary to have the developer complete precondition ratings of the existing Pavement condition. Criteria should be developed to monitor the Truck Haulage Route to ensure there is no damage to the existing Norfolk County Assets.
10. All entrances are to be shown on the plans. Entrances must conform to Norfolk County Design Criteria and By-law 2016-32 for commercial/heavy industrial minimum driveway design.
    a. Driveway Grades (Section 6.7.02);
    b. Driveway Widths (Section 6.7.03);
    c. Number of Commercial entrances (By-Law 2016-32)

    Entrance design must also encompass any recommendations from the Traffic Impact Study.
11. All entrances are to be paved on municipal property as a minimum and follow Section 6.7.01 Minimum Driveway Design for commercial entrances.

Site Plan Stage:

At the time of Pre-consultation, it was the understanding of Development Engineering that this Stage will NOT be an official submission to Norfolk County for a registered Site Plan. This stage will be completed as part of the submission and approval by the Ministry of Natural Resources.

Potentially Required Notes:

12. An Area Rough Grading Plan may be required for all areas where Cuts and/or fills

exceed 0.5m

13. A Siltation and Erosion Control Plan is anticipated to be required as part of a complete submission to the Ministry. Development Engineering would like a copy for our records.
14. A Stormwater drainage plan may be required. This plan will show existing and proposed drainage patterns and show any adverse effects on surrounding properties.
    a. As mentioned at the pre consultation meeting the applicant had a possible concern with a road culvert crossing in front of this property which they felt may outlet into the property. In consultation with both the Drainage Department and the Roads Department there have been no reports of any issues in this area regarding road culverts or outlets. The Consultant is recommended to make themselves familiar with the area and provide any plans necessary to ensure no adverse effects to this site or the Road allowance.
15. Confirm legal and adequate outlet – If the proposed aggregate extraction will have any impact on the current legal and adequate outlet then any changes must be confirmed in the SWM report and must be validated by Norfolk County that any changes are acceptable for Legal and adequate outlet. It is recognized that an area of this property is designated and Zoned Hazard Lands (HL). Existing drainage to these areas must be maintained where possible.

Stephen Gradish
Development Technologist
Extension 8015
Stephen.Gradish@norfolkcounty.ca

Agreements

A recommended condition of your planning application approval could be to enter into a development agreement with the County that will be registered on title to the subject lands, at the Owner's expense. The additional requirements for a development agreement could include, but are not limited to the following:

- Engineering drawing review
- Engineer's schedule of costs for the works
- Clearance letter and supporting documentation to support condition clearance
- User fees and performance securities
- Current property identification number (PIN printout) (can be obtained by visiting https://help.onland.ca/en/home/)
- Owner's commercial general liability insurance to be obtained and kept in force during the terms of the agreement
- Postponement of interest. If there are mortgages / charges on your property identifier, your legal representative will be required to obtain a postponement from your bank or financial institution to the terms outlined in your development agreement
- Transfers and / or transfer easements along with registered reference plan

Annette Helmig
Agreement and Development Coordinator
Extension 8053

Annette.Helmig@norfolkcounty.ca

Conservation Authority
Long Point Regional Conservation Authority

Conservation Authority requirements to proceed	May be Required	Required
Conservation Authority Permit	x	

Notes:

Site Characteristics

The subject property is subject to flooding and erosion hazards from the **Provincial Policy Statement,**
2020, Section 3.1 Natural Hazards

Conservation Authorities have been delegated responsibilities from the Minister of Natural Resources and Forestry to represent the provincial interests regarding natural hazards encompassed
by Section 3.1 of the Provincial Policy Statement, 2020 (PPS). The overall intent of Section 3.0 -
Protecting Public Health and Safety of the PPS is to reduce the potential public cost or risk to Ontario's residents from natural or human-made hazards. As such, the PPS states "development shall
be directed away from areas of natural or human-made hazards where there is an unacceptable risk to
public health or safety or of property damage, and not create new or aggravate existing hazards."

The application is subject to the following subsections of section 3.1 of the Provincial Policy Statement:
3.1.1 Development shall generally be directed, in accordance with guidance developed by the Province (as amended from time to time), to areas outside of:

b) hazardous lands adjacent to river, stream and small inland lake systems which are impacted by Flooding hazards and/or erosion hazards; and

Staff can advise that the proposed application appears to be consistent with section 3.1 of the
Provincial Policy Statement, 2020.

Ontario Regulation 178/06

The subject lands are regulated by Long Point Region Conservation Authority under Ontario Regulation 178/06. It appears the pit will be outside of the regulated area. However, if any grading, or extraction is planned within 30m of the existing watercourse, a permit will be required, unless the work is part of an approved Aggregate Resources Act license.

Current Planning Application Fees (2023)
Pre-consultation Fee - $339

Combined Official Plan/Zoning By-Law Amendment- $813.60 Zoning By-Law Amendment- $514.15*
* Accompanied by 1 technical report- $813.60, Accompanied by 2 technical reports- $1,615.90

LPRCA fees, applications, and helpful resources can be found can be found by visiting https://lprca.on.ca/planning-permits/planning-fees/
Regards,
Isabel Johnson, Resource Planner
planning@lprca.on.ca

Building

Zoning Administrator:

-AGR zone and HL zone does not permit sand and gravel pit. Appropriate zone would be (MX) Extractive Industrial Zone for area of need
-No buildings or structures are proposed at this time.

Roxanne Lambrecht
Zoning Administrator
Extension 1839
Roxanne.Lambrecht@norfolkcounty.ca

Building Inspector:

The site plan indicates no new construction proposed. Any structure larger than 10sqm, installation of plumbing or a septic system will require a building permit.

Structures functioning as a lunchroom for employees, office space, scale house etc will fit the requirements for a building permit.

Please see below the definition of a “building” according to the BCA.

“building” means,

(a) a structure occupying an area greater than ten square metres consisting of a wall, roof and floor or any of them or a structural system serving the function thereof including all plumbing, works, fixtures and service systems appurtenant thereto,

(b) a structure occupying an area of ten square metres or less that contains plumbing, including the plumbing appurtenant thereto,

(c) plumbing not located in a structure,

(c.1) a sewage system, or

(d) structures designated in the building code; (“bâtiment”)

Jonathan Weir
Building Inspector
jonathan.weir@norfolkcounty.ca

Corporate Support Services – Realty Services

If a Development Agreement is required, then the County will require postponements of any charges/mortgages (if any) on title to the County's Development Agreement. We recommend that you contact your Lender(s) (if any) and/or your solicitor as early in the process as possible to avoid any delays.

Karen Lambrecht
Corporate Services Generalist,
Realty Services
realty.services@norfolkcounty.ca

Appendix A: Planning Reference Materials

Following is a summary of some land use planning reference materials. It is the requirement of the applicant to ensure compliance with applicable legislation, policies and regulations.

Provincial Policy Statement, 2020

https://www.ontario.ca/page/provincial-policy-statement-2020

Norfolk County Official Plan
https://www.norfolkcounty.ca/government/planning/official-plan/

Section 4.6.1 outlines requirements in relation to Mineral Aggregates in the Official Plan.

Section 9.6.1 outlines requirements in relation to requests to amend the Official Plan.

Section 9.6.2 outlines requirements in relation to requests to amend the Zoning By-law.

It is the responsibility of the proponent to review and ensure relevant Official Plan policies are addressed in any future development application.

Norfolk County Zoning By-Law 1-Z-2014
https://www.norfolkcounty.ca/government/planning/new-zoning-by-law/

The provisions of the Norfolk County Zoning By-Law shall apply to all lands within the boundaries of Norfolk County. No land, building or structure shall be used, erected, or altered in whole or in part except in conformity with the provisions of this By-Law. No land, building or structure shall be used or occupied except for uses that are specifically identified in the By-Law as permitted uses by the relevant zoning category.

It is the responsibility of the proponent to review and ensure relevant Zoning By-law provisions are addressed in any future development application

PLANNING JUSTIFICATION REPORT:

KELLY PIT

Application to Amend the County of Norfolk Zoning By-law to permit sand and gravel extraction

364 ST JOHNS RD E
PART LOT 5, CONCESSION 2 (WOODHOUSE)
TOWN OF SIMCOE, NORFOLK COUNTY

Prepared for:
26909095 Ontario Inc.

Prepared by:
ESHER PLANNING INC.
133 Ayton Cres.
Woodbridge, Ontario L4L 7H6

Esher Planning Inc.

August 2025

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1.0 Introduction

Esher Planning Inc is submitting applications on behalf of 2690905 Ontario Inc to amend the Zoning by-law for Norfolk County, in order to permit a sand and gravel pit operation (**Kelly Pit**). An application has also been submitted to the Ministry of Natural Resources (MNR) under the Aggregate Resources Act (ARA) for Class A, Pit Below Water License. The proposed pit will not extend into the water table to create a pond, however, where extraction is proposed within 1.5 metres of the high water table, MNR considers the application to be a below water application.

The proposed pit is located at 364 St. John's Road East in part of Lot 5, Concession 2, former Township of Woodhouse, now Town of Simcoe, Norfolk County, Ontario (see **Figure 1**). The subject property has an area of 29 hectares (72 acres) with frontage along St. John's Rd. East. The proposed licence applies to a portion of the property (25 hectares).

The property is currently designated 'Agriculture' and 'Hazard Lands' in the County Official Plan. The proposed licence would apply to the portion of the property that is designated Agriculture and excludes the Hazard Lands area identified in the southern part of the property. The area to be licenced is also identified as a Buried Sand and Gravel Resource Area as illustrated on Schedule 'J' of the County's Official Plan. The extraction of aggregate, mineral or petroleum resources is permitted in agricultural lands, subject to meeting the policy requirements of the Official Plan. An amendment to the Zoning Bylaw is required to permit the proposed pit.

The Planning Act and Aggregate Resources Act applications are supported by a series of technical studies which have assessed the impact of the proposed operation on neighbouring residents, the natural environment, the agricultural capabilities of the land, the impact on roads, and municipal water supply. The Site Plans detail the manner in which operations will be carried out as described by the sequence of mining and progressive rehabilitation.

The following information and reports have been prepared in support of this application:

- Hydrogeology Report: Groundwater Science Corp.
- Natural Environment Report: Vroom & Associates
- Noise Impact Assessment Report: Aercoustics Engineering Ltd.
- Cultural Heritage/Archaeology Report: Lincoln Environmental Consulting
- Traffic Impact Study: SBM Engineering
- Site Plans: Harrington McAvan Ltd.

The proposed pit operation has been designed in accordance with current industry best practices and reflects the recommendations of the accompanying technical reports. The operational notes on the license site plans under the Aggregate Resources Act, have incorporated conditions to reflect specific recommendations and measure to mitigate any potential negative environmental effects. This report provides an overview of the applications and an analysis of the proposed expansion in the context of current provincial and municipal planning policy.

1.1 LOCATION AND SURROUNDING LANDS

The subject property has an area of 29 hectares (72 acres) with frontage along St. John's Rd. East. The proposed Aggregate Resources Act licence would include 25 hectares of the property and excludes the northern part of the property and the wooded feature along the southern boundary (see **Figure 2**).

The ground surface of the site is rolling and slopes down from the north to the south. A house and barn are located in the north part of the property at St John's Road East, and a tree line extends along the east property line. There is a private natural gas well and located on the property, and a woodland located at the southern limit. A tree line cuts across the property (east to west) approximately midway through the property just north of a gas pipeline easement. There are remnant tobacco kilns located in the northeast part of the property.

The area to be extracted is approximately 22.4 hectares

The surrounding lands include an existing gravel pit (Thompson Pit) on the property to the east, which has a class B licence (ARA #3766). The applicant currently operates the Thompson pit. In 2023 approvals were obtained from the municipality for an entrance and access to the Thompson Pit through the subject property at the western end of the site, onto St. John's Rd East. The entrance and access was also approved though the Ministry of Natural Resources. The associated approvals documents are included in Appendix A of this report.

There are a number of residences located along St. John's Rd East, and the surrounding land use is predominantly agricultural. There is another gravel pit located northwest of the subject lands (Lipsit pit) which also operates as a class B licence. Industrial uses near the site include Thompson Landscape Supply and Cookston Disposal, located on the north side of St. John's Road East (see **Figure 3**).

2.0 Description of the Proposal

The technical reports submitted with the ARA application assessed the potential impacts of the proposed pit operation on groundwater, natural heritage and cultural heritage features on the site and adjacent lands.

Rehabilitation of the site will restore the extracted lands to an agricultural after use, compatible with the surrounding lands. The agricultural land shall be returned to soil capabilities that are the same as the present capabilities. Rehabilitated grades will be coordinated with the rehabilitation plans for the existing Thompson pit licence. The current agricultural uses shall continue on this site as long as possible during pit operations.

The ARA Site Plans include details about the pit operations and rehabilitation as well as technical recommendations as outlined in the reports submitted with the application.

2.1 AGGREGATE RESOURCE OVERVIEW

Geological mapping for the area is based on the Ontario Geological Survey and shows that the deposit on the site is primarily sand, originating from a glaciolacustrine deposit. In general, the aggregate is acceptable for Granular Base, Course B and C and select subgrade material. Hot-laid asphalt products may be manufactured with proper blending.

The quality and quantity of the aggregate resource within the area to be licensed was confirmed by on-site test pit and drilling which included 4 boreholes drilled to depths between 12.2 and 14.3 metres and 15 test pits ranging from 3.7 to 4 metres in depth. The results of the site investigation indicate that the surficial sand/gravel resource varies from approximately 8 -10 m in thickness, with approximately 60 percent of the resource located within 1.5 metres of the water table. The area to be licensed contains an estimated 2.7 million tonnes of aggregate resource. The deposit is primarily sand and fine sand, with gravel present in the northern part of the site. Based on grain size analysis of test pit samples, the material is suitable for concrete and mortar and and Granular B material as well as SSM.

The Official Plan mapping is based on provincial resource mapping which is derived from existing surficial geology maps of the area or from aerial photograph interpretation in areas where surficial mapping is incomplete. The exact limits of the deposit can vary on the ground. The mapping shows there is a buried outwash deposit, overlain by sand and clay. As noted, the onsite testing has confirmed the resource on the site is primarily sand, with some gravels in the northern part of the site. The material is suitable for a range of construction materials.

2.2 OPERATIONS AND PHASING

The proposed licensed area is approximately 25 ha and the proposed extraction area is approximately 22.4 ha. As extraction occurs, the operational area will be sequentially stripped of topsoil and subsoil, and this material will be stored on-site generally within berms or used for progressive rehabilitation.

The proposed extraction would remove gravel to a depth of 0.5 metres above the water table. The pit would be operated in 2 areas, as shown on the Site Plans. Extraction will occur sequentially in phases as shown in the Site Plans, starting in Area 1 and proceeding to Area 2. Existing topsoil and overburden soils will be stockpiled along the west and north limits of Area 2, to provide noise attenuation as outlined in the Noise Impact Assessment Report. The material will be used for rehabilitation of the site.

The operations will maintain a minimum 15 m setback from the western property limit, and a 20 m setback adjacent to the woodlot in the southern area of the site. The areas of the site that are not being actively extracted will remain in agricultural use.

The aggregate operations will include excavation of sand and gravel, using excavators, loading with front end loaders and transporting them by truck to the processing area. Portable and stationary processing equipment for screening and crushing will be used on site and will generally be located on the pit floor. A wash plant is also proposed. Other equipment may include excavators, bulldozers and conveyors.

Aggregate processing operations and shipping will only occur during daytime hours (7am to 7pm Monday to Friday and 7am to noon Saturday). Processing and shipping of material will be done in the existing pit. Existing vegetation will be maintained to visually buffer the pit from the adjacent land uses. Fencing will be upgraded to meet the requirements of the Aggregate Resources Act along the site boundaries to prevent inadvertent access into the property.

The aggregate material from the proposed expansion will be shipped to market through the existing pit entrance on St. Johns Road E. The Pit license proposes an annual maximum material extraction of 325,000 tonnes.

The site plans have incorporated the technical recommendations from all the reports to minimize any negative impacts on the adjacent land uses from the proposed pit.

2.4 REHABILITATION

In accordance with the requirements of the Aggregate Resources Act Provincial Standards, the extracted area will be progressively rehabilitated, as outlined on the Site Plans. All topsoil and overburden on site will be stripped and stockpiled separately in berms or stockpiles and replaced as quickly as possible in the progressive rehabilitation process. Soil stripping/handling will only occur during dry (unsaturated) and unfrozen conditions. Topsoil berms shall be graded to stable slopes and seeded with a grass/legume mixture to prevent erosion and minimize dust.

In the short term, the expansion areas will continue to be used for agriculture until such time as the aggregate extraction commences. The phasing of the pit will maintain lands in agricultural use during pit operations as much as possible. The final rehabilitation of this property will be to an agricultural after use as shown on the Site Plans.

The ARA Site Plans (Rehabilitation Plan) include additional details regarding progressive and final rehabilitation. The final rehabilitation will be compatible with the surrounding lands and land uses and enhance the existing natural features within and surrounding the site.

During rehabilitation in the agricultural areas the soils shall be replaced in a manner that approximates the original soil profile. Prior to soil placement compacted areas of the pit floor shall be ripped and scarified. As such, it is expected that the same average soil capability will be restored.

The proposed final rehabilitation is compatible with the surrounding lands and land use. The owners will cultivate the rehabilitated lands and plant the areas with a cover crop of grasses and legumes to get the soil productive and return the land to crops and pasture. The rehabilitation plan is consistent with the Official Plan and the Provincial Planning Statement (2024).

2.5 BACKGROUND REPORTS AND SITE PLANS

The Planning Act and Aggregate Resources Act applications are supported by a series of technical studies which have assessed the impact of the proposed operation on the natural environment, cultural heritage, and water resources. These reports have been prepared in accordance with the requirements under the Aggregate Resources Act and also meet the requirements for review of the Planning Act application.

The Site Plans detail the manner in which operations will be carried out as described by the sequence of operations and progressive rehabilitation. The Site Plans form the basis of the pit license application under the Aggregate Resources Act and also form an integral part of the review process of the applications.

The proposed pit operation has been carefully designed and reflects recommendations of the accompanying technical reports, together with comments from reviewing agencies. The operational notes on the license site plans under the Aggregate Resources Act, have incorporated conditions to reflect specific recommendations and measures to mitigate any negative environmental effects.

3.0 Planning Considerations

The subject lands fall within the Planning jurisdiction of Norfolk County. This report evaluates the proposed land use within the context of the Official Plan, as well as within the context of Provincial legislation including the Planning Act, and the Provincial Planning Statement (PPS 2024).

The protection and management of aggregate resources has been deemed to be of provincial significance, and their development is regulated by specific legislation. In addition to the Aggregate Resources Act (ARA), the development of aggregate extraction operations must respect the provisions of the Planning Act and give appropriate consideration to the policy framework established by the regional and municipal planning documents.

When making any land use planning decision, it is necessary to review provincial interests and determine how they may be impacted through development. In the case of aggregate development, often more than one provincial interest exists, and it is the goal of sound land use planning to balance and protect these competing interests in the most effective manner, keeping in mind the long term planning horizon.

The area to be licenced is currently designated as "*Agriculture*" in the Official Plan (see **Figure 4**). The site is also identified as a "Buried Sand and Gravel Resource Area" on Schedule J of the Official Plan. The property is currently zoned Agriculture (A) in the Zoning By-law (see **Figure 6**). The proposed pit will require an amendment to the Zoning By-law to rezone the lands from the Agriculture zone (A) to Extractive Industrial zone (MX).

The following analysis provides an assessment of the proposed pit in the context of relevant Provincial and Local planning policies. For ease of reference, the following tables review the proposal against the applicable current planning policies. The evaluation is based on the findings of the technical studies forming part of the application submission, an evaluation and an analysis of the surrounding land use, and the environmental impact of the proposal.

3.1 PLANNING ACT

When carrying out its responsibilities under the Planning Act, a municipality or any other authority which affects a planning matter must have regard for the provincial interests as identified in Section 2 of the Planning Act.

The provincial interests contained in Section 2 of the Planning Act are outlined in the table below. The Kelly Pit proposal has been evaluated in the context of these prescribed provincial interests:

Planning Act, Section 2 Evaluation

Provincial Interests	Kelly Pit Proposal
2(a) The protection of ecological systems, including natural areas, features and functions.	The proposed extraction operations and associated development activities for the application have been assessed for impacts on the natural environment. The recommendations of the Vroom & Associates report have been incorporated into the pit design, thereby protecting ecological systems, natural areas, features and functions.

Provincial Interests	Kelly Pit Proposal
2(b) The protection of the agricultural resources of the Province	The proposed rehabilitation of the site to agricultural uses allows for the interim use of the site for aggregate extraction while returning the lands to an appropriate use once extraction is complete. This represents wise resource management and protects the resources of the area for the long term.
2(c) The conservation and management of natural resources and the mineral resource base.	Aggregate resources are a provincial interest and should be protected from incompatible land uses and developed responsibly. The proposed pit will provide a high quality supply of mineral aggregate material to the local and regional markets.
2(d) The conservation of features of significant architectural, cultural, historical, archaeological or scientific interest.	The Archaeology Assessment Report prepared by Lincoln Environmental Consulting Corp. evaluated the presence of archaeological features on the site. There were no features of archaeological significance identified on this property. The report has been provided by the Ministry of Citizenship and Multiculturalism (MCM) for review and a clearance letter has been issued by the Ministry.
2(e) The supply, efficient use and conservation of energy and water	Ground and surface water features have been studied and documented in the Hydrogeology Report prepared by Groundwater Science Corp. Mitigation measures included on the Operations Plan such as groundwater level monitoring and restriction of surface activities will minimize the potential for groundwater disturbance or contamination in accordance with provincial guidelines.
2(k) The adequate provision of employment opportunities.	The proposed pit will continue to provide local employment opportunities.
2(l) The protection of the financial and economic well-being of the Province and its municipalities.	Norfolk County will see an ongoing source of revenue through property tax assessment and annual tonnage contributions (TOARC) fees.

Provincial Interests	Kelly Pit Proposal
2(m) The coordination of planning activities of public bodies.	The interests of public bodies and agencies are considered by the circulation requirements of the Planning Act and the ARA.
2(n) The resolution of planning conflicts involving public and private interests.	The land use planning process, as well as the ARA licensing process, enables municipalities, agencies and the public to participate in the evaluation of this proposal.
2(o) The protection of public health and safety.	The operational plan contains a variety of mitigation measures which have been developed to minimize the social impact of the proposed pit operation. The requirements of the Operation Plan and site plan notes therein are legally binding as per the ARA.
2(p) The appropriate location of growth and development.	Rural areas are prime location for the development of this non-renewable resource. On-site investigation has confirmed the quality and extent of this resource. The expansion will allow the existing pit operations to continue to supply the local market with construction materials. No significant natural or cultural heritage features will be negatively impacted by the proposed pit operation, and the rehabilitation plans will return the lands to an agricultural use.

3.2 PROVINCIAL PLANNING STATEMENT (PPS) 2024

The Province introduced a new Provincial Planning Statement which came into effect on October 20, 2024. The PPS 2024 is issued under *section 3 of the Planning Act,* which requires that all decisions affecting planning matters shall be consistent with the minimum standards set in the Provincial Planning Statement.

The PPS provides policy direction on matters of provincial interest related to land use planning and development. As a key part of Ontario's policy-led planning system, the Provincial Planning Statement sets the policy foundation for regulating the development and use of land province-wide, helping achieve the provincial goal of meeting the needs of a fast-growing province while enhancing the quality of life for all Ontarians.

The PPS recognizes that the Province's natural heritage resources, water, agricultural lands, mineral aggregate resources, cultural heritage and archaeological resources provide important environmental, economic and social benefits. The wise use and management of these resources over the long term is a key provincial interest. The province must ensure that its resources are managed in a sustainable way to conserve biodiversity, protect essential ecological processes and public health and safety, provide for the production of food and fiber, minimize environmental and social impacts and meet its long term economic needs.

The proposed pit expansion area contains resources that are considered to be of provincial significance: a high-quality aggregate resource, and agricultural land. The operations and progressive rehabilitation plans have been designed to achieve the balance required to manage these overlapping provincial interests.

The following table provides an evaluation of the proposal in the context of the relevant policies of the PPS. The evaluation is based largely on findings of various technical studies referenced previously in this report.

Provincial Planning Statement – Consistency Analysis

PPS (2024) Policies	Kelly Pit Proposal
2.5. Rural Areas in Municipalities *Healthy, integrated and viable rural areas should be supported by:* *f) promoting the diversification of the economic base and employment opportunities through goods and services, including value-added products and the sustainable management or use of resources.*	The proposed pit expansion is located in a rural area. The sustainable management or use of mineral aggregate resources, contributes to the local economic base. The proposed pit and the return of the lands to an agricultural use post extraction represents sustainable resource management.
3.5 Land Use Compatibility *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	The site plans for the proposed pit expansion have been designed to ensure that appropriate mitigation measures are in place to minimize the effects of noise and dust from the operation.

PPS (2024) Policies	Kelly Pit Proposal
and economic viability of *major facilities* in accordance with provincial guidelines, standards and procedures.	
4 Wise Use and Management of Resources *4.1 Natural features and areas shall be protected for the long term.*	The Natural Environment Report has evaluated the impacts of the proposal on significant wetlands, woodlands, fish habitat, and habitat of endangered species and threatened species. The recommended mitigative measures and enhanced habitat creation as part of the rehabilitation plan, are incorporated to ensure no negative impacts on these natural features or their functions.
4.2.1 Planning authorities shall protect, improve or restore the quality and quantity of water by: *b) minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts;* f) implementing necessary restrictions on *development* and *site alteration* to: 1. protect all municipal drinking water supplies and *designated vulnerable areas*; and 2. protect, improve or restore *vulnerable* surface and ground water and their *hydrologic functions*;	No municipal drinking water sources are located within the proposed licensed area. Operational best practices have been included on the Operations Plan in order to minimize any potential for surface activities to impact groundwater quality. These include groundwater level monitoring, and restriction of surface activities (fuel storage and refueling, spills plan, etc.) in accordance with provincial guidelines. The Groundwater Science Corp. report concluded that the proposed gravel pit will not have any adverse effect on surface and groundwater in the area.
4.3 Agriculture *4.3.2 As part of the agricultural land base, prime agricultural areas, including specialty crop areas, shall be designated and protected for long-term use for agriculture.*	The subject property is identified in the Canada Land Inventory Agricultural Capabilities Mapping as predominantly class 1 soils. The proposed extraction of sand and gravel, and progressive rehabilitation is in-keeping with the PPS section 2.3.6.

PPS (2024) Policies	Kelly Pit Proposal
4.3.5 Non-Agricultural Uses in Prime Agricultural Area *4.3.5.1 Planning authorities may only permit non-agricultural uses in prime agricultural areas for:* *a) extraction of minerals, petroleum resources and mineral aggregate resources in accordance with policies 2.4 and 2.5* *b) limited non-residential uses* *4.3.5.2 Impacts from any new or expanding non-agricultural uses on the agricultural sysem are to be avoided, or where avoidance is not possible, minimized and mitigated as determined through an agricultural impact assessment or equivalent analysis, based on provincial guidance.*	Extraction of mineral is permitted in prime agricultural areas. The PPS recognizes aggregate extraction as an interim land use and the site will be progressively rehabilitated to an agricultural after use.
4.5 Minerals Aggregate Resources *4.5.1.1 Mineral aggregate resources shall be protected for long-term use and, where provincial information is available, deposits of mineral aggregate resources shall be identified.* *4.5.2 Protection of Long-Term Resource Supply* *4.5.2.1 As much of the mineral aggregate resources as is realistically possible shall be made available as close to markets as possible.* *Demonstration of need for mineral aggregate resources, including any type of supply/demand analysis, shall not be required, notwithstanding the availability, designation or licensing for extraction of mineral aggregate resources locally or elsewhere.*	The technical studies prepared in support of the proposed pit demonstrate that no natural or cultural heritage features will be impacted by the development. The hydrogeological study has confirmed groundwater elevations and a series of operational practices designed to restrict activities which could present threats to groundwater have been included on the operations plan. Adherence to provincial standards for noise and dust will minimize any potential social impacts and nuisances. The TOARC contributions will provide a sustained fund to the Township for road maintenance along the proposed haul route and ensure safe vehicular access to and from the site is provided over the long-term with minimal disruption to existing traffic flows.

PPS (2024) Policies	Kelly Pit Proposal
4.5.2.2 Extraction shall be undertaken in a manner which minimizes social, economic and environmental impacts.	The site plans for the proposed pit expansion have been designed to ensure that appropriate mitigation measures are in place to minimize the potential social, economic and environmental effects of the pit operations.
4.5.3 Rehabilitation *2.5.3.1 Progressive and final rehabilitation shall be required to accommodate subsequent land uses, to promote land use compatibility, to recognize the interim nature of extraction, and to mitigate negative impacts to the extent possible. Final rehabilitation shall take surrounding land use and approved land use designations into consideration.* *4.5.3.2 Comprehensive rehabilitation planning is encouraged where there is a concentration of mineral aggregate operations.*	The proposed rehabilitation to an agricultural use, with the same soil capabilities that exist pre-extraction, is consistent with provincial policy.
4.5.4 Extraction in Prime Agricultural Areas *4.5.4.1* In *prime agricultural areas, on prime agricultural land, extraction of mineral aggregate resources is permitted as an interim use provided that* *a) impacts to the prime agricultural areas are addressed, in accordance with policy 4.3.5.2; and* *b) the site will be rehabilitated back to an agricultural condition.*	Agricultural uses will continue on a portion of the proposed licenced area and the site will be rehabilitated to an agricultural after use. The proposal is consistent with the PPS in this regard.

PPS (2024) Policies	Kelly Pit Proposal
4.6 Cultural Heritage and Archaeology *4.6.2 Planning authorities shall not permit development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless the significant archaeological resources have been conserved.*	An Archeological Assessment was completed by Lincoln Consulting Corp and will be reviewed by the MCM. There are no significant archaeological resources identified on the subject lands. The proposal is consistent with the PPS in this regard.

3.3 OFFICIAL PLAN POLICIES: NORFOLK COUNTY

The Norfolk County Official Plan is the policy document that establishes the overall land use strategy for growth and development in the County through to the year 2036. The purpose of the Plan is to provide a policy framework to guide economic, environmental and social decisions that have implications for the use of land.

The Plan functions as both a broad growth management and local land use policy plan, dealing with a wide range of environments including Urban Areas, Hamlet Areas, Resort Areas, Rural Areas, the Lake Erie shoreline and natural resources, cultural heritage features and archaeological features. For this report, the January 1, 2023 consolidated version of the Official Plan is referenced.

As shown in F**igures 4 and 5,** the area to be licenced is currently designated 'Agriculture' and is identified as an Aggregate Resource Area. This report examines the proposed Kelly Pit in the context of the Official Plan policies. The key policy considerations are summarized in the charts below.

Norfolk County OP Policy	Kelly Pit Proposal
2.2.1 Strong and Diversified Economy **2.2.1.2 Objectives** c) Promote employment opportunities that utilize local economic and natural resources. i) Recognize aggregate, mineral and petroleum resource potential and establish a framework for the long-term use of these resources.	The OP supports "a flexible and adaptable economic environment that encourages investment and a broad range of employment opportunities". The proposed pit is consistent with the objectives to utilize the County's natural resources (in this case mineral aggregate) and will provide access to construction materials to support growth and development in the County.
.2.2 Protecting and Enhancing the Natural Environment **2.2.2.1 Goal** Protect and enhance the quality of the natural environment through a planning framework that conserves and enhances the diversity and connectivity of the natural forms, features and functions of Norfolk's natural heritage, surface water and ground water resources, and that minimizes and mitigates impacts on air quality.	The proposed pit is designed to protect the natural heritage features that have been identified on adjacent lands outside of the proposed extraction area through the use of setbacks and buffers and measures to mitigate potential impacts on wildlife habitat and habitat for species at risk.
3.0 Sustainable Natural Heritage It is a priority of this Plan to protect, enhance and restore significant natural features and functions, and to reduce the risk to public safety and property from natural hazards, such as flooding and unstable slopes.	The Natural Environment Report (NER) prepared by Vroom & Associates evaluated the potential impact of the proposed pit on natural features and functions on the site and adjacent lands. Mitigation measures including setbacks and buffers are incorporated to protect the features near the site.
3.3 Source Water Protection The Source Protection Plan contains policies to address prescribed drinking water threats and relevant local threats identified in the Assessment Report. The policies of this Plan are intended to implement and complement the policies of the Source Protection Plans that apply within the County of Norfolk.	The property is not within a wellhead protection area or intake zone as defined by the Source Water Protection Plan. Aggregate extraction is not identified as a threat to drinking water.

Norfolk County OP Policy	Kelly Pit Proposal
3.5 Natural Heritage Systems It is the policy of this Plan to conserve Natural Heritage Features and functions and protect such features and areas from incompatible development, wherever possible. These features shall be protected for the long-term and given due consideration in the development, redevelopment and alteration of land within the identified areas. The delineation of these environmental considerations may be refined through the preparation of a detailed Environmental Impact Study (EIS), pursuant to Section 9.7.1 (Environmental Impact Study) of this Plan.	The Natural Environment Report has evaluated the impacts of the proposal on significant wetlands, woodlands, fish habitat, and habitat of endangered species and threatened species. The recommended mitigative measures and enhanced habitat creation as part of the rehabilitation plan, are incorporated to ensure no negative impacts on these natural features or their functions.
4.4 Promoting Agriculture Norfolk County has a rich agricultural land base with approximately 85 per cent considered to be prime agricultural lands consisting of Class 1, 2 and 3 soil capability for agriculture. Agricultural production contributes significantly to the County's economic vitality. It is the policy of this Plan to promote the further development of Norfolk County's agricultural industry and to provide support to local farmers. To support this policy, the County may undertake the following measures: a) Protect the agricultural land base and discourage or prohibit those uses that unnecessarily take agricultural land out of production or which may conflict with farm operations;	Agricultural uses will continue on the site in the areas that are not undergoing active extraction. Progressive rehabilitation will restore the extracted area to an agricultural after use, with a soil capability that matches the pre-extraction capabilities for agriculture.

Norfolk County OP Policy	Kelly Pit Proposal
4.6 Natural Resources **4.6.1 Mineral Aggregates** Petroleum resources and Mineral aggregates play an important economic role in Norfolk County. Existing and potential mineral aggregate resource activities shall be protected, and the extractive industry should be permitted to operate as free from land use conflict as possible, while ensuring minimal environmental impact and social disruption. It is also important that exhausted pits and quarries and mineral resource land be rehabilitated for appropriate uses that are compatible with the surrounding area. Bedrock Resource Areas, and Sand and Gravel Resource Areas, as identified by the Ministry of Natural Resources and Forestry, are illustrated on Schedule "J" to this Plan. Unless otherwise specifically referenced in the policies of this Plan, both shall generally be referred to as "Aggregate Resource Areas" in the policies of this Plan.	The subject property is identified as a mineral aggregate resource area and the proposed pit will provide access to sand and gravel to supply local markets with construction materials. The site will be rehabilitated in accordance with provincial standards.
4.6.1 The following shall be the policy of the County: a) Exploration and extraction of mineral resources shall be undertaken in accordance with Federal and Provincial legislation, as well as municipal regulation. b) Aggregate Resource Areas shall be protected for future use. More precise boundaries of the Aggregate Resource Areas may be established through consultation with the Ministry of Natural Resources and Forestry. Subject to consultation with the Ministry, minor modifications to the boundaries of the Aggregate Resource Areas shall not require an amendment to this Plan.	The proposed pit is being considered through applications under the Aggregate Resources Act, administered by the MNR, as well as associated Planning Act approvals (rezoning) administered by Norfolk County.

Norfolk County OP Policy	Kelly Pit Proposal
f) The County shall not permit new pits and quarries in Provincially Significant Wetlands, as identified in Section 3.5 (Natural Heritage Systems) and shown on Schedule "B"" of this Plan. Prior to the development of new pits and quarries on lands adjacent to Provincially Significant Wetlands, as identified on Schedule "C", or on lands that are on or adjacent to the habitat of endangered species and threatened species, an Environmental Impact Study shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study) demonstrating to the satisfaction of the County and any other required approval agency that the proposed pit or quarry will have no negative impact on the natural features or their ecological functions. g) The County shall generally not permit new pits and quarries in Natural Heritage Features, as identified on Schedule "J" to this Plan and listed on Table 2 of Section 3.5.2. Prior to the development of new pits and quarries within or adjacent to a Natural Heritage Feature, an Environmental Impact Study shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study). When and where the quality of available aggregate or the market changes significantly, new pits and quarries may be considered within Significant Woodlands close to an Urban Area.	The proposed pit is not located in a provincially significant wetland or natural heritage features as identified on Official Plan schedule C.
i)New pits and quarries or expansion of legally existing pits or quarries in Aggregate Resource Areas identified on Schedule "J" shall be permitted without an amendment to this Plan. New pits and quarries or the expansion of legally existing pits or quarries shall require an amendment to the Zoning By-law.	The area to be licenced is identified as a Buried Sand and Gravel Resource Area. Geologic testing on site has confirmed the site contains 2.7 million tonnes of sand and gravel. An application to amend the zoning bylaw is being submitted to permit the proposed use.

Norfolk County OP Policy	Kelly Pit Proposal
o) Rehabilitation of mineral aggregate extraction sites shall be required in accordance with the requirements of the Aggregate Resources Act. Progressive rehabilitation shall be encouraged. Where there is a concentration of mineral aggregate resource operations, comprehensive aggregate resource extraction plans will be encouraged. Progressive and final rehabilitation shall be required to accommodate subsequent land uses, to promote land use compatibility, and to recognize the interim nature of extraction. Final rehabilitation shall take surrounding land use and the Land Use Designation of the lot and surrounding lots into consideration. p) A rehabilitation program shall ensure that the pit or quarry can be utilized for agricultural purposes. Land in the Agricultural Area shall be rehabilitated to ensure that substantially the same areas and average soil quality for agriculture are restored. In the Agricultural Area, complete agricultural rehabilitation is not required if: i) extraction is permitted below the water table; ii) other alternatives have been considered and found unsuitable; iii) and agricultural rehabilitation in remaining areas is maximized. Where agricultural rehabilitation is not required, other appropriate after uses, such as recreational uses may be considered in accordance with the policies of this Plan. Sites may also be rehabilitated to good wildlife habitat using native species for vegetation.	The proposed rehabilitation of the site to agricultural uses allows for the interim use of the site for aggregate extraction while returning the lands to an appropriate use once extraction is complete. The rehabilitation plans have been designed in coordination with the existing pit (Thompson Pit) located adjacent to the east of the site. The grading plan reflects the adjoining rehabilitation plans for the existing pit. The overall site creates a rehabilitation plan that is compatible with the surrounding landscape.
5.7 Cultural Heritage Council shall encourage the preservation of significant built heritage resources and cultural heritage landscapes and may utilize the Ontario Heritage Act to do so	There are no heritage buildings or resources identified on the subject property.

Norfolk County OP Policy	Kelly Pit Proposal
5.7.4 Archaeological Resources The following shall be the policy of the County: a) Archaeological potential areas shall be determined through the use of Provincial screening criteria, or criteria developed based on the known archaeological record within the County by a licensed archaeologist as part of an archaeological management plan.	An Archaeological Assessment has been completed for the subject property, and no archaeological resources were identified.
6.7 Rural Area The Rural Area is a significant component of Norfolk County's community structure. Land within the Rural Area, which is identified on Schedule "A" to this Plan, accommodates numerous rural resource activities, including agriculture, aggregate and petroleum resource areas, forestry and lifestyle uses. 6.7.1 Agricultural Land The following shall be the policy of the County: a) The County is committed to the protection of prime agricultural land. The County recognizes, however, that where growth and development occur, it is likely that land with significant agricultural productivity will need to be utilized. Priority shall be given to less productive agricultural land for non-agricultural development, where it is feasible and practical to do so. b) Unless otherwise designated, use of prime agricultural land shall be subject to the policies of Section 7.2 (Agricultural Designation) of this Plan. New non agriculturally related uses on prime agricultural land shall not be permitted, unless otherwise specifically permitted by this Plan.	The proposed pit is in a rural area. Aggregate extraction is recognized as an appropriate land use in the rural area. The subject lands are prime agricultural lands and through the progressive and final rehabilitation the site will be restored to an agricultural after use. Aggregate extraction is considered to be an interim use.

Norfolk County OP Policy	Kelly Pit Proposal
6.7.3 Natural Resources associated with the Rural Area are the Aggregate and Petroleum Resource Areas identified on Schedule "C", which represent potential opportunities for aggregate and petroleum related resource extraction, including the extraction of natural gas. Resource extraction, along with forestry are important components of the County's economic base, and shall be subject to the policies of Section 4.6 (Natural Resources).	The property is within and area identified on Schedule J, Mineral Aggregate Resource Area (buried resource).
7.2 Agricultural Designation 7.2.1 Permitted Uses f) The extraction of aggregate, mineral or petroleum resources shall be permitted in accordance with the Aggregate Resources Act, the Mining Act or the Oil, Gas and Salt Resources Act, as appropriate, subject to the policies of Section 4.6(Natural Resources) of this Plan	Aggregate extraction is a permitted use in the agricultural designation, subject to obtaining a zoning by law amendment which addresses the policies of the Official plan.

Norfolk County OP Policy	Kelly Pit Proposal
6.3 Community Policies and Actions 7) Development applications will be required to undertake a site assessment to determine if natural heritage features are present and to evaluate their significance. Development and site alteration shall not be permitted in: a) Provincially significant wetlands and provincially significant coastal wetlands. b) Significant woodlands, significant valleylands, significant wildlife habitat and significant areas of natural and scientific interest, and coastal wetlands or on lands adjacent to the foregoing features, unless the ecological functions of the feature and of the adjacent lands have been evaluated and it has been demonstrated that there will be no negative impacts on the natural heritage feature or area, or on their ecological functions. c) Fish habitat and habitat of endangered species and threatened species, except in accordance with provincial and federal requirements. d) Areas where potentially significant natural heritage features or areas exist and have not been evaluated, until an evaluation is completed at the time of a development application to determine the significance of the feature and applicable policies. 8) Where development is proposed within or adjacent to natural features the impacts of the development are required to be reviewed	As noted previously, the NER provides an inventory of natural heritage features and functions on the site and adjacent lands and provides a series of recommendations to ensure that there is no negative impact from the proposed pit operation.
10) Source protection water areas, drinking water supplies and the health of watercourses will be protected and improved as critical resources for the longterm wellbeing of residents and the environment.	According to the MECP Source Water Protection Atlas, the site is not located within an identified wellhead protection area (WHPA) as set out in an applicable source water protection plan under the Clean Water Act. The site not identified as within an intake protection zone or an issue contributing area.

As outlined in the Official Plan (Section 4.1.6 k), an application for a Zoning By-law amendment shall be reviewed on the basis of the following:

i) the feasibility of aggregate extraction proposed;

The geological investigations have confirmed that there is mineral aggregate resource (sand and gravel) within the proposed area of extraction. Extraction is currently taking place on the adjacent lands to the east (Thompson Pit) which is operated by the applicant. Similar methods of extraction and processing will be utilized for the proposed Kelly pit.

ii) compatibility with the surrounding land uses;

The site is within a rural area amidst agricultural uses and other mineral aggregate uses. The Site Plans includes measures to mitigate noise and dust during operations, and the site will be progressively rehabilitated to an agricultural after use, compatible with the surrounding land uses.

iii) impact of the proposed haulage routes;

The pit operation will use an existing haul route and entrance.

iv) potential impact on groundwater quality and quantity, Provincially Significant Features, Natural Heritage Features, and the broad natural environment;

The potential impacts on groundwater and natural heritage features has been examined through the reports being submitted with the application. Mitigation measures are incorporated as conditions on the site plans.

v) rehabilitation plans;

The rehabilitation plans have been prepared in accordance with the provincial standards for the Aggregate Resources Act.

vi) potential impacts to cultural heritage resources;

There are no identified cultural heritage or archaeological resources on the property.

vii) matters raised by the Province or the appropriate Conservation Authority.

The comments received through the process will be addressed by the applicant as part of the required review process.

viii) whether approval will be granted under the Aggregate Resources Act.

The ARA and Planning Act applications are being submitted concurrently. As set out in the ARA legislation, a licence cannot be issued until the appropriate municipal zoning is in place. The

applicant and project team will respond to any questions and concerns as they arise through the review process. Revisions to the Site Plans may be made to address concerns.

Based on the planning analysis presented in this report, the proposed pit conforms with the policies of the County Official Plan.

3.5 ZONING BY-LAW

An application to amendment the Norfolk County Zoning By-Law (1-Z-2014) is being submitted and proposes to rezone the area to be licenced from "Agricultural" (A) Zone to Extractive Industrial (MX) Zone to permit the establishment of a Class A pit below the water table. The site will be rehabilitated to an agricultural after use.

This is the appropriate zone category for a mineral aggregate use. There are no special provisions proposed.

4.0 Planning Conclusion

To permit the establishment of a Class A pit below the water table, to be operated in the Town of Simcoe, Norfolk County, applications are being submitted for an amendment to the Zoning By-law, to rezone the lands from "Agriculture" (A) to Extractive Industrial (MX).

A Licence application has recently been submitted to the Ministry of Natural Resources (MNR) for a class A, Pit Below Water license under the Aggregate Resources Act (ARA), and deemed complete.

The Zoning by-law amendment application and the ARA license application are supported by the land use planning analysis, the Site Plans, and the associated technical reports referenced in this document.

Based on these submissions it is concluded that:

1) The proposed pit is located in a recognized mineral aggregate resource area and contains a substantial quantity of commercial aggregate resource.

2) The proposed pit will supply the local market with construction materials.

3) The lands can be extracted in such a manner that potential environmental and social impacts are minimized.

3) The matters of provincial interest as identified in Section 2 of the Planning Act have been properly assessed and the proposal has appropriate regard to these provincial interests.

4) The Provincial Planning Statement 2024 contains policy requiring mineral aggregate resources to be protected and that as much of the resource as possible be made available as close to market as is possible. The proposal is consistent with this provincial objective as well as provincial policy related to the protection of natural heritage, water and cultural resources and the protection of public health and safety.

5) The proposed pit expansion, through its Operations Plan, Rehabilitation Plan and the recommendations of the supporting technical reports, is consistent with provincial policy as set out in the 2024 Provincial Planning Statement.

6) The proposal is consistent with the relevant policies of the Norfolk County Official Plan with regard to proposals for new aggregate extraction operations.

7) The ARA site plans, prepared by taking into consideration the technical studies, surrounding land uses and legislative requirements, will minimize any environmental and social impacts in accordance with the Provincial Standards established under the ARA.

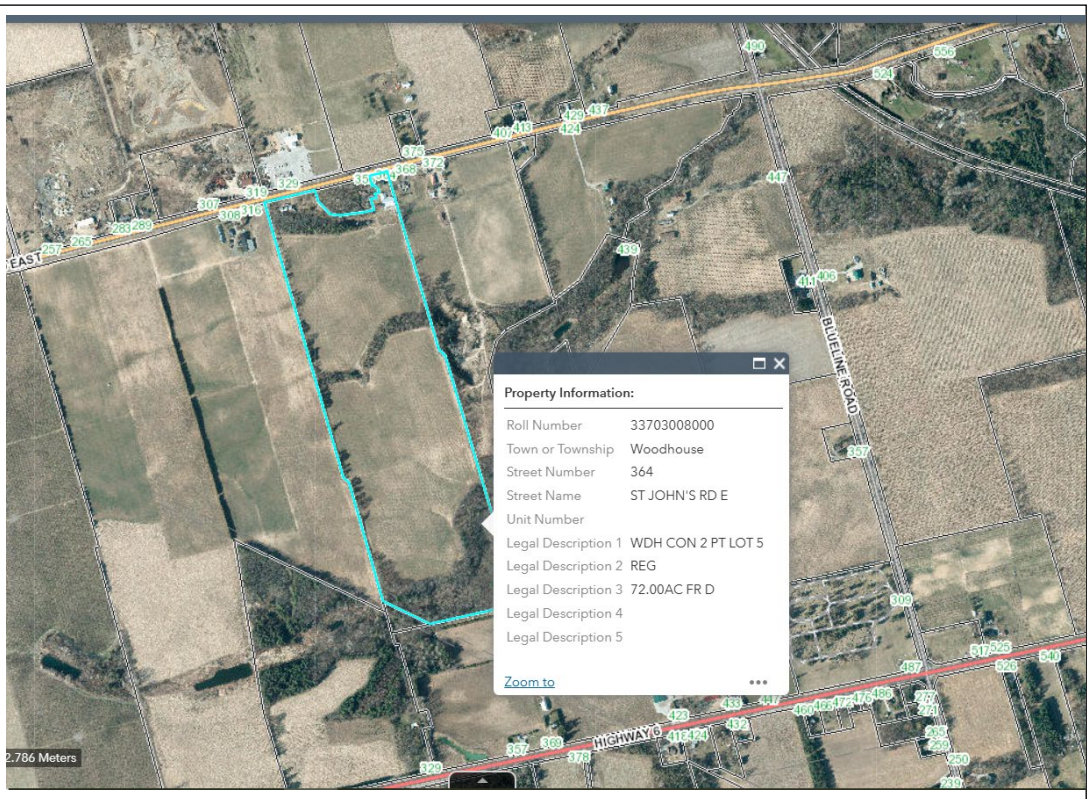
The proposed pit operation has been designed and reflects recommendations of the accompanying technical reports. The operational notes on the license site plans under the Aggregate Resources Act, have incorporated conditions to reflect specific recommendations and measure to mitigate any negative environmental effects.

In my professional opinion, the proposal represents good land use planning.

This report has been prepared by:

Melanie Horton, MCIP, RPP
Esher Planning Inc.

FIGURE 1: LOCATION

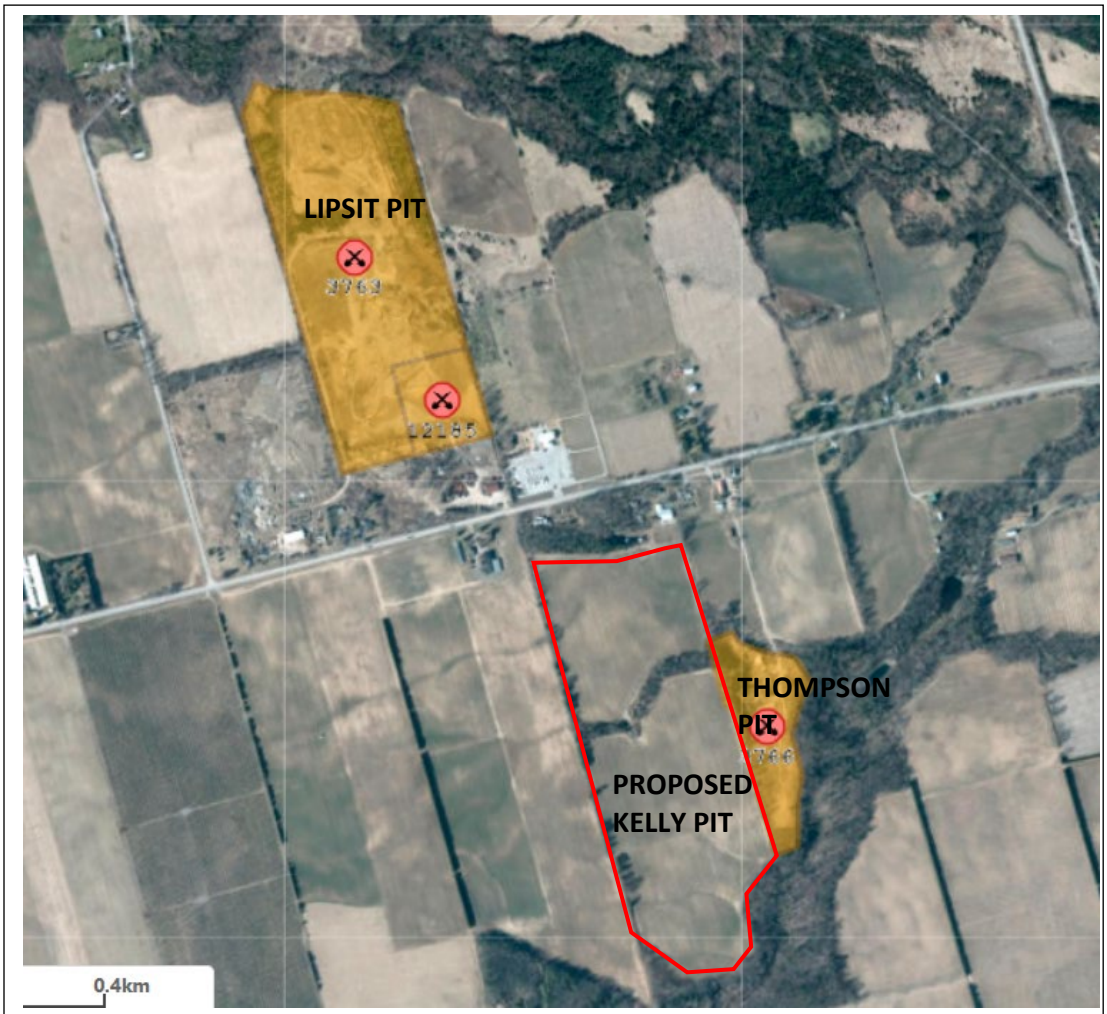


KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

N

FIGURE 2: AREA TO BE LICENCED

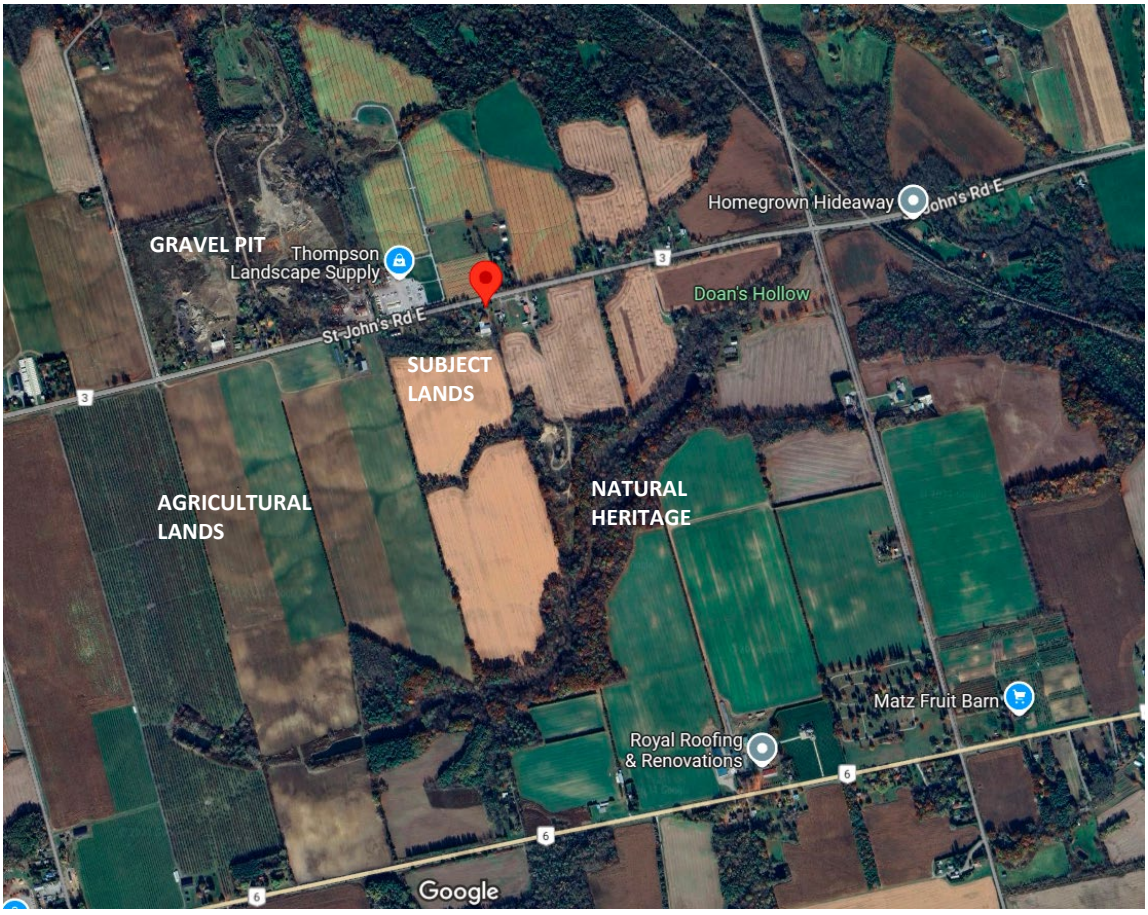


KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

N

FIGURE 3: SURROUNDING LANDS



KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

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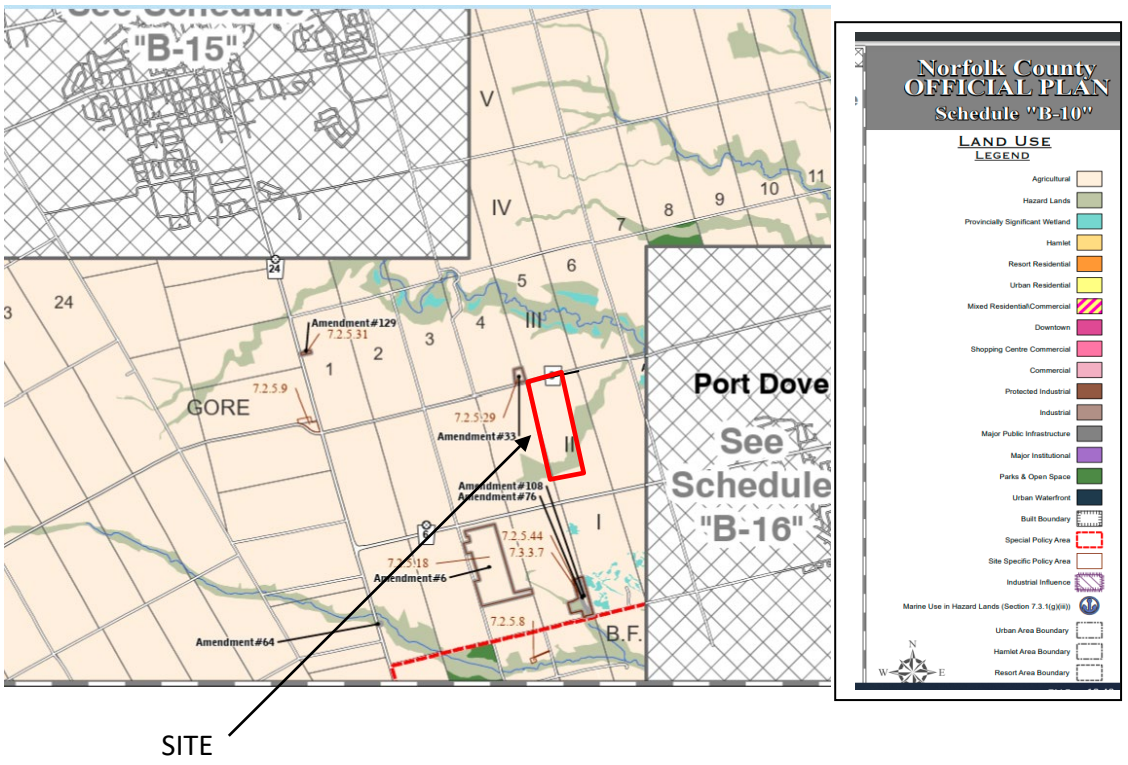
FIGURE 4:
NORFOLK COUNTY OFFICIAL PLAN: LAND USE SCHEDULE B-6



KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

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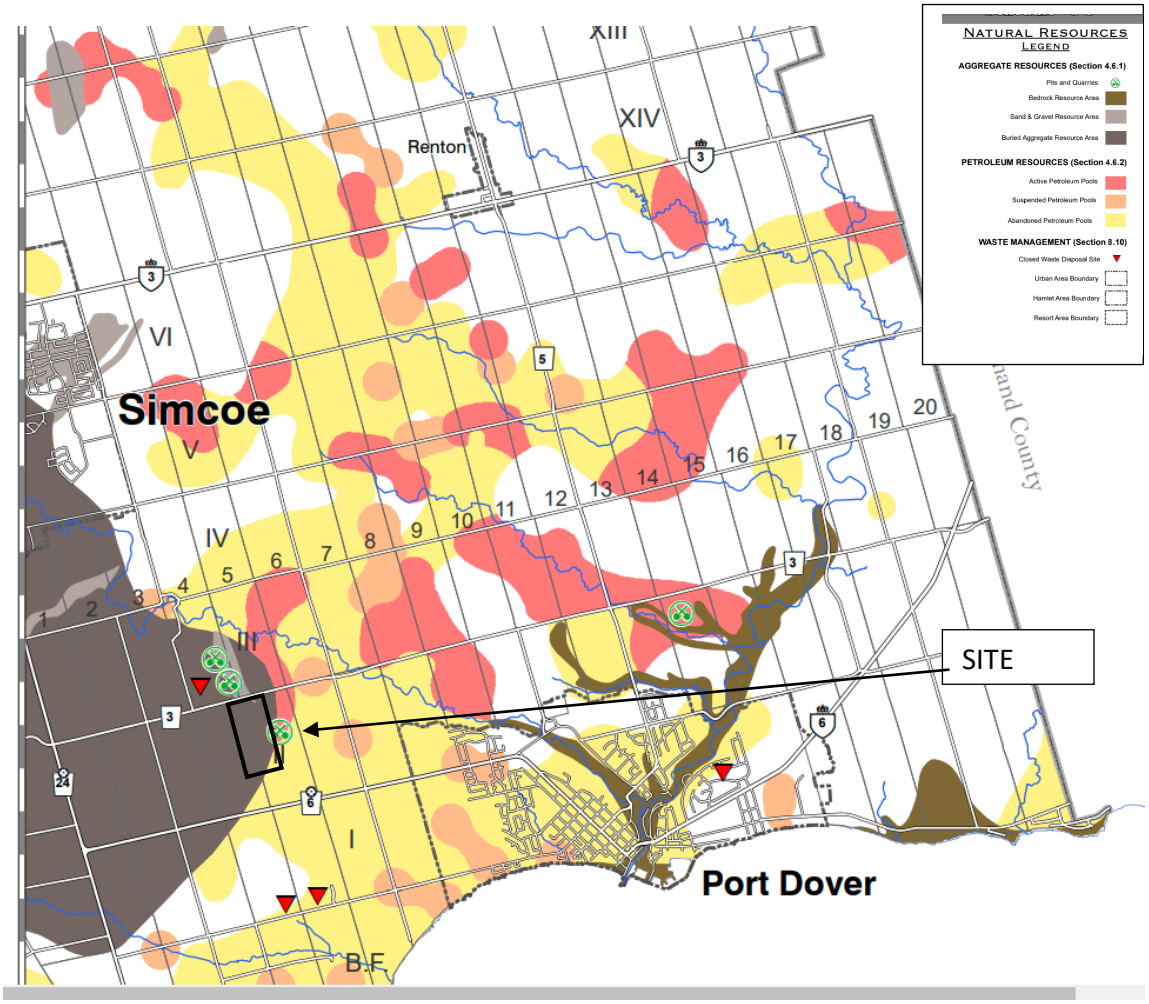
FIGURE 5: NORFOLK COUNTY OFFICIAL PLAN SCHEDULE J-5, NATURAL RESOURCES MAP



KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

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FIGURE 6: NORFOLK COUNTY, ZONING

KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

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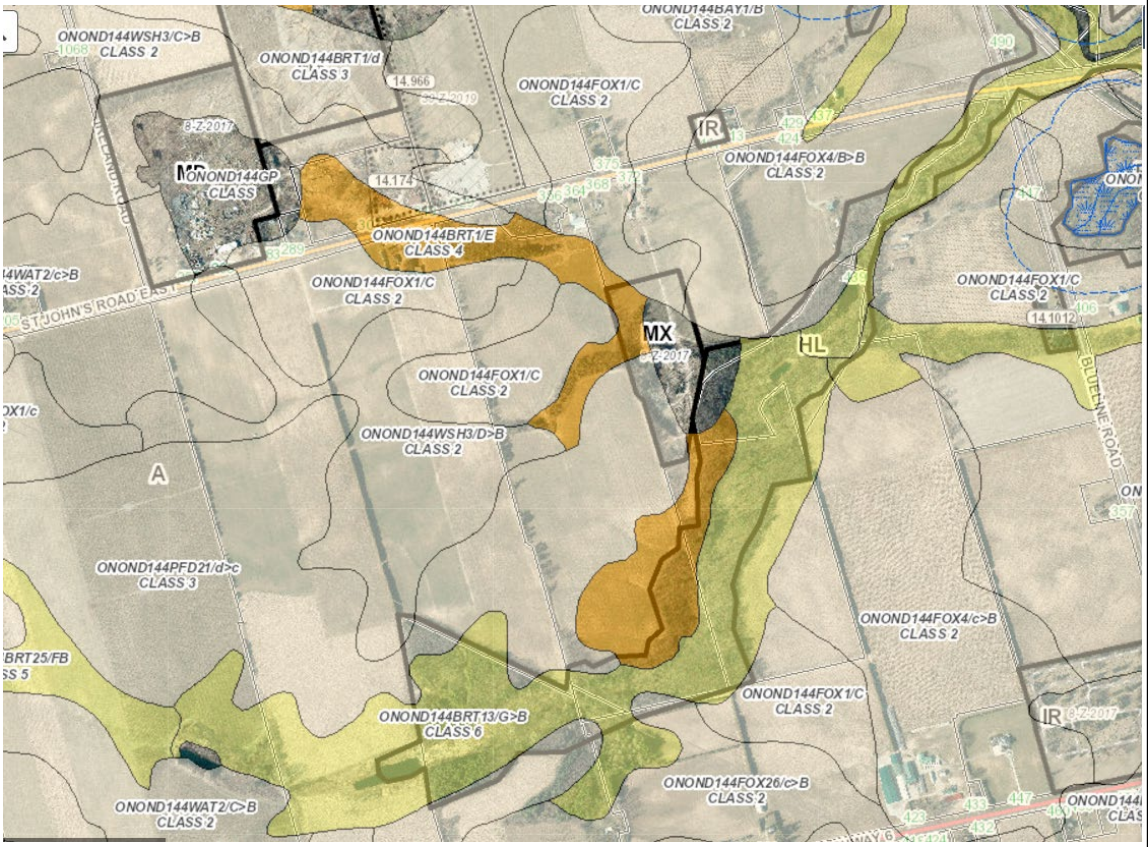
FIGURE 7: SOILS MAPPING



KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

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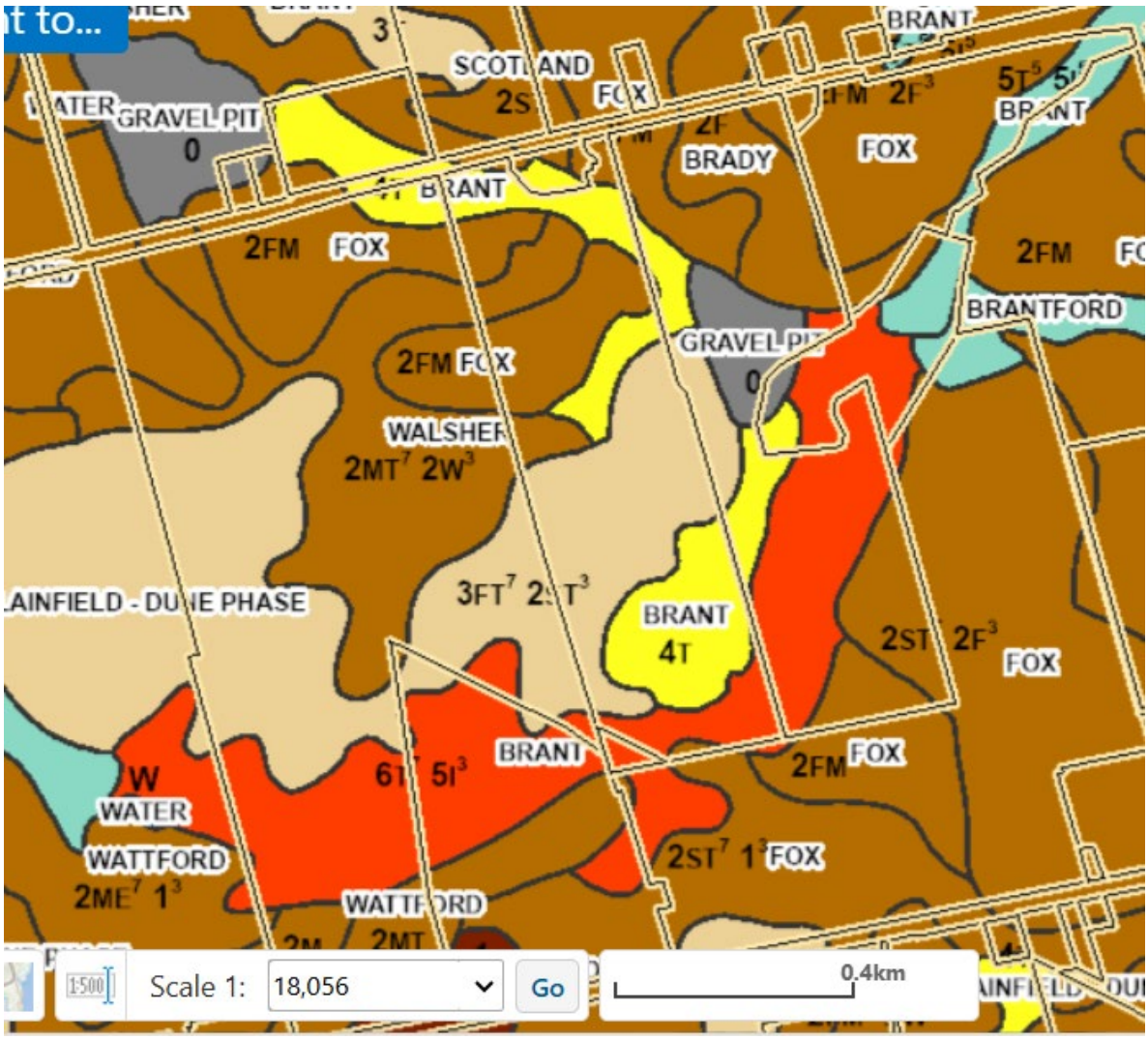
FIGURE 8: CANADA LAND INVENTORY MAPPING



KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

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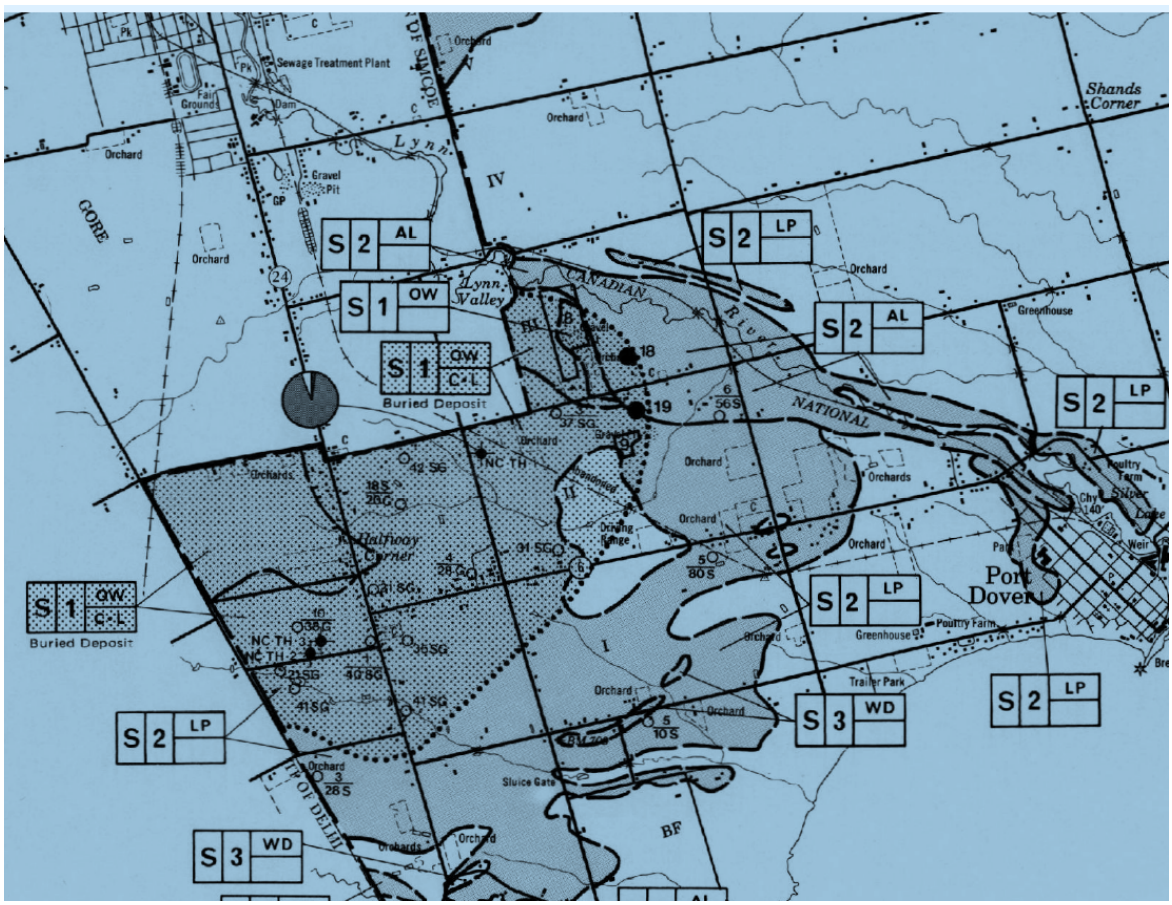
FIGURE 9: GEOLOGY MAPPING



APPENDIX 1

Ministry of Natural Resources and Forestry

Aggregates Section

Divisional Delivery Branch
300 Water Street
Peterborough, ON K9J 3C7

E: ARAApprovals@ontario.ca

Ministère des Richesses naturelles et des Forêts

Section Agrégats

Direction de la Prestation des services de la Division
300, rue Water
Peterborough (ON) K9J 3C7

E : ARAApprovals@ontario.ca

Ontario

July 06, 2023

Wayne Thompson
Rural Route 3
Simcoe, ON N3Y 4K2

Dear Peter Penner:

Subject: Site Plan Amendment for Licence #3766 under the *Aggregate Resources Act*
Lot 5, Concession 2, Geographic Township of Woodhouse, Norfolk County

Further to your site plan amendment request of March 3, 2023, please be advised that the Ministry of Natural Resources and Forestry (MNRF) approves your request under the *Aggregate Resources Act* for the following amendments to the site plan:

1) Reduction of 15m setback on the western boundary to 0m.

2) Relocation of the entrance driveway to the adjacent property at 364 St. John's Road.

Attached is the revised site plan (2 of 2 pages[s]) approved by the MNRF on July 06,2023 the MNRF will forward a copy to the agencies listed below. Please replace the previous version of the site plan with the attached.

Should you have any questions regarding this amendment please contact Uche Eje, Aggregate Specialist, at uche.eje2@ontario.ca/ (365) 885-2684.

Sincerely,

Katie O'Connell
Aggregate Resources Manager

Attachment – Licence #3766 site plan (2 pages)

c. Clerk – Norfolk County
MNRF District

Ontario

Ministry of Natural Resources and Forestry

Amendment Form *Aggregate Resources Act* (August 2020)

Instructions

Applications for an Amendment

This form is to be completed by any licence or permit holder applying to the ministry to make a change to their licence, permit, or site plan under sections 13, 13.1, 13.2, 30.1, or 37.2 of the Act.

When notification is required, this form must be circulated with the amendment application package.

As part of an application for an amendment, the licensee or permittee must submit a sketch or a draft copy of an updated site plan or site plan pages to the ministry.

Following confirmation from the ministry that the proposed amendment is acceptable, the licensee or permittee must make changes to the site plan to reflect the noted changes and submit the updated site plan or site plan pages to the ministry for approval.

Following ministry approval, the licensee or permittee must include a description of the amendment and the date the amendment was approved on a schedule to the site plan and must forward the site plan to the ministry for their records.

Submit this form and any additional information online using the Natural Resources Information Portal. If you have any questions about using the Natural Resources Information Portal, contact NRIP@ontario.ca. If web access is unavailable, submit the form and additional information by mail to Integrated Aggregate Operations Section, Ministry of Natural Resources and Forestry, 300 Water Street, Peterborough ON K9J 3C7.

When an amendment requires consultation and you are participating in the *Aggregates Resources Act* (ARA) notification and consultation process, all personal information (PI) you provide may be subject to the *Freedom of Information and Protection of Privacy Act* (FIPPA), whether provided to the Applicant or MNRF at any point during the consultation process. The MNRF collects your PI under the authority of s.7, s. 11, s.13.1, s.23, s. 34, s . 35 and other provisions of the ARA and maintains it for the purposes of ensuring consultation and other requirements in the ARA are met. Under the authority of s. 11(2),s.13.1(3), s.23(7), s.35(2) of the ARA, your name and address will form part of the public record (that is available to the general public as described in s 37 of FIPPA) and will appear with your comments, unless you request in your submission that your name and address be kept confidential. If you have any questions about the collection and use of your personal information, please contact Ministry of Natural Resources and Forestry, Natural Resources Information and Support Centre (NRISC) 300 Water Street, Peterborough ON K9J 3C7. Toll free: 1-800-667-1940.

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Fields marked with an asterisk (*) are mandatory.

Section A: Site Identification

Licence/Permit ID Number *
3766

Licensee/Permittee Name *
Wayne Thompson

Local Municipality
Norfolk County

Upper Tier Municipality
Norfolk County

Site Location (e.g. lot and concession, geographic township, 911 address) *
372 St. John's Road East, Simcoe, ON N3Y 4K2

Section B: Contact Information

Last Name *	First Name *	Middle Initial
Penner	Peter	J

Telephone Number *	Email
519-688-1000 Extension 22	ppenner@cjdleng.com

Address

Unit Number	Street Number *	Street Name *	PO Box
	261	Broadway	460

City/Town *	Country *	Province/State *	Postal Code/Zip Code *
Tillsonburg	Canada	Ontario	N4G 4H8

Input all necessary information for correspondence

☑ I authorize the person named above to provide correspondence and proceed with amendments on my behalf.

☑ I authorize the person applying on my behalf to use their company name and address to be used for correspondence on behalf of the licensee/permittee during the site plan amendment process.

Section C: Description of Amendment

Check the box that best represents the amendment that is the subject of this form. *

☐ Amendment to lower the depth of extraction in an area of a licence or aggregate permit that does not allow extraction below the water table under section 13.1 or 37.2 of the *Aggregate Resources Act*

- If selected, include technical reports, information and an updated site plan in your submission as described in *Aggregate Resources of Ontario: Amendment Standards*.

☐ Amendment to expand a licence boundary into an adjacent road allowance under section 13.2 of the Act

- If selected, ensure that technical reports, information and an updated site plan are attached in your submission as described in *Aggregate Resources of Ontario: Amendment Standards*.

☑ Other amendments (not including Amendment Without Approval)

- The ministry may require the applicant to provide additional information.
- The ministry may direct you to circulate this form to organization(s) and individual(s) for comment(s).

Description *

Provide a description of the proposed amendment(s)

Remove 15m setback to expand the limit of extraction to adjacent westerly lot boundary; Driveway is being relocated to the neighbouring property to the west of Lot 5, Concession 2, in the Geographic Township of Woodhouse

Provide reasons for the site plan amendment request

Owner of adjacent property at 364 St. John's Road plans to apply for pit licence, and is seeking to avoid leaving a berm of aggregate between the pits that cannot be rehabilitated back to farmland.
The driveway from the pit out to St John's Road is close to a residence with young children and will be relocated onto the neighbouring property to the west. A letter from the the adjacent property owner, agreeing to these changes, is attached.

Select all that apply *

☑ Enclosed is a sketch/picture outlining proposed changes to the site plan.

☑ Enclosed is a draft version of a page(s) of the site plan altered to demonstrate the desired changes to the site plan.

☑ Enclosed is additional information and/or technical reports.

Last Name *	First Name *
Thompson	Wayne
Signature (Licencee/Permittee)	Date (yyyy/mm/dd) *
Thompson Exec. / Owner Chuck Thompson	2023/03/08

CJDL
Consulting Engineers

CYRIL J. DEMEYERE LIMITED
John D. Wiebe, P. Eng. | Andrew Gilvesy, P. Eng.
Peter J. Penner, P. Eng. | Deren Lyle, P. Eng.

261 Broadway, P.O. Box 460, Tillsonburg, ON N4G 4H8 T: 519-688-1000 F: 519-842-3235 www.cjdleng.com

21 March 2023 22080

2690905 Ontario Inc.
869 Charlotteville Road 7
Simcoe, Ontario
N3Y 4K5

RE: APPLICATION FOR CATEGORY 7 - CLASS B AGGREGATE PERMIT
PART OF LOT 5, CONCESSION 2
GEOGRAPHIC TOWNSHIP OF MIDDLETON, NORFOLK COUNTY

ATTENTION: JOHN ALLAN GEE AND JOANNA GEE, DIRECTORS

Dear Allan and Joanna:

Wayne Thompson is proceeding with the application to Ministry of Natural Resources & Forestry for an Amendment to the Class B Aggregate Permit for the pit at 372 St. John's Road (County Road 3). This will allow extraction of aggregate to extend right up to your property line and slope down to the pit floor at a 3:1 slope. If the application for an Aggregate License on your property at 364 St. John's Road is successful, the slope is proposed to be removed to allow the pit floors to match grades. The intent of this amendment is to improve grades for final rehabilitation for farming and increase aggregate yield for both pits. See attached Drawing.

The limit for excavation and stockpiling from the licensed site boundary on the west, is proposed to be 0m setback. The Aggregate Resource Act would normally require a 15m excavation setback and 30m stockpile setback from the licensed site boundary.

The active barrow site will be appropriately fenced to maintain safe site conditions and stockpiles will be seeded for dust control. The removal of sand from the site will take place over several years and areas will be cleared and progressively rehabilitated to coincide with yearly demand for sand.

The driveway access to the pit will also be relocated to cross your property to access St. John's Road. The operator of the pit will be responsible for dust control whenever the driveway is in use.

☐ Fax ☐ Mail ☐ Deliver ☐ Courier ☑ e-mail

If you do not object to the foregoing, please sign below and return a copy of this letter to CJDL.

Yours very truly,

Peter J. Penner, P. Eng.

JH/sed

Encl.

c.c. Mr. Wayne Thompson

** ** **

We, John Allan Gee and Joanna Gee , Directors of 2690905 Ontario Inc., hereby agree to reducing the 15m excavation and 30m stockpiling setbacks and requirement to 0m adjacent to my property located at 364 St. John's Road (County Road 3). I also agree to relocation of the driveway access to the Thompson Pit onto our property as indicated on the attached amended Site Plan.

John Allan Gee — Date: March 22, 2023

Joanna Gee — Date: March 22, 2023

PERMIT #2023-0074

FO-204
Ver. May 2022

Entrance Application

Norfolk County Operations
Roads Department
8 Schellburg Avenue,
Simcoe, ON N3Y 2J4
Phone: 519-426-5870

Accessible formats and communication supports available upon request

Part A – General Information – to be completed by Applicant

Owner Information

Name: 2690905 Ontario Inc. Telephone: (519) 718-0112
Address: 869 Charlotteville Rd 7 Email: allansexcavating@gmail.com
City: Simcoe, ON Signature: [signature]
Postal Code: N3Y 4K5 Date: June 8/23

Contractor Information (if known)

Name: Allan's Excavating Inc. Telephone: (519) 428-9998 (office)
Address: 869 Charlotteville Rd 7 Email: info@allansexcavating.com
City: Simcoe, ON Signature: [signature]
Postal Code: N3Y 4K5 Date: June 8/23

Part B – Work Location – to be completed by Applicant

Municipal Number: 364 Street Name: St. John's Rd E (Kiln Yard) portion
Former Township Norfolk
On the South side of St. John's Rd E
North/South/East/West Road Name

about 1/4 km(s) West of 356 St. John's Rd E
Distance North/South/East/West Road Name

Property Use: ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural
☐ Institutional ☐ Other _____

Is the property subject to a planning application/approval with the County: ☐ Yes ☐ No
If Yes, provide:

I/We the applicant(s) attest that the information provided on this application form is true and accurate to the best of my/our knowledge. I/We have read, understood and agree to the terms and conditions contained within Norfolk County By-Law 2016-32 and this permit.

Signature _____ Date June 8/23

Part D – Entrance Information (to be completed by County staff)

Entrance width: 18 m Finished Entrance Surface Material: Gravel

Culvert Details: Diameter: _____mm Length: _____m Material: _____

☑ Not required

Sight Line Verification: ☑ Acceptable ☐ Not acceptable

Sight line distance to E (N/E/S/W) is 200 m

Sight line distance to W (N/E/S/W) is 200 m

General requirements

☑ Approval granted for new entrance to property as per sketch/comments
☐ Resurfacing – Remove existing asphalt, relay new asphalt to existing grade

If culvert is required

☐ Culvert inverts to be installed _____ mm below existing ditch grade

If curb cut required

☐ Approval granted to cut curb ___m wide
☐ Approval granted to cut curb ___m wide to the _____ of the existing entrance

Additional Requirements and Comments:

_____

_____

_____

_____

☑ APPROVED ☐ NOT APPROVED (see Terms & Conditions)

_____ 9/6/23

Signature Date

Part E – Additional Construction Specifications

Grading Requirements:

All entrances shall be designed, constructed and maintained in a manner that will prevent the surface water from the entrance from being discharged onto the travelled portion of the highway.

The minimum grade for all driveways shall be 2%.

The maximum grade for all entrances shall be 8%. This maximum grade is not recommended and shall only be used in exceptional cases where physical conditions prohibit the use of lesser grades.

Minimum Consolidated Depth Requirements:

Urban Residential
- 50 mm HL3 asphalt surface
- 150 mm of Granular 'A' base

Rural Residential
- 150 mm of Granular 'A' surface

Commercial, Light Industrial and Apartments
- 40 mm HL3 asphalt surface
- 50 mm HL8 asphalt base
- 150 mm of Granular 'A' base
- 225 mm of Granular 'B' base

Heavy Industrial
- 50 mm HL3 asphalt surface
- 75 mm HL8 asphalt base
- 150 mm of Granular 'A' base
- 300 mm of Granular 'B base

Additional Requirements:

- All culverts shall have a minimum of 300 mm cover where possible.
- The property owner shall ensure that proper cover and/or separation distances are maintained from all existing utilities, including overhead wires.
- All entrances shall be 3.0 m from any utility poles or boxes.
- All entrances shall be 1.2 m from any side yard property line.
- All curb cuts shall be completed by a qualified curb cutting contractor, as determined by the Director, Roads, or designate.

Part F – Terms & Conditions

Refer to ***By-Law 2016-32, To Regulate Entrances onto Municipal Roads and Highways,*** as amended, for additional procedures, guidelines, specifications and terms and conditions.

This is only an application for an entrance permit and does not constitute final approval by Norfolk County staff until it has been approved and signed by the appropriate staff.

This application will not be reviewed until the permit application fee has been processed. Fees are established in Norfolk County's most current User Fees and Service Charges By-Law.

As part of this agreement, the following are the insurance requirements that must be shown on a Certificate of Insurance:

a. Commercial General Liability
   - $2M Liability limit per occurrence
   - $2M Products and Completed Operations
   - $2M Non-owned Auto
   - Cross Liability endorsement

b. Automobile
   - $2 M liability limit under a Standard Automobile Policy in respect of each vehicle

c. An endorsement certifying that The Corporation of Norfolk County is added as additionally insured on the policy

d. 30 days' notice of nonrenewal

A deposit must be posted prior to the issuance of the permit. The amount of the deposit will be set in accordance with the most current Norfolk County User Fees and Service Charges By-Law. The deposit will be returned upon completion of ALL of the following:

- A minimum of 1 year has lapsed since the installation of the driveway
- The contractor has made application to the County for the deposit to be returned
- An inspection has taken place by Norfolk County Operations, Roads staff
- The driveway has been installed in accordance with the Permit and is to the satisfaction of Norfolk County Staff

Please be advised that the permit will not be released until the Contractor's Certificate of Insurance and Deposit have been received by Norfolk County Operations, Roads.

LEGEND:

BOUNDARY OF AREA LICENCED SHOWN
LINE 150 METRES FROM THE BOUNDARY TO BE LICENCED SHOWN
LOT LINES SHOWN
DEED LINES SHOWN
FENCES SHOWN (EXISTING)
STANDARD IRON BARS SHOWN
IRON BARS SHOWN
CROSS-SECTION A and B, SEE DRAWING Nº. 2 - SHOWN AS ELEVATIONS SHOWN
CONTOURS SHOWN
TOP OF BANK SHOWN
BUSH SHOWN
GAS WELLS SHOWN

KEY PLAN: SCALE 1:10,000

WAYNE THOMPSON

R.R. 3, SIMCOE, ONTARIO.
N3Y 4K2

ALPS # 3766
NRVIS 2008-9-8

SAND AND GRAVEL PIT

IN
LOT 5, CONCESSION II
IN THE GEOGRAPHIC
TOWNSHIP OF WOODHOUSE
IN THE
COUNTY OF NORFOLK
NOW IN THE
CITY OF NANTICOKE
IN THE REGIONAL MUNICIPALITY OF
HALDIMAND - NORFOLK

NOTES:

1. THE MAXIMUM DEPTH OF EXCAVATION IS 199.0m. EXCAVATION WILL NOT OCCUR BELOW THE WATER TABLE AT AN ELEVATION OF 198.02m.
2. EXTRACTION WILL CONTINUE IN THE NORTHERLY SECTION OF THE PIT (PHASE 1) UNTIL AGGREGATE IS EXHAUSTED. EXTRACTION WILL THEN PROCEED INTO THE EXISTING SOUTHERLY FACE AND CONTINUE TO THE SOUTHERLY BOUNDARY (PHASE 2) NOTWITHSTANDING THE PHASING AND DIRECTION OF OPERATION, BLENDING OF MATERIALS AND AVAILABILITY OF CERTAIN PRODUCTS MAY REQUIRE DEVIATION FROM THE SAME.
3. MATERIAL FROM THE ADJOINING NORTHERLY FIELD WILL BE TRANSPORTED TO THE PIT FLOOR, RAISING THE ELEVATION TO 202.0±. SLOPING OF FACES, FROM THE EXISTING SOUTHERLY FACE (SEE PLAN) TO THE NORTHERLY FACE, SHALL BE A MAXIMUM OF 2:1, DUE TO LACK OF OVERBURDEN. REMAINING FACES TO THE SOUTH SHALL BE A MAXIMUM OF 3:1.
   SUBSOIL AND TOPSOIL WILL BE RESPREAD OVER THE ENTIRE PIT AND THEN SEEDED WITH GRASSES, LEGUMES OR CROPS.
   THE AFTER USE IS AGRICULTURE.
4. WHEN PHASE 1 (SEE PLAN) IS EXHAUSTED THEN IT SHALL BE REHABILITATED AS IN NOTE 3. LIKEWISE FOR PHASE 2. NOTWITHSTANDING THE ABOVE, WHEN PART OF A PHASE IS ABLE TO BE REHABILITATED, THEN IT SHALL BE CARRIED OUT.
5. TOPSOIL, SUBSOIL AND OVERBURDEN TO BE STOCKPILED SEPARATELY ON WEST AND EAST SETBACKS IN THE FORM OF SEEDED BERMS (MINIMUM HEIGHT OF 2m, MAXIMUM SLOPE OF 2:1 AND COMMENCE AT LEAST 3m FROM THE BOUNDARY OF THE LICENCE).
6. REMOVAL OF THE SETBACKS IN THE SOUTH, SOUTHEAST, NORTH, NORTHEAST SHALL OCCUR (AS PER PLAN) SINCE THE OPERATOR OWNS THE ADJACENT LANDS OF THE LICENCED BOUNDARY IN THOSE AREAS.
7. PERIMETER FENCING SHALL NOT BE REQUIRED AT THIS TIME ON THE SOUTH AND EAST LICENCED BOUNDARIES TO A POINT 29.118m EAST OF THE MAIN GATE (ENTRANCE/EXIT). THIS IS DUE TO THE THICK BUSH AND STEEP SLOPES AND TO THE EXISTING FENCE WHICH EXTENDS FROM THE ABOVE MENTIONED POINT EAST INTO THE THICK BUSH. FENCING MAY BE REQUIRED IN THE FUTURE IF THESE CONDITION CHANGE.
8. FENCING SHALL NOT BE REQUIRED, AT THIS TIME, ALONG THE WESTERLY BOUNDARY SOUTH OF THE EAST-WEST FENCE (LOCATED APPROXIMATELY 163m NORTH OF THE SOUTH-WEST CORNER) THIS FENCE ADEQUATELY ENCLOSES THE PRESENT EXTRACTION. WHEN EXTRACTION MOVES SOUTHERLY AND THE EAST-WEST FENCE IS REMOVED, THEN THE FENCING OF THE ENTIRE WEST BOUNDARY WILL BE REQUIRED.
9. LICENCED BOUNDRIES WHICH ARE NOT FENCED SHALL BE CLEARLY INDENTIED WITH PAINTED CEDAR POSTS (1.2m HIGH), INSTALLED EVERY 60 METRES ± AND POSTED WITH NO TRESPASSING SIGNS.
10. DUST SHALL BE MITIGATED BY APPLYING WATER OR ANOTHER PROVINCIAL APPROVED DUST SUPPRESSANT TO HAUL ROADS ON SITE AS OFTEN AS REQUIRED.

MUN. NO. 329 ST. JOHN'S ROAD
MUN. NO. 375 ST. JOHN'S ROAD
MUN. NO. 308 ST. JOHN'S ROAD
MUN. NO. 364 ST. JOHN'S ROAD
MUN. NO. 356 ST. JOHN'S ROAD
MUN. NO. 368 ST. JOHN'S ROAD
MUN. NO. 372 ST. JOHN'S ROAD

CONCESSION III
ALLOWANCE FOR ROAD BETWEEN CONCESSIONS II AND III
CONCESSION II

PROPOSED ENTRANCE/EXIT FOR PIT
PROPOSED CULVERT
LIMIT OF 364 ST. JOHN'S ROAD
Limit between East half and West half of Lot 5, Concession II
Lot 4 / Lot 5
Lot 5 / Lot 6
S.I.B.(700)
N.W. Angle Lot 5 Concession II
N.E. Angle Lot 5 Concession II
N78° 30' E 305.460
N78° 30' E 299.478
315.125
150 metres
Approx. Location of Gas well

AGRICULTURE (ZONED AGRICULTURAL)

AMENDMENT NO. 1 – NOTE 3
NEW ENTRANCE/EXIT TO ACCESS ST. JOHN'S ROAD FROM 364 ST. JOHN'S ROAD

ENTRANCE / EXIT (Access Road)
ORIGINAL ENTRANCE TO REMAIN FOR EMERGENCY ACCESS ONLY
"Existing Gate"
Existing Gate

AGRICULTURE (ZONED AGRICULTURAL)

PHASE 1
PHASE 2
PIT AGRICULTURE

REDUCE 15m EXTRACTION SETBACK TO 0m
REDUCE 15m EXTRACTION SETBACK TO 0m

LICENCED PIT (ZONED EXTRACTIVE INDUSTRIAL)
AGRICULTURE (ZONED EXTRACTIVE INDUSTRIAL)

Boundary of Licenced Area
N67°08' 30" E 48.905
N32°16' E 5.254
N79°52' W 29.118
N13°07'40" W 57.428
N13°32'26" W 293.852
N14°01' W 133.417
N14°01' W 293.852
N68°55' W 23.939
N68°55' E 66.106
N68°55' E 43.050
N70°40' 30" E 43.050
S.I.B.(wit) 1.524 East
S.I.B.(wit) 0.914 North
S.I.B.(wit) 4.115
Approx. Location of Abanded Gas well
Centreline of Creek Z
150 metres

BUSH (ZONED AGRICULTURAL)

MINISTRY OF NATURAL RESOURCES
SIMCOE DISTRICT
SITE PLANS APPROVED
UNDER THE AGGREGATE RESOURCES ACT
INSPECTOR
DATE NOV. 6/91

PAGE 1 OF 2 - DRAWING Nº 1

MAP SCALE 1:1000 (METRIC)

10 5 0 10 20 30 40 50 60 70 80 90 100 METRES

ELEVATIONS ARE GEODECTIC AND ARE DERIVED FROM GEODETIC SURVEYS OF CANADA, BENCH MARK 72-U-320, HAVING AN ELEVATION OF 222.265m.

THIS PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES IN ACCORDANCE WITH SECTION 69(5) UNDER THE AGGREGATE RESOURCES ACT AND THE REGULATIONS MADE THEREUNDER.

AREA TO BE LICENCED - 4.218 HECTARES
AREA TO BE EXTRACTED - 3.974 HECTARES
AREA TO BE REHABILITATED - 4.218 HECTARES

Wayne Thompson
WAYNE THOMPSON

R. J. DIXON
ONTARIO LAND SURVEYOR

VARIATIONS FROM OPERATIONAL STANDARDS

No.	VARIATION	SECTION
1.	SET BACK VARIATIONS FOR EXCAVATION; REFER TO OPERATIONAL NOTES ON THIS DWG FOR LOCATIONS AND DIMENSIONS. i) 15m EXCAVATION SETBACKS FROM LICENSED SITE BOUNDARY HAS BEEN REDUCED TO 0m FROM ADJACENT PROPERTY LINE MUN. #364 (LANDOWNER AGREEMENT (GEE) ON FILE WITH M.N.R.)	5.10.1

AMENDMENT NO. 1

1. SETBACK FROM WESTERLY LICENSE BOUNDARY REDUCED FROM 15m TO 0m. EXEMPTION REQUIRED FROM AGGREGATE RESOURCES ACT (ARA).
2. ACCESS ROAD TO THE LICENSED PIT SHALL BE RELOCATED TO AN EXISTING DRIVEWAY ENTRANCE AT 364 ST. JOHN'S ROAD. (LANDOWNER AGREEMENT (GEE) ON FILE WITH M.N.R.)

DATE	REVISION	OWNER	SURVEYOR	M. N. R.
09 JUNE 2023	REMOVE 15m SETBACK; RELOCATE ACCESS ROAD	WAYNE THOMPSON	JEWITT AND DIXON	UCHE EJE

CJDL Consulting Engineers

Cyril J. Demeyere Limited
P.O. Box 460, 261 Broadway
Tillsonburg, Ontario. N4G 4H8
Tel: 519-688-1000
866-302-9886
Fax: 519-842-3235
cjdl@cjdleng.com

LICENSED PROFESSIONAL ENGINEER P.J. PENNER 09 JUN 2023 PROVINCE OF ONTARIO

PLAN BY: R.J. EMPEY

JEWITT AND DIXON Ltd.
ONTARIO LAND SURVEYORS
R.R.1 (51 PARK ROAD), SIMCOE, ONTARIO. N3Y 4J9
PHONE: (519) 426-0842

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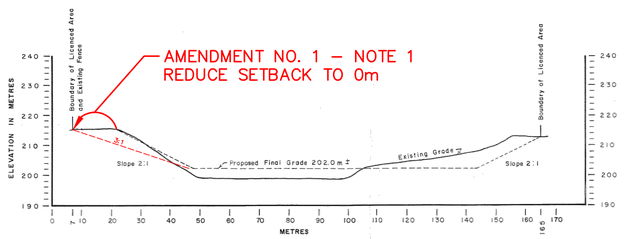
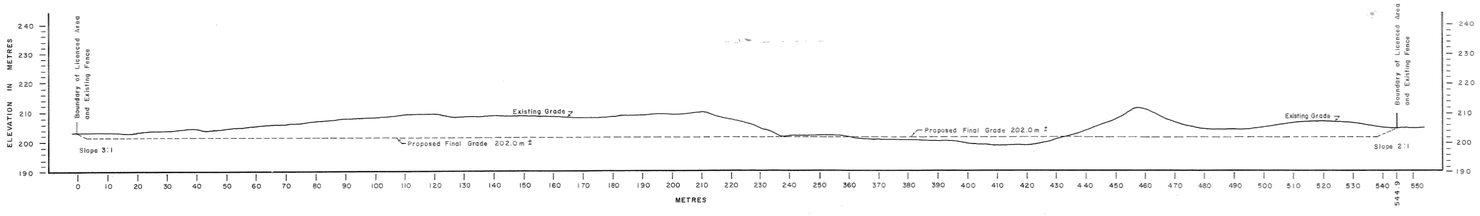


SECTION A - AI

SCALES: VERTICAL 1:1000
HORIZONTAL 1:1000



SECTION B - BI

SCALES: VERTICAL 1:1000
HORIZONTAL 1:1000

MINISTRY OF NATURAL RESOURCES
SIMCOE DISTRICT
SITE PLANS
APPROVED
UNDER THE AGGREGATE RESOURCES ACT
INSPECTOR
DATE Nov. 6/91

DATE	REVISION	OWNER	SURVEYOR	M. N. R.
09 JUNE 2023	REMOVE 15m SETBACK; RELOCATE ACCESS ROAD	WAYNE THOMPSON	JEWITT AND DIXON	UCHE E.E

PAGE 2 OF 2 - DRAWING Nº 2

Wayne Thompson
WAYNE THOMPSON

D. Dixon
D. DIXON
ONTARIO LAND SURVEYOR

PLAN BY: R.J. EMPEY

JEWITT AND DIXON Ltd.
ONTARIO LAND SURVEYORS
R.R.1 (51 PARK ROAD), SIMCOE, ONTARIO.
N3Y 4J9
PHONE (519) 426 - 0842

P91 02 9786 - 1

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E: June 8/23

PERMIT #2023-0074

FO-204
Ver. May 2022

Entrance Application

Norfolk County Operations
Roads Department
8 Schellburg Avenue,
Simcoe, ON N3Y 2J4
Phone: 519-426-5870

Accessible formats and communication supports available upon request

Part A – General Information – to be completed by Applicant

Owner Information

Name: 2690905 Ontario Inc. Telephone: (519) 718-0112

Address: 869 Charlotteville Rd 7 Email: allansexcavating@gmail.com

City: Simcoe, ON Signature: [signature]

Postal Code: N3Y4K5 Date: June 8/23

Contractor Information (if known)

Name: Allan's Excavating inc. Telephone: (519) 428-9998 (office)

Address: 869 Charlotteville Rd 7 Email: info@allansexcavating.com

City: Simcoe, ON Signature: [signature]

Postal Code: N3Y 4K5 Date: June 8/23

Part B – Work Location – to be completed by Applicant

Municipal Number: 364 Street Name: St. John's Rd E (Kiln Yard) portion

Former Township Norfolk

On the South side of St. John's Rd E
North/South/East/West Road Name

about 1/4 km(s) West of 356 St. John's Rd E
Distance North/South/East/West Road Name

Property Use: ☐ Residential ☐ Commercial ☒ Industrial ☒ Agricultural

☐ Institutional ☐ Other Transport Aggregate from Licence #3766

Is the property subject to a planning application/approval with the County: ☐ Yes ☐ No

If Yes, provide:

I/We the applicant(s) attest that the information provided on this application form is true and accurate to the best of my/our knowledge. I/We have read, understood and agree to the terms and conditions contained within Norfolk County By-Law 2016-32 and this permit.

Signature _____ Date June 8/23

Part D – Entrance Information (to be completed by County staff)

Entrance width: 18 m Finished Entrance Surface Material: Gravel

Culvert Details: Diameter: _____mm Length: _____m Material: _____

☑ Not required

Sight Line Verification: ☑ Acceptable ☐ Not acceptable

Sight line distance to E (N/E/S/W) is 200 m

Sight line distance to W (N/E/S/W) is 200 m

General requirements

☑ Approval granted for new entrance to property as per sketch/comments
☐ Resurfacing – Remove existing asphalt, relay new asphalt to existing grade

If culvert is required

☐ Culvert inverts to be installed _____ mm below existing ditch grade

If curb cut required

☐ Approval granted to cut curb ___m wide
☐ Approval granted to cut curb ___m wide to the _____ of the existing entrance

Additional Requirements and Comments:

_____

_____

_____

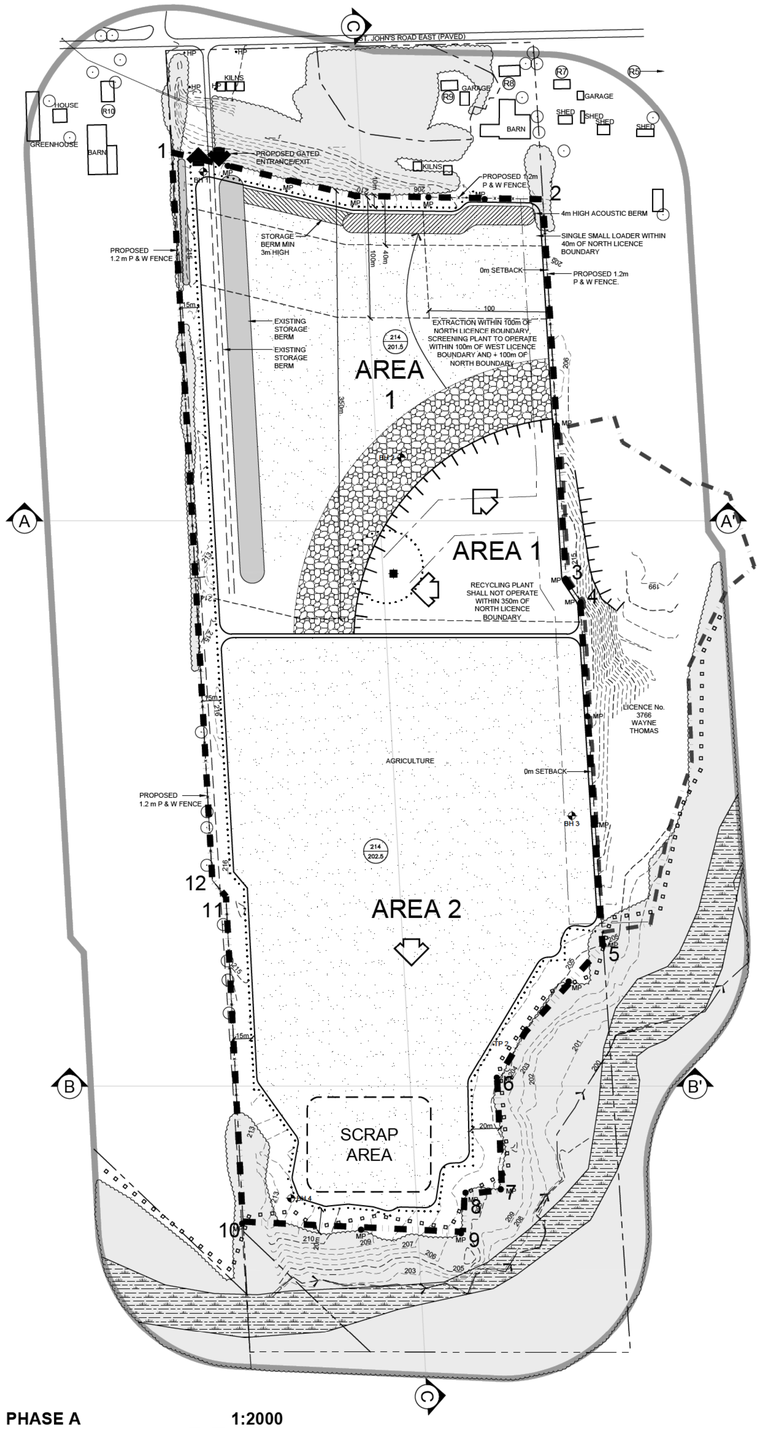
_____

☑ APPROVED ☐ NOT APPROVED (see Terms & Conditions)

_____ 9/6/23

Signature Date

ST JOHN'S ROAD EAST
hydro pole
entrance proposed. (18m wide)
375
368
364
366
329
319
307
316
308



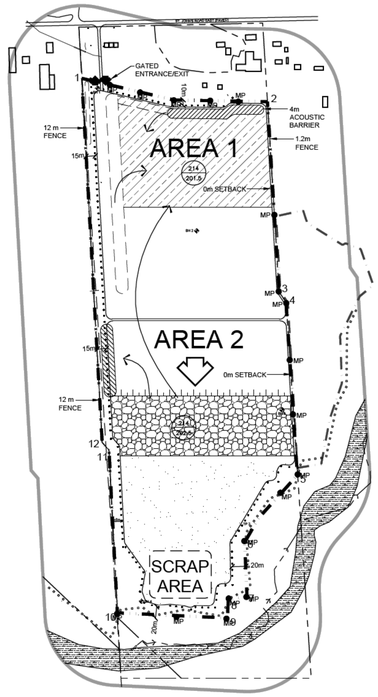
PHASE A

1:2000

0 10 50 80m

PHASE A NOTES

1. UPGRADE ENTRANCE/EXIT ON ST. JOHNS ROAD EAST TO ACCORDING TO THE APPROPRIATE MUNICIPAL STANDARDS. AN ENTRANCE PERMIT IF REQUIRED, SHALL BE OBTAINED.
2. PRIOR TO ANY ON SITE OPERATIONS, INSTALL OR REPAIR 1.2m POST AND WIRE FENCE AND INSTALL MARKER POSTS ON THE LICENCED BOUNDARIES, ACCORDING TO SITE PLAN VARIANCES.
3. CONSTRUCT THE HAUL ROAD THROUGH AREA 1 AND USE STRIPPED MATERIAL TO CONSTRUCT ACOUSTIC BERM AS SHOWN.
4. PRIOR TO EXTRACTION IN AREA 1, DEMARCATE NATURAL FEATURE SETBACKS.
5. STRIP TOPSOIL AND OVERBURDEN SEPARATELY AND COMPLETE CONSTRUCTION OF ACOUSTIC BERM. EXCESS MATERIAL MAY BE STORED IN BERMS AS SHOWN OR IN STOCKPILES ON PIT FLOOR.
6. BEGIN EXTRACTION IN AREA 1 IN DIRECTION SHOWN. STOCKPILING AREA MAY BE TEMPORARILY LOCATED NEAR THE PIT FACE DURING THE INITIAL EXCAVATION OF AGGREGATE.
7. UNDISTURBED PORTIONS OF AREA 2 SHALL REMAIN IN AGRICULTURAL USE.
8. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION



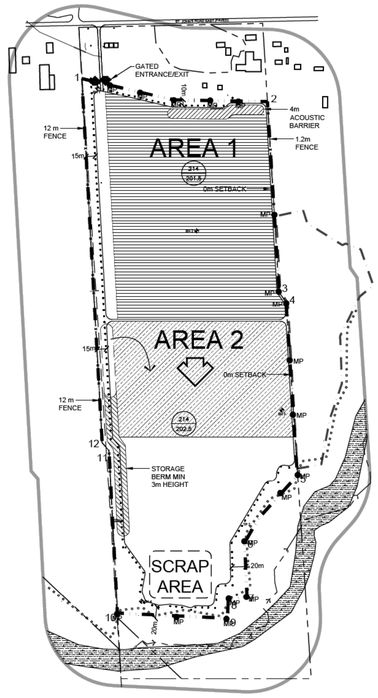
PHASE B

1:4000

0 5 10 15m

PHASE B NOTES

1. BEGIN PROGRESSIVE REHABILITATION OF AREA 1 AS RESOURCES ARE DEPLETED USING MATERIAL STORED IN BERMS AND IMPORTED EXCESS SOIL.
2. STRIP TOPSOIL AND OVERBURDEN SEPARATELY FROM AREA 2 AND USE THE MATERIALS TO COMPLETE REHABILITATION OF 50 % OF AREA 1 PRIOR TO EXTRACTION IN AREA 2. EXCESS OVERBURDEN AND TOPSOIL MAY BE USED TO CONTINUE REHABILITATION OF AREA 1 OR STOCKPILED ON PIT FLOOR.
3. BEGIN EXTRACTION OF AREA 2 IN DIRECTION SHOWN. STOCKPILING AND PROCESSING AREA MAY BE TEMPORARILY LOCATED NEAR THE PIT FACE DURING THE INITIAL EXCAVATION OF AGGREGATE.
4. UNDISTURBED PORTIONS OF AREA 2 REMAIN IN AGRICULTURAL USE.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION



PHASE C

1:4000

0 5 10 15m

PHASE C NOTES

1. COMPLETE REHABILITATION OF AREA 1 USING STOCKPILED MATERIAL AND IMPORTED EXCESS SOIL.
2. BEGIN PROGRESSIVE REHABILITATION OF AREA 2 AS RESOURCES ARE DEPLETED.
3. COMPLETE EXTRACTION IN AREA 2.
4. CONTINUE REHABILITATION OF AREA 2 USING MATERIAL STORED IN BERMS AND IMPORTED EXCESS SOIL.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION

PHASE D (NOT SHOWN)

PHASE D NOTES

1. COMPLETE REHABILITATION OF AREA 2 USING STOCKPILED MATERIAL AND IMPORTED EXCESS SOIL.
2. COMPLETE REHABILITATION OF ALL REMAINING AREAS AND HAUL ROADS USING IMPORTED EXCESS SOIL.
3. REMOVE ALL SCRAP AND EQUIPMENT.
4. SITE IS REHABILITATED TO AGRICULTURE.

OPERATIONS NOTES

GENERAL INFORMATION

1a) THIS PLAN DEPICTS A SCHEMATIC OPERATIONS AND REHABILITATION SEQUENCE FOR THIS PROPERTY BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION. PHASES SHOWN ARE SCHEMATIC AND WILL BE OPERATED ACCORDING TO MATERIAL QUALITY, SITE HYDROLOGY AND HYDROGEOLOGY OR MARKET DEMAND. PHASES DO NOT REPRESENT ANY SPECIFIC OR EQUAL TIME PERIOD.

b) EXTRACTION SHALL FOLLOW THE SEQUENCE SHOWN ON THIS PAGE AND ON THE 'OPERATIONAL PLAN PHASES B-E AND DETAILS' (PAGE 3 OF 4). PROGRESSIVE REHABILITATION SHALL BE CARRIED OUT, AS DEPICTED ON THE 'OPERATIONAL PLAN PHASES B-E AND DETAILS' (PAGE 3 OF 4) AND THE REHABILITATION PLAN (PAGE 5 OF 5)'. DEMAND FOR CERTAIN PRODUCTS OR BLENDING OF MATERIALS WILL REQUIRE SOME DEVIATION IN THE EXTRACTION AND REHABILITATION PHASING. ANY DEVIATIONS FROM THE OPERATIONS SEQUENCE SHOWN WILL REQUIRE APPROVAL FROM MNR.

2. SITE PLAN VARIANCES ARE LISTED IN THE SITE PLAN OVERRIDE TABLE SHOWN ON THIS PAGE.

EXTRACTION/PROCESSING/HAULING INFORMATION

3. TOTAL AREA TO BE EXTRACTED IS 22.4 HECTARES.
4. MAXIMUM NUMBER OF TONNES OF AGGREGATE TO BE REMOVED FROM THE SITE IN ANY CALENDAR YEAR IS 325,000 TONNES.

5a) EXTRACTION OF SAND AND GRAVEL ABOVE WATER TABLE WILL TAKE PLACE IN TWO BENCHES, WITH A MAXIMUM HEIGHT OF 5 METRES AND WILL COMPLY WITH OHSA REGULATIONS REGARDING FACE HEIGHTS. FRONT END LOADERS WILL BE USED TO EXTRACT MATERIAL AND HAUL TRUCKS OR CONVEYORS WILL CARRY MATERIAL TO THE PLANT FOR FURTHER PROCESSING. HAUL ROADS WILL BE CONSTRUCTED AS REQUIRED. REFER TO SECTIONS A-A', B-B', C-C' ON DRAWING 3 OF 4 FOR FURTHER DETAILS. HAUL ROADS SHALL BE CONSTRUCTED AS REQUIRED.

b) PORTABLE PROCESSING EQUIPMENT, FOR CRUSHING, SCREENING, AND WASHING WILL BE USED ON SITE AND WILL BE LOCATED ON THE PIT FLOOR CLOSE TO THE FACE. IN ADDITION TO PROCESSING, SITE ACTIVITIES WILL INCLUDE STRIPPING AND REHABILITATION. OPERATIONAL EQUIPMENT MAY INCLUDE TRUCKS, LOADERS, EXCAVATOR, BACKHOES, BULLDOZERS, SCRAPERS, CONVEYORS, AND OTHER RELATED EQUIPMENT. PROCESSING EQUIPMENT, STACKERS AND PRODUCT STOCKPILES WILL NOT EXCEED ±15 METRES IN HEIGHT AND WILL BE LOCATED IN THE AREAS SHOWN AND/OR CLOSE TO PIT FACES.

c) A PERMIT TO TAKE WATER SHALL BE APPLIED FOR PRIOR TO WASHING ON SITE.

6. MATERIAL FROM OTHER PROPERTIES MAY BE IMPORTED INTO THE SITE FOR BLENDING, CUSTOM PRODUCTS AND/OR RESALE. THIS MAY INCLUDE AGGREGATE AND/OR PEAT IN AREA 2.

i) EXCESS SOIL SHALL ONLY BE IMPORTED FOR BLENDING, RESALE AND/OR TEMPORARY STORAGE ON-SITE IN ACCORDANCE WITH ONTARIO REGULATION 244/97 UNDER THE AGGREGATE RESOURCES ACT.

ii) LIQUID SOIL, AS DEFINED IN ONTARIO REGULATION 406/19 UNDER THE ENVIRONMENTAL PROTECTION ACT, IS NOT AUTHORIZED FOR IMPORTATION TO THE SITE.

iii) THERE SHALL BE NO FURTHER IMPORTATION OF EXCESS SOIL FOR BLENDING, RESALE, AND/OR TEMPORARY STORAGE ONCE EXCAVATION ON-SITE HAS BEEN COMPLETED.

Iv) THE TOTAL AMOUNT OF EXCESS SOIL BROUGHT ONTO THE SITE ANNUALLY AND THE TOTAL AMOUNT STORED ON-SITE AT ANY ONE TIME WILL NOT EXCEED 25,000 M3.

7. TEMPORARY STORAGE BUILDINGS/TRAILERS MAY BE LOCATED ON SITE AS REQUIRED AND WILL BE REMOVED UPON FINAL REHABILITATION.

HYDROGEOLOGICAL INFORMATION

8. THE MAXIMUM PREDICTED WATER TABLE ELEVATION WITHIN THE KELLY PIT EXTRACTION AREA FROM APPROXIMATELY 200.5 MASL (NEAR BH-03-23) TO 205 MASL (NEAR BH-04-23) (A.S.L.). REFER TO SECTIONS ON SHEET 3 OF 4.
9. SURFACE DRAINAGE WILL BE DIRECTED TO LOW AREAS FOR WATER TO INFILTRATE INTO THE GRANULAR MATERIALS ON THE PIT FLOOR. THERE WILL BE NO OFF-SITE DITCHING/ DISCHARGE.

NOISE MITIGATION INFORMATION

10. HOURS OF OPERATION:

SITE PREPARATION AND REHABILITATION:	07:00-19:00 WEEKDAYS; 07:00 - NOON SATURDAYS
EXCAVATION AND PROCESSING	07:00-19:00 WEEKDAYS; 07:00 - NOON SATURDAYS
SHIPPING:	07:00-19:00 WEEKDAYS; 07:00 - NOON SATURDAYS

AIR QUALITY INFORMATION

11. WATER OR CALCIUM CHLORIDE WILL BE APPLIED TO INTERNAL HAUL ROADS AND PROCESSING AREAS AS OFTEN AS REQUIRED TO MITIGATE DUST.

SITE MANAGEMENT INFORMATION

MAINTENANCE/ PROTECTION OF VEGETATION INFORMATION

12. EXISTING VEGETATION WITHIN THE LICENCED AREA SHALL BE MAINTAINED IN A HEALTHY VIGOROUS GROWING CONDITION UNTIL SEQUENTIAL STRIPPING BEGINS OR UNTIL THE REHABILITATION IS COMPLETE. ANY VEGETATION PLANTED AS PART OF SITE IMPROVEMENTS OR PROGRESSIVE AND FINAL REHABILITATION WILL ALSO BE MAINTAINED IN A HEALTHY, VIGOROUS GROWING CONDITION. NO TREE SCREENS ARE PROPOSED.

FENCING INFORMATION

13. UNFENCED BOUNDARIES SHALL BE DEMARCATED WITH HIGHLY VISIBLE MARKER POSTS AT INTERVISIBLE INTERVALS. ALL FENCING AND MARKER POSTS SHALL BE MAINTAINED. SILT/EROSION CONTROL FENCING WILL BE CONSTRUCTED ONCE STRIPPING OCCURS WITHIN 50m OF THE SETBACK ADJACENT TO THE HUMPHREY DRAIN AND THE NATURAL FEATURES AND SHALL BE MAINTAINED UNTIL ADJACENT AREA IS STABLE AND VEGETATED. ALL FENCING AND POSTS/STAKES SHALL BE MAINTAINED.

TOPSOIL/SUBSOIL/OVERBURDEN STORAGE INFORMATION

14. TOPSOIL AND OVERBURDEN SHALL BE STRIPPED AND STORED SEPARATELY IN BERMS WHERE SHOWN AND IN STOCKPILES ON THE PIT FLOOR.

BERM INFORMATION

15. BERMS SHALL BE A MINIMUM OF ±2.5 METRES ABOVE THE EXISTING GRADE, OR AS SPECIFIED IN THE NOISE ASSESSMENT REPORT DATED JULY 2025 AND SHOWN ON OPERATIONAL PLAN. BERMS SHALL NOT EXCEED 2:1. REFER TO TYPICAL BERM CROSS SECTION ON DRAWING 3 OF 4 DETAILS AND SECTIONS. ALL BERMS SHALL BE SEEDED (USING GRASS/ LEGUME MIXTURE, SEE REHABILITATION PLAN, NOTE #7) IMMEDIATELY UPON COMPLETION TO MINIMIZE NOISE, DUST AND EROSION.
16. ON COMPLETION OF THE BERMS, EXCESS ON-SITE OVERBURDEN WILL BE USED TO PROGRESSIVELY BACKFILL AND REHABILITATE THE SITE. TOPSOIL CAN BE TEMPORARILY STOCKPILED ON THE PIT FLOOR.

SCRAP STORAGE INFORMATION

17. ALL SCRAP, USED MACHINERY AND STUMPS GENERATED THROUGH THE OPERATIONS WITHIN THIS LICENCE WILL BE STORED IN THE SCRAP AREA AS SHOWN, A MINIMUM OF 30m FROM THE BOUNDARY OF THE SITE AND NOT WITHIN 30m OF ANY BODY OF WATER. SCRAP SHALL BE DISPOSED OF ON AN ONGOING BASIS. UPON COMPLETION OF EXTRACTION, ALL SCRAP EQUIPMENT AND USED MACHINERY SHALL BE REMOVED.

TREE/STUMP REMOVAL

18. STUMPS/ WOODY MATERIAL MAY BE CHIPPED AND USED FOR SOIL ENHANCEMENT DURING PROGRESSIVE REHABILITATION. TREES WILL BE HARVESTED AND SOLD AS LUMBER OR UTILIZED FOR FIREWOOD AND/ OR THEIR BEST USE.

FUEL STORAGE

19. THERE SHALL BE NO FUEL STORAGE ON SITE. REFUELING SHALL BE BY PORTABLE FUEL TANKS.

SPILLS PLAN

20. IN CASE OF AN ACCIDENTAL SPILL OF PETROLEUM PRODUCTS, THE FOLLOWING CONTINGENCY PLAN WILL BE ACTIVATED:

a) THE MINISTRY OF ENVIRONMENT & CLIMATE CHANGE (SEE ADDRESS & PHONE NUMBER BELOW) AND SURROUNDING LANDOWNERS WILL BE NOTIFIED.
b) FOR A LEAKAGE OR SPILL IMMEDIATE ACTION WILL BE TAKEN TO STOP IT. AT THE SAME TIME MEASURES WILL BE TAKEN TO PREVENT SPREADING. THESE MEASURES MAY INCLUDE BUILDING OF A BERM OR CONSTRUCTION OF A DITCH, FOR INSTANCE.
c) THE PIT OPERATOR SHALL COMMENCE RECOVERY PROCEDURES BY THE SPILLED SUBSTANCE INTO CONTAINERS.
d) THE SOIL IN THE AREA AFFECTED BY THE SPILL OR LEAK SHALL BE REMOVED AND DISPOSED OF AT A LOCATION PRESCRIBED BY THE MINISTRY OF THE ENVIRONMENT & CLIMATE CHANGE.

SITE PLAN VARIANCES

THE FOLLOWING CONDITIONS ILLUSTRATED ON THESE PLANS VARY FROM THE OF THE PROVINCIAL STANDARDS MADE UNDER THE AGGREGATE RESOURCES ACT

ITEM		SECTION
1.	THE EAST BOUNDARY REGULATORY SETBACK IS REDUCED TO 0m PER AGREEMENT WITH ADJACENT LICENSEE/LANDOWNER.	0.13(1)1)b
2.	THE NORTH AND SOUTH BOUNDARY REGULATORY SETBACK IS REDUCED TO 0m; ADJACENT LAND IS OWNED BY LICENSEE.	
3.	STOCKPILING AND PROCESSING EQUIPMENT MAY BE LOCATED WITHIN 30m OF THE COMMON EAST BOUNDARY PER AGREEMENT WITH ADJACENT LICENSEE/LANDOWNER AND WITHIN 30m OF THE SOUTH AND NORTH BOUNDARY, LICENSEE OWNS ADJACENT LAND.	0.13(1)1)3
4.	FENCING SHALL BE OMITTED ALONG THE COMMON EAST LICENCE BOUNDARY PER AGREEMENT WITH ADJACENT LICENCEE.	0.13(3)a
5.	FENCING SHALL BE OMITTED ALONG THE SOUTH AND NORTH WOODED BOUNDARY; ADJACENT LAND OWNED BY LICENSEE AND WOODLAND/RAVINE PREVENT ACCESS.	
6.	AN ENTRANCE/EXIT MAY BE LOCATED ANYWHERE ALONG THE COMMON EAST LICENSED BOUNDARY AND A GATE SHALL BE OMITTED PER AGREEMENT WITH ADJACENT LICENSEE.	0.13(1)1

LEGEND

- BOUNDARY OF PROPOSED LICENCE
- BOUNDARY OF EXISTING LICENCED AREA
- 120m INFORMATION BOUNDARY
- PROPERTY LINES
- LOT LINE
- EXTRACTION LIMIT/SETBACK
- LPRCA REGULATED AREA LINE
- EXISTING WATERWAY
- EXISTING FENCE
- 295 EXISTING 5m ASL CONTOUR LINE
- 294 EXISTING 1m ASL CONTOUR LINE
- EXISTING VEGETATION
- EXISTING WATER
- EXISTING WETLAND
- A LOCATION OF SECTION
- EXTRACTION FACE
- BERM (MIN. HEIGHT AS SHOWN)
- UNDISTURBED AREA
- AREA STRIPPED OF TOPSOIL AND OVERBURDEN
- SILT FENCE
- PROGRESSIVE REHABILITATION
- FINAL REHABILITATION
- 214 / 201.5 EXISTING ELEVATION / PROPOSED ELEVATION
- EXISTING BUILDING
- HP EXISTING HYDRO POLE
- DIRECTION OF SURFACE WATER DRAINAGE
- EXISTING ENTRANCE/EXIT
- BH 1 BOREHOLE LOCATION AND NUMBER DRILLED AND MONITORING WELL INSTALLED MAY 2023 BY ELEMENTS GEO CORP UNDER THE SUPERVISION OF ENGLOBE
- TP 10 TEST PIT LOCATION AND NUMBER DUG MAY 2023 BY ALLAN'S EXCAVATING UNDER THE SUPERVISION OF ENGLOBE
- GATED FARM ACCESS
- GATED ENTRANCE/EXIT
- DIRECTION OF EXTRACTION
- DIRECTION OF TOPSOIL AND OVERBURDEN MOVEMENT
- R3 LOCATION OF NOISE RECEPTOR
- MP PROPOSED MARKER POST

NO.	DATE	REVISIONS	DRWN	PM	MHR

Pre Licence Review

NO.	DATE	REVISIONS	DRWN	PM	MHR

Site Plan Amendments

Harrington McAvan Ltd
41 Main Street, Unit 102
Unionville, Ontario L3R 2E5
Tel: 905-294-8282 Fax: 905-294-7623
www.harringtonmcavan.com

Project Name

2690905 ONTARIO INC.

KELLY PIT

LICENCE No.

LICENCEE SIGNATURE

LOT 5, CONCESSION 2 WOODHOUSE
(FORMERLY TOWNSHIP OF WOODHOUSE), COUNTY OF NORFOLK

Scale 1:2000 (0 10 50 80m)	North	Stamp: ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS — RICHARD McAVAN — MEMBER
Drawing Status: SUBMITTED FOR LICENCE APPROVAL		
Drawn SB	Checked RM	Issue Date AUG 2025
Drawing Title: OPERATIONAL PLAN PHASES A TO C		Project Number 24-26
		Drawing Number 2 OF 4

FILE NAME: 24-26/COMP/2426-2.DWG
PLOT DATE: AUGUST 25, 2025

AGGREGATE RESOURCES ACT SUMMARY STATEMENT

Kelly Pit

Application for a Class 'A' Pit Below Water License under the Aggregate Resources Act

Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

Prepared for:
2690905 Ontario Inc.

Prepared by:
ESHER PLANNING INC.

Esher Planning Inc.

July 2025

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1.0 INTRODUCTION

This report has been prepared in support of an application for a Class "A", Pit Below Water License by Allan's Excavating Ltd. in accordance with the provincial standards under the Aggregate Resources Act (ARA). This report summarizes the information and conclusions of the consultants who have contributed to the preparation of the licence application for the "Kelly Pit". The following information is included as part of the application submission:

- Water Report: Groundwater Science Corp.
- Natural Environment Report: Vroom & Associates
- Cultural Heritage/Archaeology: Lincoln Environmental Consultants
- Noise Impact Assessment: Aercoustics Engineering
- Site Plans: Harrington McAvan Limited

Related applications for approvals under the Planning Act are required and will be submitted to Norfolk County.

2.0 DESCRIPTION OF SITE AND ADJACENT LANDS

The proposed pit is located at 364 St. John's Road East in part of Lot 5, Concession 2, Former Township of Woodhouse, Norfolk County, Ontario (see **Figure 1**). The subject property has an area of 29 hectares (72 acres) with frontage along St. John's Rd. East. The ground surface is rolling and typically slopes down to the north and south with a topographical relief of approximately 13 m as measured at the borehole locations. A house and barn are located at the north side of the property at St John's Road and a tree line extends along the east property line and a second tree line cuts across the property (east to west) approximately mid way through the property.There is a house and barn located in the northeast part of the property, and tobacco kilns located in the northeast part of the property. There is a private natural gas well and located on the property, and a woodland located at the southern limit.

The area to be licenced is approximately 25 hectares as shown on **Figure 2** and excludes the northern part of the property and the wooded feature along the southern boundary.

The surrounding lands include an existing gravel pit (Thompson Pit) on the property to the east, which has a class B licence (ARA #3766). The applicant currently operates the Thompson pit. In 2023 approvals were obtained from the municipality for an entrance and access to the Thompson Pit through the subject

property at the western end of the site, onto St. John's Rd East. The entrance and access was also approved though the Ministry of Natural Resources. The associated approvals documents are included in Appendix A of this report.

There are a number of residences located along St. John's Rd East, and the surrounding land use is predominantly agricultural. There is another gravel pit located northwest of the subject lands (Lipsit pit) which also operates as a class B licence. Industrial uses near the site include Thompson Landscape Supply and Cookston Disposal, located on the north side of St. John's Road East (see **Figure 3**).

3.0 PROPOSAL DESCRIPTION

The total area to be licensed is 25.0 hectares (ha) in size, with extraction proposed for 22.4 ha within that area. The proposed maximum annual tonnage limit is 325,000 tonnes. The operational design and rehabilitation of the pit is based on the recommendations of a multi-disciplinary technical team to address provincial policies and regulations. The technical reports assessed the potential impacts of the proposed pit operation on groundwater, natural heritage and cultural heritage features on the site and adjacent lands

Extraction will occur sequentially in phases as shown in the Site Plans. Extraction will not extend into the water table, but is proposed within 1.5 metres of the maximum predicted high water table and is therefore considered to be a Pit Below Water according the MNR licencing procedures.

The aggregate operations will include excavation of sand and gravel, loading with front end loaders and transporting by truck to the processing area. Portable and stationary processing equipment for screening and crushing will be used on site and will generally be located on the pit floor. Other equipment may include excavators, bulldozers and conveyors.

The proposed hours of operation are 7 a.m. to 7 p.m for full operations (extraction, processing and shipping) and 7 a.m. to noon on Saturdays with no operations on Sundays or Statutory holidays. Loading and shipping between 6am and 7am is also proposed for Monday to Friday.

Rehabilitation of the site will be to an agricultural use, with soil capability matching the pre-extraction levels.

The provincial standards under the Aggregate Resources Act include requirements for Site Plans together with a Summary Statement as part of the license application submission. The Summary Statement outlines the information and conclusions of the technical reports prepared in support of the application.

4.0 PLANNING AND LAND USE CONSIDERATIONS

The protection and management of aggregate resources has been deemed to be of provincial significance and their development is regulated by specific legislation. In addition to the Aggregate Resources Act (ARA), the development of aggregate extraction operations must respect the provisions of the Planning Act and give appropriate consideration to the policy framework established by the regional and municipal planning documents.

The Norfolk County Official Plan is the policy document that establishes the overall land use strategy for the municipality. The area to be licensed is designated and zoned as "Agriculture". According to the Official Plan policies, mineral aggregate extraction is permitted on lands within the Agriculture designation where the property is identified as a Mineral Aggregate Resource Area. A Zoning By-law Amendment is required to permit the proposed use.

The operations and the rehabilitation of the pit have been designed to minimize impacts and propose that the lands will be progressively rehabilitated with the final rehabilitation creating a pond and upland areas. The Hydrogeology Report evaluates the impacts of the proposed below water extraction on ground and surface water resources, including an assessment of any potential impacts to water wells near the site. The Natural Environment Report evaluates the impacts of the proposal on significant wetlands, woodlands, fish habitat, and habitat of endangered species and threatened species located on the site and on adjacent lands. The report identifies measures to ensure there are no negative impacts on these natural features or their functions.

In summary, the proposed pit:

- Has been evaluated to ensure there are no significant negative impacts on the natural environment, groundwater resources, and the agricultural system.

- Is designed to mitigate potential impacts on surrounding neighbours from noise and dust of the proposed operations.
- Conforms with the policies of the Norfolk County Official Plan.
- Is consistent with the Provincial Planning Statement (PPS 2024).
- Represents wise management and use of resources.

5.0 AGRICULTURAL CLASSIFICATION

According to the Soil Survey for Norfolk County, the soils on the subject property are Brant, Fox and Plainfield Dune Phase soils (see **Figure 4)**.

Brant soils occur on areas of glaciolacustrine silts that are usually transitional between shallow water sands and deep water clays. Topography ranges from nearly level on the lacustrine plain, to very strongly sloping along some of the valley walls. Brant 1 soils are mainly lacustrine silt loam with good drainage. Brant 13 soils are sandy textures overlaying lacustrine silt loam.

Fox soils are widely distributed and have developed on the nearshore glaciolacustrine sand deposits of the Norfolk sand plain. The topography ranges from level to moderately sloping on most of the areas, but can be strongly to very strongly sloping on dissected stream valley slopes. The parent materials of Fox soils are mainly glaciolacustrine loamy sands and sands, usually modified somewhat at the surface by wind action. The wind-graded surface sand and fine sand can range up to one metre thick in Fox soils, but are usually less than 50 cm thick. Occasional thin bands of fluvial coarse sands or gravels occur in some Fox soils. Fox soils were extensively used for growing flu-cured tobacco. Rye and winter wheat are also widely grown on Fox soils. Increasing use is being made of Fox soils for peanuts and horticultural crops such as asparagus, onions, potatoes, apples and cherries. Supplemental sprinkler irrigation is necessary for tobacco and most other high value crops. Fox soils have only fair potential for most tree species, except red pine or white pine which seem to do well.

Canada Land Inventory mapping shows that the majority of the area to be licensed is class 2 and 3 (see **Figure 5**). In Ontario, class 1-3 agricultural lands are considered “prime agricultural” lands,

Section 4.5.4 of the Provincial Planning Statement (2024) deals with mineral aggregate resources extraction in prime agricultural areas. The PPS defines prime agricultural land as “specialty crop areas and/or Canada Land Inventory Class 1, 2, and 3 lands, as amended from time to time, in this order of priority for protection”. The policies allow for extraction of mineral aggregate resources as an interim

use. Rehabilitation will be to an agricultural after use and will restore the soils the to same agricultural capability that exists pre-extraction.

6.0 QUALITY AND QUANTITY OF AGGREGATE RESOURCE

Geological mapping for the area is based on the Ontario Geological Survey and shows that the deposit on the site is primarily sand, originating from a glaciolacustrine deposit.

The quality and quantity of the aggregate resource within the area to be licensed was confirmed by on-site test pit and drilling which included 4 boreholes drilled to a depths between 12.2 and 14.3 metres and 15 test pits ranging from 3.7 to 4 metres in depth. The results of the site investigation indicate the surficial sand/gravel resource varies from approximately 8 -10 m in thickness, with approximately 60 percent of the resource located within 1.5 metres of the water table. The area to be licensed contains an estimated 2.7 million tonnes of aggregate resource. The deposit is primarily sand and fine sand, with gravel present in the northern part of the site. Based on grain size analysis of test pit samples, the material is suitable for concrete and mortar and and Granular B material as well as SSM.

7.0 HAUL ROUTES AND TRUCK TRAFFIC

Primary site access to the site is from the existing entrance onto St. John's Road near the west limit of the site. This entrance is currently utilized for access to the Thompson pit, which abuts the east limit of the proposed Kelly pit. An entrance permit is in place for this access.

At the maximum annual tonnage volume of 325,000 tonnes and based on 210 operating days at 10 hours per day, the average hourly tonnage volume would be approximately 155 tonnes. The average load for gravel trucks is 32-40 tonnes, which would produce an average hourly truck volume of 4 trucks at maximum operating conditions.

8.0 SOURCE WATER PROTECTION

The subject property is located within the Long Point Source Water Protection Area. The site is not within a Wellhead Protection Area or Intake Protection Zone, according to provincial mapping.

On a regional watershed scale, highly vulnerable aquifers (HVA) and significant groundwater recharge areas (SGRA) were also mapped as part of the assessment. These areas are based on an aquifer vulnerability assessment which is determined through assessment of the aquifer depth and geologic setting and provides an intrinsic vulnerability of the aquifer. Portions of the site and surrounding area are identified as Significant Groundwater Recharge Areas, consistent with the occurrence of surficial sand/gravel deposits. The Hydrogeology report includes an analysis of water balance for the proposed pit operation which addresses the maintenance of site groundwater recharge functions.

Aggregate extraction is not identified as a significant drinking water threat according to the Source Protection Plan.

9.0 PROGRESSIVE AND FINAL REHABILITATION

In accordance with the requirements of the Aggregate Resources Act Provincial Standards, the extracted area will be progressively rehabilitated, as outlined on the Site Plans. All topsoil and overburden on site will be stripped and stockpiled separately in berms or stockpiles and replaced as quickly as possible in the progressive rehabilitation process.

The final rehabilitation of this property will be to an agricultural use as shown on the Site Plans.

The ARA Site Plans (Rehabilitation Plan) include additional details regarding progressive and final rehabilitation. The final rehabilitation will be compatible with the surrounding lands and land uses and enhance the existing natural features within and surrounding the site.

10.0 TECHNICAL REPORTS

A series of technical reports were completed in accordance with the requirements set out in the Provincial Standards for Pit Below Water license applications. A brief description of these reports is provided in the following section. The technical recommendations outlined in these reports have been incorporated as conditions and can be found on the Site Plans.

10.1 Water Report: Groundwater Science Corp.

A hydrogeology study was completed in accordance with the requirements of the Aggregate Resources Act. In order to collect geologic information and establish a site groundwater monitoring network drilling was completed at 4 locations (MW1, MW2, MW3, MW4) in May 2023. Water level monitoring began in May 2023 and is ongoing.

Based on the results of the impact assessment, and, proposed monitoring and mitigation plan, the proposed aggregate operation below the water table will not have any adverse effects on local water resources including domestic water wells, and natural environmental features in the area. As noted in this report, extraction will be within 1.5 metres of the water table and is therefore considered to be a below water pit, however, extraction will not extend into the water table to create a pond.

A monitoring program is included as a Site Plan condition and includes quarterly water level measurements, with a summary report submitted annually to MNR.

10.2 Natural Environment Report: Vroom & Associates

A Natural Environment impact assessment and report was prepared by Vroom & Associates to evaluate the impact of the proposed pit on natural heritage features or within 120 metres of the site. During site investigations and field surveys carried out in 2023 and 2024, it was determined that significant natural features and species of conservation interest occurred on or adjacent to the site.

The extraction limit incorporates a 20 metre setback from the significant woodland located at the southeastern limit of the area to be licenced. No disturbance or site alteration associated with pit operations (e.g., berms) is proposed within the setback, while ongoing cultivation of cash crops will cease within this area. During pit operations, erosion and sediment control measures in the setback (e.g., installation of silt fencing, native plantings) will provide further protection for the wooded area.

The NER concludes that the phased extraction approach and progressive rehabilitation, along with mitigation measures described in their report, will ensure that potential impacts to natural heritage features on and within 120 m of the site will be mitigated. The features and their ecological functions will be maintained over the long-term consistent with provincial and local policy requirements.

10.3 Cultural Heritage/Archaeology: Lincoln Environmental Consultants Inc.

Lincoln completed field work for Stage 1 and 2 archaeological assessments for the Site in December 2022. The assessments were conducted to meet the requirements of the Planing Act and Aggregate Resources Act and in accordance with the Standards and Guidelines for Consultant Archaeologists (MTC 2011). The objective of the Stage 2 assessment was to provide an overview of archaeological resources on the property and to determine whether any of the resources might be archaeological sites with cultural heritage value or interest and to provide specific direction for the protection, management and/or recovery of these resources.

Based on the assessment, Lincoln concluded that there were no archaeological resources on the property that warranted further investigation. The Lincoln report, dated November 2023 was submitted to the Ministry of Citizenship and Culturalism (MCM) and the Minisitry confirmed that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario. A clearance letter dated June 2, 2025 was issued by MCM.

10.4 Noise Impact Assessment, Aercoustics

Aercoustics has conducted a noise impact study to provide noise control recommendations for the pit operations to satisfy the MECP noise guidelines. Sound level limits were developed based on the MECP noise guidelines. Calculations were then carried out to determine the worst-case noise impact for each phase of the aggregate pit operation, at each noise-sensitive receptor. Where noise predictions indicated the potential for exceedance of the MECP sound level limits, noise control recommendations were provided, and these measures have been incorporated as conditions on the Site Plans.

With the incorporation of the recommended noise control measures, the noise study concludes that the aggregate extraction operations in the proposed Bingo West Pit extension will comply with the MNR and MECP guidelines for noise from stationary sources.

11.0 CONCLUSION

The proposal to establish a mineral aggregate operation on the subject property is supported by the Summary Statement, the Site Plans and related requirements, and the associated technical reports referenced in this document.

Based on these submissions it is concluded that:

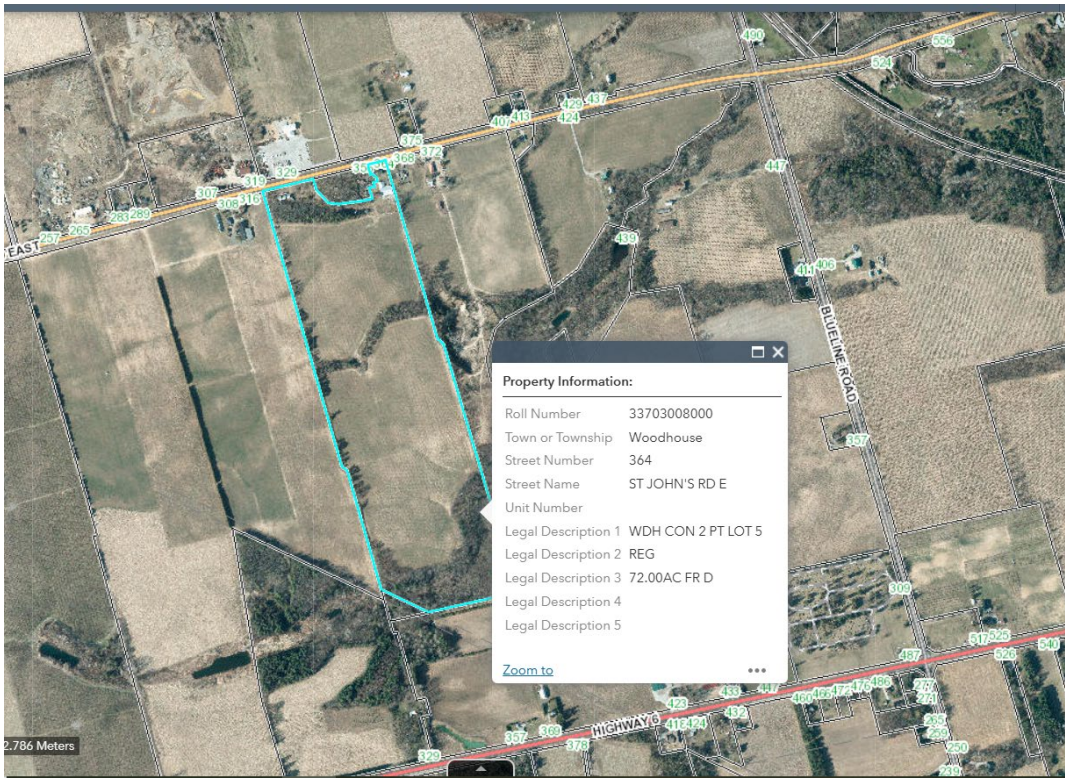
- The proposed pit will provide a close to market supply of aggregate resources for construction materials to supply local markets.
- The deposit can be extracted in such a manner that potential environmental and social impacts are minimized.
- The Provincial Planning Statement 2024, contains policy requiring mineral aggregate resources to be protected and that as much of the resource as possible be made available as close to market as is possible. The proposal is consistent with this provincial objective as well as provincial policy related to the protection of natural heritage, water and cultural resources and the protection of public health and safety.
- The proposed pit, through its Operations Plan, Rehabilitation Plan and the recommendations of the supporting technical reports, is consistent with provincial policy as set out in the 2020 Provincial Policy Statement.
- The proposal is consistent with the relevant policies of the Norfolk County Official Plan for mineral aggregate extraction applications.
- The proposed pit operation has been designed to reflect best practices and incorporates recommendations of the accompanying technical reports.

Prepared by:

Melanie Horton, MCIP, RPP

July 2025

FIGURE 1: LOCATION

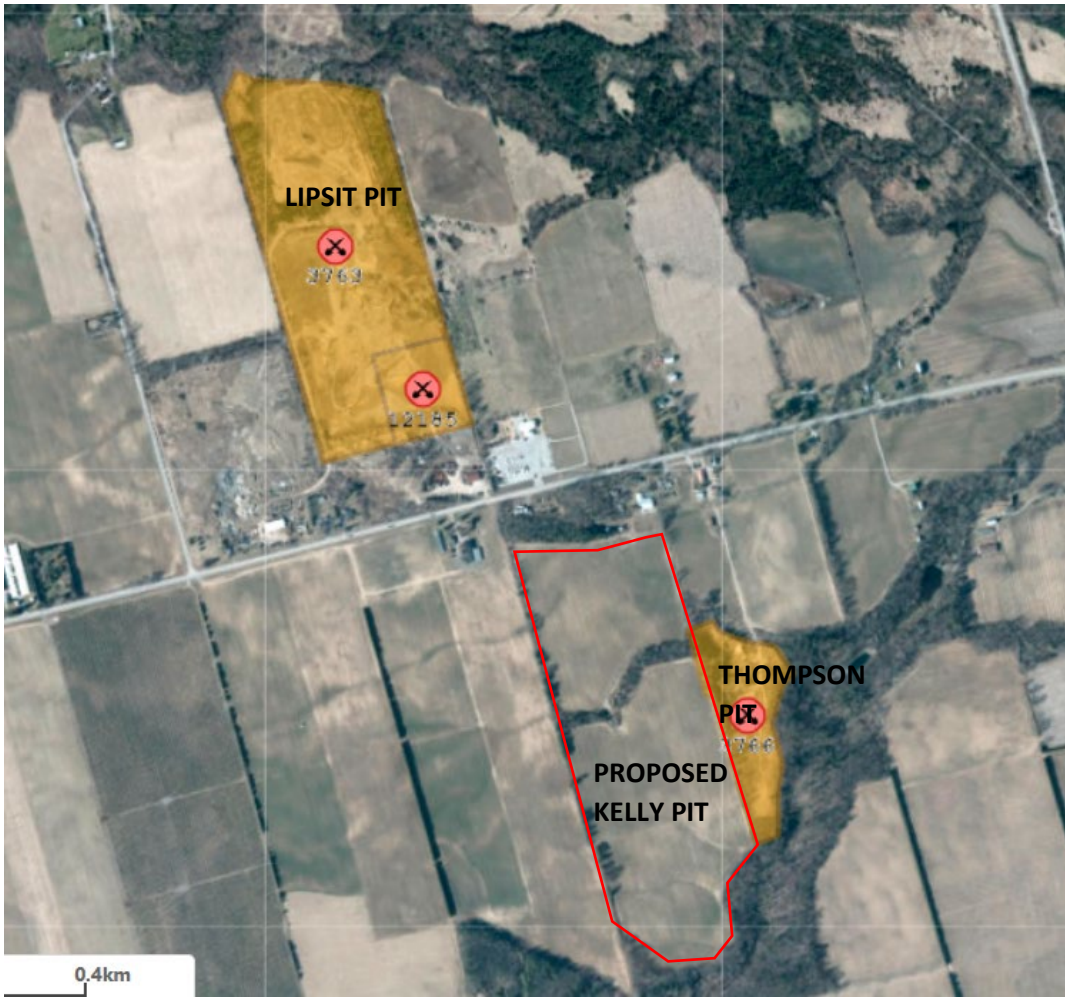


KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

N

FIGURE 2: AREA TO BE LICENCED



KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

N

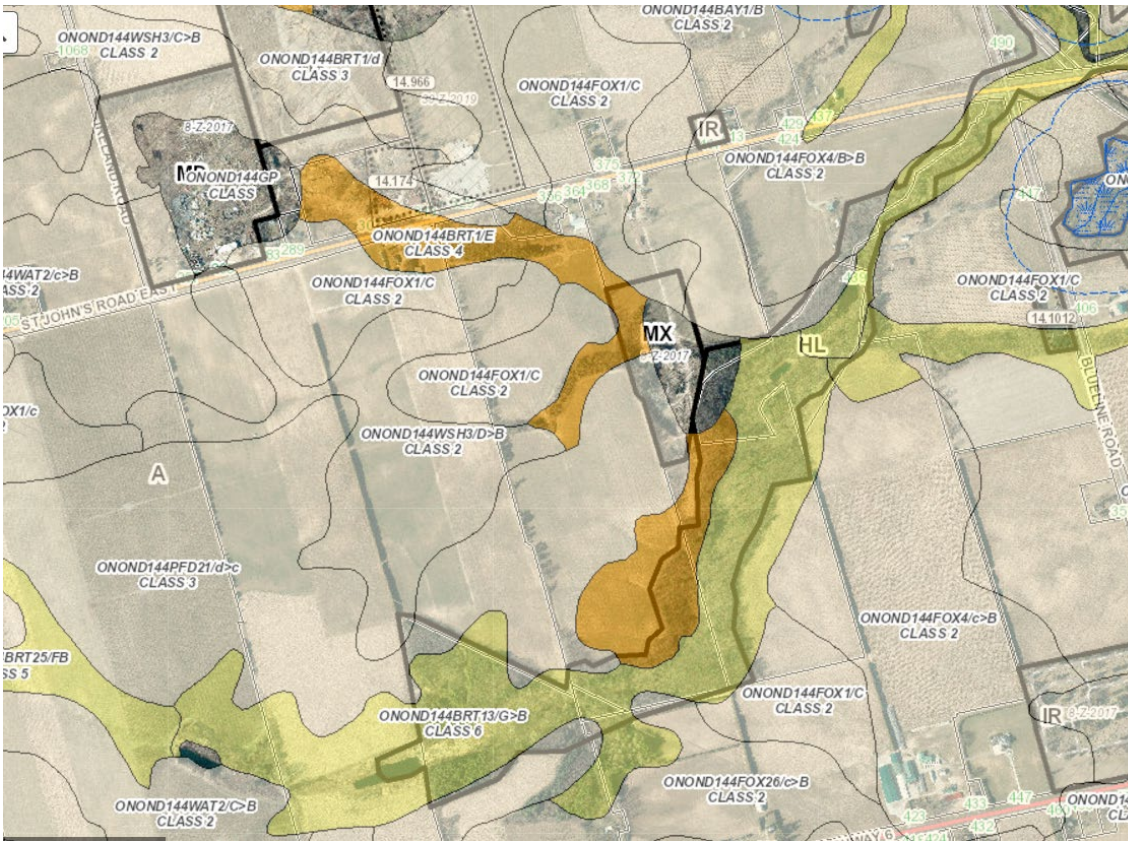
FIGURE 3: SURROUNDING LANDS

KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

N

FIGURE 4: SOILS MAPPING

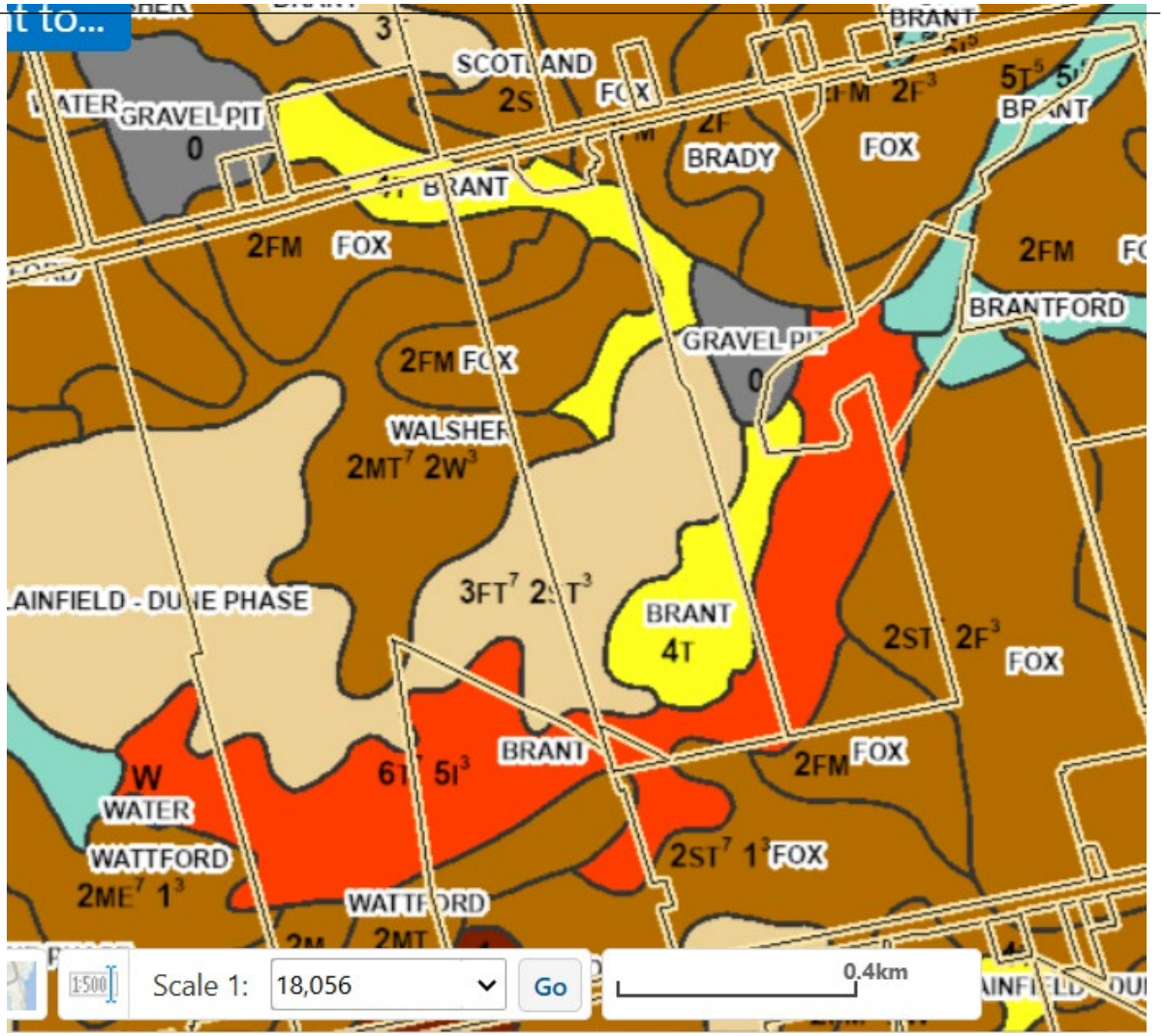


KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

N

FIGURE 5: CANADA LAND INVENTORY MAPPING



KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

N

FIGURE 6: GEOLOGY MAPPING

KELLY PIT

364 St. John's Rd. E
Part Lot 5, Concession 2 (Woodhouse)
Norfolk County

STATEMENT OF QUALIFICATIONS

Esher Planning Inc.

Melanie Horton, MCIP, RPP

Esher Planning Inc. was established in 2020 and provides land use planning consulting services, with expertise and extensive experience in aggregate resource planning. The firm is an associate member of the Ontario Stone Sand & Gravel Association (OSSGA).

Melanie Horton is a Registered Professional Planner and is a member in good standing of the Ontario Professional Planners Institute and the Canadian Institute of Planners. She is past chair of the Natural Resource Working Group for the Ontario Professional Planners Institute (OPPI) and has represented Ontario Planners on a variety of Natural Resource Policy initiatives. Melanie has over 25 years of experience in Aggregate Resource Management and Planning, working in both the public and private sector. She has been coordinating applications for over twenty-five years for pits and quarries across the province. Ms. Horton has served on numerous provincial advisory committees including the State of the Aggregate Resources Report, and the Aggregate Strategy Working Group.

APPENDIX 1

Ministry of Natural Resources and Forestry

Aggregates Section

Divisional Delivery Branch
300 Water Street
Peterborough, ON K9J 3C7

E: ARAApprovals@ontario.ca

Ministère des Richesses naturelles et des Forêts

Section Agrégats

Direction de la Prestation des services de la Division
300, rue Water
Peterborough (ON) K9J 3C7

E : ARAApprovals@ontario.ca

Ontario

July 06, 2023

Wayne Thompson
Rural Route 3
Simcoe, ON N3Y 4K2

Dear Peter Penner:

Subject: Site Plan Amendment for Licence #3766 under the *Aggregate Resources Act*
Lot 5, Concession 2, Geographic Township of Woodhouse, Norfolk County

Further to your site plan amendment request of March 3, 2023, please be advised that the Ministry of Natural Resources and Forestry (MNRF) approves your request under the *Aggregate Resources Act* for the following amendments to the site plan:

1) Reduction of 15m setback on the western boundary to 0m.

2) Relocation of the entrance driveway to the adjacent property at 364 St. John's Road.

Attached is the revised site plan (2 of 2 pages[s]) approved by the MNRF on July 06,2023 the MNRF will forward a copy to the agencies listed below. Please replace the previous version of the site plan with the attached.

Should you have any questions regarding this amendment please contact Uche Eje, Aggregate Specialist, at uche.eje2@ontario.ca/ (365) 885-2684.

Sincerely,

Katie O'Connell
Aggregate Resources Manager

Attachment – Licence #3766 site plan (2 pages)

c. Clerk – Norfolk County
MNRF District

Ontario

Ministry of Natural Resources and Forestry

Amendment Form *Aggregate Resources Act* (August 2020)

Instructions

Applications for an Amendment

This form is to be completed by any licence or permit holder applying to the ministry to make a change to their licence, permit, or site plan under sections 13, 13.1, 13.2, 30.1, or 37.2 of the Act.

When notification is required, this form must be circulated with the amendment application package.

As part of an application for an amendment, the licensee or permittee must submit a sketch or a draft copy of an updated site plan or site plan pages to the ministry.

Following confirmation from the ministry that the proposed amendment is acceptable, the licensee or permittee must make changes to the site plan to reflect the noted changes and submit the updated site plan or site plan pages to the ministry for approval.

Following ministry approval, the licensee or permittee must include a description of the amendment and the date the amendment was approved on a schedule to the site plan and must forward the site plan to the ministry for their records.

Submit this form and any additional information online using the Natural Resources Information Portal. If you have any questions about using the Natural Resources Information Portal, contact NRIP@ontario.ca. If web access is unavailable, submit the form and additional information by mail to Integrated Aggregate Operations Section, Ministry of Natural Resources and Forestry, 300 Water Street, Peterborough ON K9J 3C7.

When an amendment requires consultation and you are participating in the *Aggregates Resources Act* (ARA) notification and consultation process, all personal information (PI) you provide may be subject to the *Freedom of Information and Protection of Privacy Act* (FIPPA), whether provided to the Applicant or MNRF at any point during the consultation process. The MNRF collects your PI under the authority of s.7, s. 11, s.13.1, s.23, s. 34, s . 35 and other provisions of the ARA and maintains it for the purposes of ensuring consultation and other requirements in the ARA are met. Under the authority of s. 11(2),s.13.1(3), s.23(7), s.35(2) of the ARA, your name and address will form part of the public record (that is available to the general public as described in s 37 of FIPPA) and will appear with your comments, unless you request in your submission that your name and address be kept confidential. If you have any questions about the collection and use of your personal information, please contact Ministry of Natural Resources and Forestry, Natural Resources Information and Support Centre (NRISC) 300 Water Street, Peterborough ON K9J 3C7. Toll free: 1-800-667-1940.

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Fields marked with an asterisk (*) are mandatory.

Section A: Site Identification

Licence/Permit ID Number *
3766

Licensee/Permittee Name *
Wayne Thompson

Local Municipality
Norfolk County

Upper Tier Municipality
Norfolk County

Site Location (e.g. lot and concession, geographic township, 911 address) *
372 St. John's Road East, Simcoe, ON N3Y 4K2

Section B: Contact Information

Last Name *	First Name *	Middle Initial
Penner	Peter	J

Telephone Number *	Email
519-688-1000 Extension 22	ppenner@cjdleng.com

Address

Unit Number	Street Number *	Street Name *	PO Box
	261	Broadway	460

City/Town *	Country *	Province/State *	Postal Code/Zip Code *
Tillsonburg	Canada	Ontario	N4G 4H8

Input all necessary information for correspondence

☑ I authorize the person named above to provide correspondence and proceed with amendments on my behalf.

☑ I authorize the person applying on my behalf to use their company name and address to be used for correspondence on behalf of the licensee/permittee during the site plan amendment process.

Section C: Description of Amendment

Check the box that best represents the amendment that is the subject of this form. *

☐ Amendment to lower the depth of extraction in an area of a licence or aggregate permit that does not allow extraction below the water table under section 13.1 or 37.2 of the *Aggregate Resources Act*

- If selected, include technical reports, information and an updated site plan in your submission as described in *Aggregate Resources of Ontario: Amendment Standards*.

☐ Amendment to expand a licence boundary into an adjacent road allowance under section 13.2 of the Act

- If selected, ensure that technical reports, information and an updated site plan are attached in your submission as described in *Aggregate Resources of Ontario: Amendment Standards*.

☑ Other amendments (not including Amendment Without Approval)

- The ministry may require the applicant to provide additional information.
- The ministry may direct you to circulate this form to organization(s) and individual(s) for comment(s).

Description *

Provide a description of the proposed amendment(s)

Remove 15m setback to expand the limit of extraction to adjacent westerly lot boundary; Driveway is being relocated to the neighbouring property to the west of Lot 5, Concession 2, in the Geographic Township of Woodhouse

Provide reasons for the site plan amendment request

Owner of adjacent property at 364 St. John's Road plans to apply for pit licence, and is seeking to avoid leaving a berm of aggregate between the pits that cannot be rehabilitated back to farmland.
The driveway from the pit out to St John's Road is close to a residence with young children and will be relocated onto the neighbouring property to the west. A letter from the the adjacent property owner, agreeing to these changes, is attached.

Select all that apply *

☑ Enclosed is a sketch/picture outlining proposed changes to the site plan.

☑ Enclosed is a draft version of a page(s) of the site plan altered to demonstrate the desired changes to the site plan.

☑ Enclosed is additional information and/or technical reports.

Last Name *	First Name *
Thompson	Wayne
Signature (Licencee/Permittee)	Date (yyyy/mm/dd) *
Thompson Exec. / Owner Chuck Thompson	2023/03/08

CJDL
Consulting Engineers

CYRIL J. DEMEYERE LIMITED
John D. Wiebe, P. Eng. | Andrew Gilvesy, P. Eng.
Peter J. Penner, P. Eng. | Deren Lyle, P. Eng.

261 Broadway, P.O. Box 460, Tillsonburg, ON N4G 4H8 T: 519-688-1000 F: 519-842-3235 www.cjdleng.com

21 March 2023 22080

2690905 Ontario Inc.
869 Charlotteville Road 7
Simcoe, Ontario
N3Y 4K5

RE: APPLICATION FOR CATEGORY 7 - CLASS B AGGREGATE PERMIT
PART OF LOT 5, CONCESSION 2
GEOGRAPHIC TOWNSHIP OF MIDDLETON, NORFOLK COUNTY

ATTENTION: JOHN ALLAN GEE AND JOANNA GEE, DIRECTORS

Dear Allan and Joanna:

Wayne Thompson is proceeding with the application to Ministry of Natural Resources & Forestry for an Amendment to the Class B Aggregate Permit for the pit at 372 St. John's Road (County Road 3). This will allow extraction of aggregate to extend right up to your property line and slope down to the pit floor at a 3:1 slope. If the application for an Aggregate License on your property at 364 St. John's Road is successful, the slope is proposed to be removed to allow the pit floors to match grades. The intent of this amendment is to improve grades for final rehabilitation for farming and increase aggregate yield for both pits. See attached Drawing.

The limit for excavation and stockpiling from the licensed site boundary on the west, is proposed to be 0m setback. The Aggregate Resource Act would normally require a 15m excavation setback and 30m stockpile setback from the licensed site boundary.

The active barrow site will be appropriately fenced to maintain safe site conditions and stockpiles will be seeded for dust control. The removal of sand from the site will take place over several years and areas will be cleared and progressively rehabilitated to coincide with yearly demand for sand.

The driveway access to the pit will also be relocated to cross your property to access St. John's Road. The operator of the pit will be responsible for dust control whenever the driveway is in use.

☐ Fax ☐ Mail ☐ Deliver ☐ Courier ☑ e-mail

If you do not object to the foregoing, please sign below and return a copy of this letter to CJDL.

Yours very truly,

Peter J. Penner, P. Eng.

JH/sed

Encl.

c.c. Mr. Wayne Thompson

** ** **

We, John Allan Gee and Joanna Gee , Directors of 2690905 Ontario Inc., hereby agree to reducing the 15m excavation and 30m stockpiling setbacks and requirement to 0m adjacent to my property located at 364 St. John's Road (County Road 3). I also agree to relocation of the driveway access to the Thompson Pit onto our property as indicated on the attached amended Site Plan.

John Allan Gee — Date: March 22, 2023

Joanna Gee — Date: March 22, 2023

PERMIT #2023-0074

FO-204
Ver. May 2022

Entrance Application

Norfolk County Operations
Roads Department
8 Schellburg Avenue,
Simcoe, ON N3Y 2J4
Phone: 519-426-5870

Accessible formats and communication supports available upon request

Part A – General Information – to be completed by Applicant

Owner Information

Name: 2690905 Ontario Inc. Telephone: (519) 718-0112
Address: 869 Charlotteville Rd 7 Email: allansexcavating@gmail.com
City: Simcoe, ON Signature: [signature]
Postal Code: N3Y 4K5 Date: June 8/23

Contractor Information (if known)

Name: Allan's Excavating Inc. Telephone: (519) 428-9998 (office)
Address: 869 Charlotteville Rd 7 Email: info@allansexcavating.com
City: Simcoe, ON Signature: [signature]
Postal Code: N3Y 4K5 Date: June 8/23

Part B – Work Location – to be completed by Applicant

Municipal Number: 364 Street Name: St. John's Rd E (Kiln Yard) portion
Former Township Norfolk
On the South side of St. John's Rd E
North/South/East/West Road Name

about 1/4 km(s) West of 356 St. John's Rd E
Distance North/South/East/West Road Name

Property Use: ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural
☐ Institutional ☐ Other _____

Is the property subject to a planning application/approval with the County: ☐ Yes ☐ No
If Yes, provide:

I/We the applicant(s) attest that the information provided on this application form is true and accurate to the best of my/our knowledge. I/We have read, understood and agree to the terms and conditions contained within Norfolk County By-Law 2016-32 and this permit.

Signature _____ Date June 8/23

Part D – Entrance Information (to be completed by County staff)

Entrance width: 18 m Finished Entrance Surface Material: Gravel

Culvert Details: Diameter: _____mm Length: _____m Material: _____

☑ Not required

Sight Line Verification: ☑ Acceptable ☐ Not acceptable

Sight line distance to E (N/E/S/W) is 200 m

Sight line distance to W (N/E/S/W) is 200 m

General requirements

☑ Approval granted for new entrance to property as per sketch/comments
☐ Resurfacing – Remove existing asphalt, relay new asphalt to existing grade

If culvert is required

☐ Culvert inverts to be installed _____ mm below existing ditch grade

If curb cut required

☐ Approval granted to cut curb ___m wide
☐ Approval granted to cut curb ___m wide to the _____ of the existing entrance

Additional Requirements and Comments:

_____

_____

_____

_____

☑ APPROVED ☐ NOT APPROVED (see Terms & Conditions)

_____ 9/6/23

Signature Date

Part E – Additional Construction Specifications

Grading Requirements:

All entrances shall be designed, constructed and maintained in a manner that will prevent the surface water from the entrance from being discharged onto the travelled portion of the highway.

The minimum grade for all driveways shall be 2%.

The maximum grade for all entrances shall be 8%. This maximum grade is not recommended and shall only be used in exceptional cases where physical conditions prohibit the use of lesser grades.

Minimum Consolidated Depth Requirements:

Urban Residential
- 50 mm HL3 asphalt surface
- 150 mm of Granular 'A' base

Rural Residential
- 150 mm of Granular 'A' surface

Commercial, Light Industrial and Apartments
- 40 mm HL3 asphalt surface
- 50 mm HL8 asphalt base
- 150 mm of Granular 'A' base
- 225 mm of Granular 'B' base

Heavy Industrial
- 50 mm HL3 asphalt surface
- 75 mm HL8 asphalt base
- 150 mm of Granular 'A' base
- 300 mm of Granular 'B base

Additional Requirements:

- All culverts shall have a minimum of 300 mm cover where possible.
- The property owner shall ensure that proper cover and/or separation distances are maintained from all existing utilities, including overhead wires.
- All entrances shall be 3.0 m from any utility poles or boxes.
- All entrances shall be 1.2 m from any side yard property line.
- All curb cuts shall be completed by a qualified curb cutting contractor, as determined by the Director, Roads, or designate.

Part F – Terms & Conditions

Refer to ***By-Law 2016-32, To Regulate Entrances onto Municipal Roads and Highways,*** as amended, for additional procedures, guidelines, specifications and terms and conditions.

This is only an application for an entrance permit and does not constitute final approval by Norfolk County staff until it has been approved and signed by the appropriate staff.

This application will not be reviewed until the permit application fee has been processed. Fees are established in Norfolk County's most current User Fees and Service Charges By-Law.

As part of this agreement, the following are the insurance requirements that must be shown on a Certificate of Insurance:

a. Commercial General Liability
   - $2M Liability limit per occurrence
   - $2M Products and Completed Operations
   - $2M Non-owned Auto
   - Cross Liability endorsement

b. Automobile
   - $2 M liability limit under a Standard Automobile Policy in respect of each vehicle

c. An endorsement certifying that The Corporation of Norfolk County is added as additionally insured on the policy

d. 30 days' notice of nonrenewal

A deposit must be posted prior to the issuance of the permit. The amount of the deposit will be set in accordance with the most current Norfolk County User Fees and Service Charges By-Law. The deposit will be returned upon completion of ALL of the following:

- A minimum of 1 year has lapsed since the installation of the driveway
- The contractor has made application to the County for the deposit to be returned
- An inspection has taken place by Norfolk County Operations, Roads staff
- The driveway has been installed in accordance with the Permit and is to the satisfaction of Norfolk County Staff

Please be advised that the permit will not be released until the Contractor's Certificate of Insurance and Deposit have been received by Norfolk County Operations, Roads.

LEGEND:

BOUNDARY OF AREA LICENCED SHOWN
LINE 150 METRES FROM THE BOUNDARY TO BE LICENCED SHOWN
LOT LINES SHOWN
DEED LINES SHOWN
FENCES SHOWN (EXISTING)
STANDARD IRON BARS SHOWN
IRON BARS SHOWN
CROSS-SECTION A and B, SEE DRAWING Nº. 2 - SHOWN AS ELEVATIONS SHOWN
CONTOURS SHOWN
TOP OF BANK SHOWN
BUSH SHOWN
GAS WELLS SHOWN

KEY PLAN: SCALE 1:10,000

WAYNE THOMPSON

R.R. 3, SIMCOE, ONTARIO.
N3Y 4K2

ALPS # 3766
NRVIS 2008-9-8

SAND AND GRAVEL PIT

IN
LOT 5, CONCESSION II
IN THE GEOGRAPHIC
TOWNSHIP OF WOODHOUSE
IN THE
COUNTY OF NORFOLK
NOW IN THE
CITY OF NANTICOKE
IN THE REGIONAL MUNICIPALITY OF
HALDIMAND - NORFOLK

NOTES:

1. THE MAXIMUM DEPTH OF EXCAVATION IS 199.0m. EXCAVATION WILL NOT OCCUR BELOW THE WATER TABLE AT AN ELEVATION OF 198.02m.
2. EXTRACTION WILL CONTINUE IN THE NORTHERLY SECTION OF THE PIT (PHASE 1) UNTIL AGGREGATE IS EXHAUSTED. EXTRACTION WILL THEN PROCEED INTO THE EXISTING SOUTHERLY FACE AND CONTINUE TO THE SOUTHERLY BOUNDARY (PHASE 2) NOTWITHSTANDING THE PHASING AND DIRECTION OF OPERATION, BLENDING OF MATERIALS AND AVAILABILITY OF CERTAIN PRODUCTS MAY REQUIRE DEVIATION FROM THE SAME.
3. MATERIAL FROM THE ADJOINING NORTHERLY FIELD WILL BE TRANSPORTED TO THE PIT FLOOR, RAISING THE ELEVATION TO 202.0±. SLOPING OF FACES, FROM THE EXISTING SOUTHERLY FACE (SEE PLAN) TO THE NORTHERLY FACE, SHALL BE A MAXIMUM OF 2:1, DUE TO LACK OF OVERBURDEN. REMAINING FACES TO THE SOUTH SHALL BE A MAXIMUM OF 3:1.
   SUBSOIL AND TOPSOIL WILL BE RESPREAD OVER THE ENTIRE PIT AND THEN SEEDED WITH GRASSES, LEGUMES OR CROPS.
   THE AFTER USE IS AGRICULTURE.
4. WHEN PHASE 1 (SEE PLAN) IS EXHAUSTED THEN IT SHALL BE REHABILITATED AS IN NOTE 3. LIKEWISE FOR PHASE 2. NOTWITHSTANDING THE ABOVE, WHEN PART OF A PHASE IS ABLE TO BE REHABILITATED, THEN IT SHALL BE CARRIED OUT.
5. TOPSOIL, SUBSOIL AND OVERBURDEN TO BE STOCKPILED SEPARATELY ON WEST AND EAST SETBACKS IN THE FORM OF SEEDED BERMS (MINIMUM HEIGHT OF 2m, MAXIMUM SLOPE OF 2:1 AND COMMENCE AT LEAST 3m FROM THE BOUNDARY OF THE LICENCE).
6. REMOVAL OF THE SETBACKS IN THE SOUTH, SOUTHEAST, NORTH, NORTHEAST SHALL OCCUR (AS PER PLAN) SINCE THE OPERATOR OWNS THE ADJACENT LANDS OF THE LICENCED BOUNDARY IN THOSE AREAS.
7. PERIMETER FENCING SHALL NOT BE REQUIRED AT THIS TIME ON THE SOUTH AND EAST LICENCED BOUNDARIES TO A POINT 29.118m EAST OF THE MAIN GATE (ENTRANCE/EXIT). THIS IS DUE TO THE THICK BUSH AND STEEP SLOPES AND TO THE EXISTING FENCE WHICH EXTENDS FROM THE ABOVE MENTIONED POINT EAST INTO THE THICK BUSH. FENCING MAY BE REQUIRED IN THE FUTURE IF THESE CONDITION CHANGE.
8. FENCING SHALL NOT BE REQUIRED, AT THIS TIME, ALONG THE WESTERLY BOUNDARY SOUTH OF THE EAST-WEST FENCE (LOCATED APPROXIMATELY 163m NORTH OF THE SOUTH-WEST CORNER) THIS FENCE ADEQUATELY ENCLOSES THE PRESENT EXTRACTION. WHEN EXTRACTION MOVES SOUTHERLY AND THE EAST-WEST FENCE IS REMOVED, THEN THE FENCING OF THE ENTIRE WEST BOUNDARY WILL BE REQUIRED.
9. LICENCED BOUNDRIES WHICH ARE NOT FENCED SHALL BE CLEARLY INDENTIED WITH PAINTED CEDAR POSTS (1.2m HIGH), INSTALLED EVERY 60 METRES ± AND POSTED WITH NO TRESPASSING SIGNS.
10. DUST SHALL BE MITIGATED BY APPLYING WATER OR ANOTHER PROVINCIAL APPROVED DUST SUPPRESSANT TO HAUL ROADS ON SITE AS OFTEN AS REQUIRED.

MUN. NO. 329 ST. JOHN'S ROAD
MUN. NO. 375 ST. JOHN'S ROAD
MUN. NO. 308 ST. JOHN'S ROAD
MUN. NO. 364 ST. JOHN'S ROAD
MUN. NO. 356 ST. JOHN'S ROAD
MUN. NO. 368 ST. JOHN'S ROAD
MUN. NO. 372 ST. JOHN'S ROAD

CONCESSION III
ALLOWANCE FOR ROAD BETWEEN CONCESSIONS II AND III
CONCESSION II

PROPOSED ENTRANCE/EXIT FOR PIT
PROPOSED CULVERT
LIMIT OF 364 ST. JOHN'S ROAD
Limit between East half and West half of Lot 5, Concession II
Lot 4 / Lot 5
Lot 5 / Lot 6
S.I.B.(700)
N.W. Angle Lot 5 Concession II
N.E. Angle Lot 5 Concession II
N78° 30' E 305.460
N78° 30' E 299.478
315.125
150 metres
Approx. Location of Gas well

AGRICULTURE (ZONED AGRICULTURAL)

AMENDMENT NO. 1 – NOTE 3
NEW ENTRANCE/EXIT TO ACCESS ST. JOHN'S ROAD FROM 364 ST. JOHN'S ROAD

ENTRANCE / EXIT (Access Road)
ORIGINAL ENTRANCE TO REMAIN FOR EMERGENCY ACCESS ONLY
"Existing Gate"
Existing Gate

AGRICULTURE (ZONED AGRICULTURAL)

PHASE 1
PHASE 2
PIT AGRICULTURE

REDUCE 15m EXTRACTION SETBACK TO 0m
REDUCE 15m EXTRACTION SETBACK TO 0m

LICENCED PIT (ZONED EXTRACTIVE INDUSTRIAL)
AGRICULTURE (ZONED EXTRACTIVE INDUSTRIAL)

Boundary of Licenced Area
N67°08' 30" E 48.905
N32°16' E 5.254
N79°52' W 29.118
N13°07'40" W 57.428
N13°32'26" W 293.852
N14°01' W 133.417
N14°01' W 293.852
N68°55' W 23.939
N68°55' E 66.106
N68°55' E 43.050
N70°40' 30" E 43.050
S.I.B.(wit) 1.524 East
S.I.B.(wit) 0.914 North
S.I.B.(wit) 4.115
Approx. Location of Abanded Gas well
Centreline of Creek Z
150 metres

BUSH (ZONED AGRICULTURAL)

MINISTRY OF NATURAL RESOURCES
SIMCOE DISTRICT
SITE PLANS APPROVED
UNDER THE AGGREGATE RESOURCES ACT
INSPECTOR
DATE NOV. 6/91

PAGE 1 OF 2 - DRAWING Nº 1

MAP SCALE 1:1000 (METRIC)

10 5 0 10 20 30 40 50 60 70 80 90 100 METRES

ELEVATIONS ARE GEODECTIC AND ARE DERIVED FROM GEODETIC SURVEYS OF CANADA, BENCH MARK 72-U-320, HAVING AN ELEVATION OF 222.265m.

THIS PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES IN ACCORDANCE WITH SECTION 69(5) UNDER THE AGGREGATE RESOURCES ACT AND THE REGULATIONS MADE THEREUNDER.

AREA TO BE LICENCED - 4.218 HECTARES
AREA TO BE EXTRACTED - 3.974 HECTARES
AREA TO BE REHABILITATED - 4.218 HECTARES

Wayne Thompson
WAYNE THOMPSON

R. J. DIXON
ONTARIO LAND SURVEYOR

VARIATIONS FROM OPERATIONAL STANDARDS

No.	VARIATION	SECTION
1.	SET BACK VARIATIONS FOR EXCAVATION; REFER TO OPERATIONAL NOTES ON THIS DWG FOR LOCATIONS AND DIMENSIONS. i) 15m EXCAVATION SETBACKS FROM LICENSED SITE BOUNDARY HAS BEEN REDUCED TO 0m FROM ADJACENT PROPERTY LINE MUN. #364 (LANDOWNER AGREEMENT (GEE) ON FILE WITH M.N.R.)	5.10.1

AMENDMENT NO. 1

1. SETBACK FROM WESTERLY LICENSE BOUNDARY REDUCED FROM 15m TO 0m. EXEMPTION REQUIRED FROM AGGREGATE RESOURCES ACT (ARA).
2. ACCESS ROAD TO THE LICENSED PIT SHALL BE RELOCATED TO AN EXISTING DRIVEWAY ENTRANCE AT 364 ST. JOHN'S ROAD. (LANDOWNER AGREEMENT (GEE) ON FILE WITH M.N.R.)

DATE	REVISION	OWNER	SURVEYOR	M. N. R.
09 JUNE 2023	REMOVE 15m SETBACK; RELOCATE ACCESS ROAD	WAYNE THOMPSON	JEWITT AND DIXON	UCHE EJE

CJDL Consulting Engineers

Cyril J. Demeyere Limited
P.O. Box 460, 261 Broadway
Tillsonburg, Ontario. N4G 4H8
Tel: 519-688-1000
866-302-9886
Fax: 519-842-3235
cjdl@cjdleng.com

LICENSED PROFESSIONAL ENGINEER P.J. PENNER 09 JUN 2023 PROVINCE OF ONTARIO

PLAN BY: R.J. EMPEY

JEWITT AND DIXON Ltd.
ONTARIO LAND SURVEYORS
R.R.1 (51 PARK ROAD), SIMCOE, ONTARIO. N3Y 4J9
PHONE: (519) 426-0842

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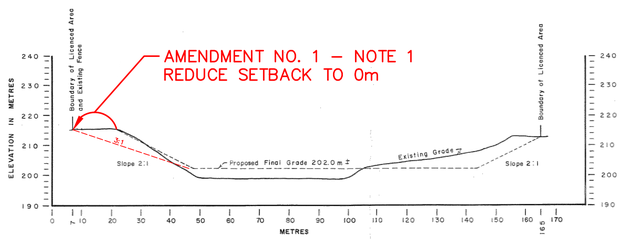
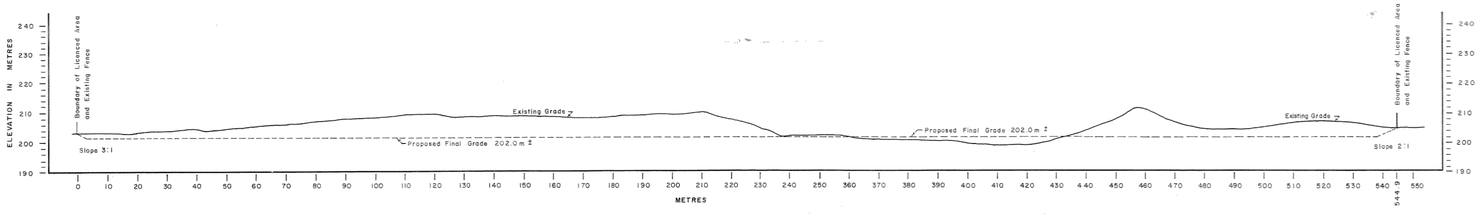


SECTION A - AI

SCALES: VERTICAL 1:1000
HORIZONTAL 1:1000



SECTION B - BI

SCALES: VERTICAL 1:1000
HORIZONTAL 1:1000

MINISTRY OF NATURAL RESOURCES
SIMCOE DISTRICT
SITE PLANS
APPROVED
UNDER THE AGGREGATE RESOURCES ACT
INSPECTOR
DATE Nov. 6/91

DATE	REVISION	OWNER	SURVEYOR	M. N. R.
09 JUNE 2023	REMOVE 15m SETBACK; RELOCATE ACCESS ROAD	WAYNE THOMPSON	JEWITT AND DIXON	UCHE E.E

PAGE 2 OF 2 - DRAWING Nº 2

Wayne Thompson
WAYNE THOMPSON

D. Dixon
D. DIXON
ONTARIO LAND SURVEYOR

PLAN BY: R.J. EMPEY

JEWITT AND DIXON Ltd.
ONTARIO LAND SURVEYORS
R.R.1 (51 PARK ROAD), SIMCOE, ONTARIO.
N3Y 4J9
PHONE (519) 426 - 0842

P91 02 9786 - 1

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E: June 8/23

PERMIT #2023-0074

FO-204
Ver. May 2022

Entrance Application

Norfolk County Operations
Roads Department
8 Schellburg Avenue,
Simcoe, ON N3Y 2J4
Phone: 519-426-5870

Accessible formats and communication supports available upon request

Part A – General Information – to be completed by Applicant

Owner Information

Name: 2690905 Ontario Inc. Telephone: (519) 718-0112

Address: 869 Charlotteville Rd 7 Email: allansexcavating@gmail.com

City: Simcoe, ON Signature: [signature]

Postal Code: N3Y4K5 Date: June 8/23

Contractor Information (if known)

Name: Allan's Excavating inc. Telephone: (519) 428-9998 (office)

Address: 869 Charlotteville Rd 7 Email: info@allansexcavating.com

City: Simcoe, ON Signature: [signature]

Postal Code: N3Y 4K5 Date: June 8/23

Part B – Work Location – to be completed by Applicant

Municipal Number: 364 Street Name: St. John's Rd E (Kiln Yard) portion

Former Township Norfolk

On the South side of St. John's Rd E
North/South/East/West Road Name

about 1/4 km(s) West of 356 St. John's Rd E
Distance North/South/East/West Road Name

Property Use: ☐ Residential ☐ Commercial ☒ Industrial ☒ Agricultural

☐ Institutional ☐ Other Transport Aggregate from Licence #3766

Is the property subject to a planning application/approval with the County: ☐ Yes ☐ No

If Yes, provide:

I/We the applicant(s) attest that the information provided on this application form is true and accurate to the best of my/our knowledge. I/We have read, understood and agree to the terms and conditions contained within Norfolk County By-Law 2016-32 and this permit.

Signature _____ Date June 8/23

Part D – Entrance Information (to be completed by County staff)

Entrance width: 18 m Finished Entrance Surface Material: Gravel

Culvert Details: Diameter: _____mm Length: _____m Material: _____

☑ Not required

Sight Line Verification: ☑ Acceptable ☐ Not acceptable

Sight line distance to E (N/E/S/W) is 200 m

Sight line distance to W (N/E/S/W) is 200 m

General requirements

☑ Approval granted for new entrance to property as per sketch/comments
☐ Resurfacing – Remove existing asphalt, relay new asphalt to existing grade

If culvert is required

☐ Culvert inverts to be installed _____ mm below existing ditch grade

If curb cut required

☐ Approval granted to cut curb ___m wide
☐ Approval granted to cut curb ___m wide to the _____ of the existing entrance

Additional Requirements and Comments:

_____

_____

_____

_____

☑ APPROVED ☐ NOT APPROVED (see Terms & Conditions)

_____ 9/6/23

Signature Date

ST JOHN'S ROAD EAST
hydro pole
entrance proposed. (18m wide)
375
368
364
366
329
319
307
316
308

Ministry of Citizenship and Multiculturalism (MCM)

Archaeology Program Unit
Heritage Branch
Citizenship, Inclusion and Heritage Division
5th Floor, 400 University Ave.
Toronto ON M7A 2R9
Tel.: (437) 869-3704
Email: victoria.cafik@ontario.ca

Ministère des Affaires civiques et du Multiculturalisme (MCM)

Unité des programme d'archéologie
Direction du patrimoine
Division de la citoyenneté, de l'inclusion et du patrimoine
5e étage, 400 ave. University
Toronto ON M7A 2R9
Tél. : (437) 869-3704
Email: victoria.cafik@ontario.ca

Jun 2, 2025

Kara Adams (P1289)
Lincoln Environmental Consulting Corp
6807 Calvert Strathroy ON N7G 3H5

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT OF 364 ST. JOHN'S ROAD EAST IN PART OF LOT 5, CONCESSION 5, FORMER TOWNSHIP OF WOODHOUSE, NOW TOWN OF SIMCOE, NORFOLK COUNTY, ONTARIO", Dated Jan 11, 2024, Filed with MCM on Apr 28, 2025, MCM Project Information Form Number P1289-0369-2022, MCM File Number 0018285

Dear Kara Adams (P1289):

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18.[1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Figure 4: Assessment Strategies and Results of the above titled report and recommends the following:

All work met provincial standards and no archaeological sites were identified during the Stage 2 assessment. If construction plans change to incorporate new areas that were not subject to a Stage 2 field survey, these must be assessed prior to the initiation of construction. In keeping with legislative stipulations, all construction, and demolition-related impacts (including, for example, machine travel, material storage and stockpiling, earth moving) must be restricted to the areas that were archaeologically assessed and cleared by the Ministry of Heritage, Sport, Tourism, and Culture Industries through acceptance of the assessment report into the provincial register.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over an approximately 15 by 15 meter area. Findspot 1 does not fulfill section 2.2 Standard 1c of the 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). As such Findspot 1 is not deemed to retain further cultural heritage value and interest and a Stage 3 site specific assessment is not recommended. The MCM is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports.

Additional archaeological assessment is still required and so the archaeological site recommended for further archaeological fieldwork remains subject to Section 48(1) of the Ontario Heritage Act and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Victoria Cafik
Archaeology Review Officer

cc. Archaeology Licensing Officer
Melanie Horton,esher
TBD TBD,TBD

[1] *In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

GROUNDWATER SCIENCE CORP.

311 Glastonbury Drive,
Stratford, ON N5A 6B8
Phone: (519) 746-6916
groundwaterscience.ca

Hydrogeologic Assessment
2690905 Ontario Inc.
Proposed Kelly Pit
Part Lot 5, Concession 2, Woodhouse
County of Norfolk

Prepared For:

2690905 Ontario Inc.
c/o Allan Gee
869 Chartotteville Road
Simcoe, Ontario
N3Y 4K5

Prepared By:

Andrew Pentney, P.Geo.
Groundwater Science Corp.

June 2025

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Appendix B Geotechnical Assessment
Appendix C Water Level Monitoring Results
Appendix D Water Balance Calculations
Appendix E Qualifications

1.0 INTRODUCTION

This report presents the results of a hydrogeologic assessment completed for the proposed Kelly Pit. The proposal is for a Class A Licence for below water extraction at the site. However, actual extraction will remain 0.5 m or more above the water table and no pit pond will be created. Rehabilitation will return the site to agricultural use.

This hydrogeological assessment addresses the requirements of the Aggregate resources of Ontario standards: *A compilation of the four standards adopted by Ontario Regulation 244/97 under the Aggregate Resources Act* (MNRF, August 2020).

This assessment, and report, was completed on behalf of the applicant to provide supporting information to be included as part of the necessary approval applications.

1.1 LOCATION

The proposed pit is located within Part Lot 5, Concession 2 Woodhouse (former Township of Woodhouse), County of Norfolk, Ontario. The street address of the ownership parcel is 364 St Johns Road, Simcoe. The proposed licence (study site) would occupy a portion of the ownership parcel, as shown on **Figure 1**.

The proposed licence area currently consists of agricultural fields. Surrounding land use is a mix of agricultural and rural residential properties. An existing licenced pit (Thompson Pit, Licence #3766) abuts a portion of the east boundary of the proposed Kelly Pit.

1.2 STUDY SCOPE

1.2.1 Summary of Provincial Standards

The licence application category would allow the operator to maximize resource recovery by extraction a portion of the 1.5 m "buffer" above the established water table. However, extraction would remain above the water table and no pit pond is proposed. In accordance with the application category this study utilizes the current ARA related groundwater reporting standards *(Aggregate Resources of Ontario: Technical reports and information standards*, MNRF, August 2020) for a Class A Pit proposing to excavate below (i.e. within 1.5 m of) the maximum predicted water table.

The standards include the following water table assessment:

> *2.1 Maximum predicted water table report*
>
> *A report must be prepared that details how the maximum predicted water table is identified in metres above sea level, relative to the proposed depth of excavation at the site.*
>
> *The maximum predicted water table shall be determined by monitoring the ground water table at the site for a minimum of one (1) year to account for seasonal variations and influences due to precipitation, unless alternative information already exists (e.g. previous hydrogeological study, existing well data) to support a determination of the maximum predicted water table by a qualified person.*
>
> *An alternative method may be used for sites determining the maximum water table in Precambrian rocks of the Canadian Shield where it is difficult to determine the elevation of the water table. In such cases, the maximum predicted water table may*

be assumed at an elevation (metres above sea level) that is a minimum of 2.5 metres below the deepest sump or pond on the site, provided a qualified person develops and oversees a drilling and monitoring program to determine if the ground water table would be intercepted at the assumed maximum predicted water table.

The number of drill holes and seasonal monitoring frequency shall be determined by a qualified person based on site conditions.

The standards also include the following site groundwater characterization and impact assessments:

2.5. Water report

Excavation at a pit proposed above the water table may not occur within 1.5 metres above the maximum predicted water table. Excavation at a quarry proposed above the water table may not occur within 2 metres above the maximum predicted water table.

Applications proposing to excavate below the maximum predicted water table must complete the following:

Water report level 1:

Determine the potential for impacts to ground water and surface water resources and their uses (e.g. water wells, ground water aquifers, surface water courses and bodies, springs, discharge areas) and identify if the proposed site is in a Wellhead Protection Area for Quantity (WHPA-Q) set out in an applicable source water protection plan under the Clean Water Act. If so, identify applicable source water protection policies and mitigation measures that will be implemented at the site.

Water report level 2:

Where the results of Level 1 have identified a potential for impacts from the aggregate site on ground water and/or surface water resources and their uses, an impact assessment is required. The assessment is to determine the significance of the effect and the potential for mitigation.

The assessment must address the potential effects of the operation on any ground water and surface water features located within the zone of influence, including but not limited to:

a) water wells (includes all types e.g. municipal, private, industrial, commercial, geothermal and agricultural)

b) springs (e.g., place where ground water flows out of the ground)

c) ground water aquifers;

d) surface water courses and bodies (e.g., lakes, rivers, brooks)

e) wetlands

The assessment must include but not be limited to the following:

f) a description of the physical setting including local geology, hydrogeology, and surface water systems;

g) proposed water diversion, discharge, storage and drainage facilities;

h) water budget (e.g. how water is managed on-site);

i) the possible positive or negative impacts that the proposed site may have on the water regime;

The Level 2 water report must also contain:

j) monitoring plan(s); and

k) technical support data in the form of tables, graphs and figures, usually appended to the report.

The "maximum predicted water table report" provides an assessment of the water table elevation at the site relative to the proposed extraction. The Level 1 report examines the site relative to identified Source Protection well head groundwater quantity protection areas (WHPA-Q) to address quantity protection policies. In addition, the Level 1 report examines the extraction plan relative to the identified water table conditions and provides a general discussion of potential for impact in order to determine the need for a Level 2 report and "scope" the issues to be examined.

The Level 2 report provides a detailed groundwater characterization, examines the type and scale of any potential extraction related impacts, and, based on that assessment identifies any potential for adverse effects on groundwater and surface water resources (and their uses). The need for monitoring and/or mitigation is also assessed. If necessary, the Level 2 report also provides recommendations regarding monitoring and/or mitigation.

The Level 1 and Level 2 hydrogeological reports are typically referenced by the Natural Environment Report (NER), which is also required as part of the ARA application.

1.2.2 Impact Assessment Approach

As part of the licensing process for the site a County of Norfolk planning application may also occur.

A Hydrogeological Study (HS) related to groundwater and natural environment feature protection can be required as part of the planning application process. The HS should also address identified Source Protection information needs.

This report follows a typical HS approach, which is identified as follows:

- an outline of the study methodology
- a description of the topographic setting, local surface water drainage and natural environment features (including springs, wetlands, etc.);
- a description of reported local water well locations;
- a description of the geologic and hydrogeologic setting (including aquifers, groundwater/surface water interaction, water budget, etc.);
- a summary of Source Protection status of the site and adjacent area;
- a description of the proposed extraction;

- an examination of the potential impact of the proposed extraction (impact assessment), including pre and post water balance calculations;
- an assessment of measures that may be needed to mitigate impacts and ensure environmental feature protection; and,
- conclusions and recommendations.

This study addresses anticipated HS planning requirements for the proposed Kelly Pit.

2.0 METHODOLOGY

This assessment included a background information review to characterize the site setting, detailed site-specific fieldwork to characterize local conditions, and, the use of specific analysis methods for the water budget and impact assessment.

Standard hydrogeologic field and analysis methods are used for this study. The specific methodologies used for each step of the characterization and analysis are outlined in the respective sections of this report.

2.1 INFORMATION REVIEW

As part of this study the following information sources were used:

1) Harrington McAvan Ltd.; *2690905 Ontario Inc. Kelly Pit Site Plans.*
2) Vroom & Associates., May 2025; *Level 1 and 2 Natural Environment Report, 356 St. Johns Road East, Norfolk County, Allans Excavating*.
3) CJDL Consulting Engineers, August 8, 2024; *Geotechnical Engineering Report, Aggregate Assessment – Class A License, 364 St John's Rd E, Simcoe, ON, N3K 4K2 (Draft Report)*.
4) Long Point Region Conservation Authority (LPRCA); *Long Point Region Watershed Report Card 2023).*
5) Ministry of Agriculture, Food and Agribusiness and Ministry of Rural Affairs AgMaps interactive mapping application website, available at: *https://www.ontario.ca/page/how-use-agmaps*.
6) Ministry of the Environment Conservation and Parks (MECP) published Water Well Records, available at: *https://www.ontario.ca/page/map-well-records*.
7) Ministry of the Environment Conservation and Parks (MECP) Source Protection Atlas interactive mapping application, available at: *https://www.ontario.ca/page/source-protection*.
8) Ontario Geological Survey OGSEarth published geological mapping (KML files viewed on Google Earth); available online at: *http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth*
9) Geographic Data Information obtained through Land Information Ontario (LIO) and licensed under the Open Government Licence – Ontario; available online at: *https://geohub.lio.gov.on.ca/*

Additional general references used are noted in the text of this report.

3.0 BACKGROUND REVIEW

The local site setting is shown in **Figure 2**. The proposed licence boundary (study site proper) forms a generally rectangular shape with the long axis oriented generally north-south. The site is bounded to the north by a farm residence and outbuildings within the ownership parcel, and, St. Johns Road East. Residential and commercial properties are located north of the road. Farm properties occur to the west and east. In addition, the existing Thompson Pit occurs along the east boundary. The south boundary follows a wooded valley feature associated with an unnamed tributary to the Lynn River.

3.1 SITE TOPOGRAPHY AND DRAINAGE

Please refer to the Site Plan for specific topographic information at the property. Site topography is also shown on **Figure 3**. No surface water features (creeks, drainage channels, ponds or wetlands) occur within the proposed licence. Potential runoff (overland sheetflow) directions at the site are varied, as described below.

The site has varied topography, with a rolling form within the northern portion of the property and table lands with peripheral slopes in the southern portion. The topographic high in the northern portion is a low ridge at a maximum elevation of approximately 215 metres above sea level (mASL). Slopes and potential runoff form a radial pattern, declining in elevation generally eastward to a low of approximately 204 mASL at the northeast site corner. The table land within the southern portion of the site has a maximum elevation of approximately 316 mASL, again sloping in a radian manner to the north and south. A moderately steep wooded slope divides the north and south portion of the property and forms a local runoff feature that would flow eastward to the existing Thompson Pit, at an elevation of approximately 207 mASL. Near the southern boundary slopes, and potential runoff, are southward to the tributary valley. The minimum elevation at the south boundary (agricultural field edge) is approximately 205 mASL.

The Lynn River tributary flows generally west to east along the south site boundary. At the site a lane (possible former rail bed) bisects the tributary valley, and flow passes through a culvert. The valley invert (channel elevation) varies from approximately 204 mASL at the culvert to approximately 200 mASL near the southeast corner of the site. As described in **Section 3.2**, the tributary within 120 m of the site appears to be ephemeral to intermittent.

The site is within the Black Creek - Lynn River subwatershed, as defined by the LPRCA. The closest reach of the Lynn river is located approximately 740 m northeast of the site, at an elevation of approximately 190 mASL.

3.2 NATURAL ENVIRONMENT FEATURES

There are no identified natural environment features (creeks, wetlands, other natural water bodies) within the proposed licenced area. The single natural heritage feature identified within 120 m of the site is the Lynn River tributary and associated valley corridor (south edge of property), which includes a wetland area (*Jewelweed Forb Organic Meadow Marsh Type, MAMMO2-1*, Vroom & Associates). The wetland occurs along the valley floor, at elevations between approximately 200 and 204 mASL near the site.

Site inspections were completed along the tributary within the ownership parcel in February and March 2025. In February 2025 there was no observed evidence of water in

the channel or groundwater discharge. In March 2025 some (minor) seepage was noted at the channel immediately south of BH-04-23, however not observed further downstream. Some (minor) flow occurred onto the property (through the culvert) and along the remainder of tributary channel at that time.

3.3 SURFICIAL GEOLOGY

Geologic mapping is shown on **Figure A1** based on information published by the Ontario Geological Survey and distributed through *OGSEarth* (viewable on Google Earth).

The reported surficial geology mapping indicates the site and adjacent areas are located within a coarse-textured glaciolacustrine (e.g. glacial lakeshore) deposit of sand, gravel, minor silt and clay (9). As shown, the glaciolacustrine unit is extends to the west/southwest, and the site is located near the northeast edge of this deposit. A fluvial terrace is mapped through the northeast corner of the site, marking the transition to older alluvial deposits of clay, silt and gravel in which Lynn Creek is developed.

To the northeast fine-grained glaciolacustrine deposits (e.g. deeper water) of massive to laminated silt and clay with minor sand and gravel occurs (8a) at surface. An isolated fine-grained deposit is also mapped at surface immediately west of the site. Based on the depositional history, the fine-grained unit can be expected to underly the coarse-grained surficial deposits.

This general geologic sequence is reflected in the local water well records and on-site drilling results (discussed later in this report).

3.4 BEDROCK GEOLOGY

Bedrock in this area is mapped as the Dundee formation limestone, described as limestone, with minor dolostone that can be locally cherty.

This is also reflected in the water well record reported bedrock materials (as encountered) consisting of limestones. Based on the water well record information, depth to bedrock in the area of the site varies from approximately 21 to 45 m, likely depending on ground surface elevation.

3.5 PRIVATE WATER WELLS AND LOCAL GROUNDWATER USE

For this study MECP well records with reported locations in the vicinity of the site were examined. The review area included the nearest water wells and extended approximately 500 m from the site. A total of 19 well records were reviewed.

The water well locations as reported are shown on **Figure A2,** and the reported water well information is summarized in **Table A1,** in **Appendix A**.

Three (3) of the well records reviewed represent on-site monitoring well installations. Additional information regarding these monitoring wells is provided in **Section 3.7** and **Section 4.1**.

The remaining 16 well records reported water supply primarily for domestic usage, with some livestock, irrigation and industrial usage also reported.

Only 1 shallow large diameter (bored) well was reported in the area (WWR# 4404661), northwest of the site. This well was reported to be in use for domestic supply, completed to a depth of 5.3 m and with a reported static level of 2.4 m.

Fifteen (15) of the well records reviewed represent drilled (small diameter) water supply wells. One (1) of these wells is completed in bedrock with a reported irrigation use. The remaining wells are completed as relatively shallow unconfined overburden aquifer wells or moderately deep confined overburden aquifer wells. Based on the reported materials encountered the overburden appears to consist of an upper sand deposit, which transitions to layered sand/silt/clay with depth.

Bedrock was encountered at 2 wells, at reported depths of 21.6 m and 44.5 m below ground surface.

As the proposed extraction will not extend into the water table, and, as shown in **Section 4.2**, the shallow water table slopes generally east at the site (i.e. groundwater flow is not directly toward the nearest water supply wells), no door-to-door water well (status and use) survey was completed.

3.6 SOURCE PROTECTION SUMMARY

Municipal water supplies in this area are lake based (sourced from Lake Erie). As such there are no well head protection areas (WHPA's), and no WHPA-Q designation, in the area of the site. There are also no Intake Protection Zones identified at or near the site. The site and surrounding area are identified as Significant Groundwater Recharge Areas, and Highly Vulnerable Aquifer consistent with the occurrence of surficial sand/gravel deposits.

As part of general (source, water resources, environmental, etc) protection expectations, maintenance of groundwater recharge at the site would be a best practice "target". A water balance is included in **Section 9** of this report which addresses maintenance of site groundwater recharge functions.

3.7 SITE DRILLING RESULTS SUMMARY

CJDL Consulting Engineers, in conjunction with Englobe Corp., completed an aggregate resource assessment at the site in 2024. A copy of the engineering report available is included in **Appendix B** for reference.

As part of the assessment 15 test pits (TP1-23 to TP14-23) and 4 boreholes (BH-01-23 to BH-04-23) were completed. Monitoring wells were installed in each of the 4 boreholes. Borehole and test pit logs are included in the report (**Appendix B**). The borehole and test pit locations are shown on **Figure 4**.

In summary, the test pits and boreholes encountered (primarily) sand at surface and extending to depth. Some sand/gravel layers were also encountered at depth, generally within the northern portion of the site. This material corresponds to the glaciolacustrine coarse-textured deposits mapped at the site. At depth silty sand to silt to silty clay was encountered at BH-01-23, BH-04-23 and TP1-23, which would generally correspond to the fine-grained glaciolacustrine deposits expected to underly the surficial sand/gravel.

In addition, 3 sets of water level measurements were obtained at the monitors in May and June 2023, as reported in the August 2024 report.

4.0 FIELD WORK

Field work completed as part of this assessment includes site inspections and water level measurements at the established water table monitoring wells.

4.1 MONITORING WELL INSTALLATION SUMMARY

The monitor elevations and installation details as reported by CJDL/Englobe (August 2024) are summarized in **Table 1**.

Location	Elevations (mASL)			
	Ground Surface	Top of Well	Top of Screen	Screen Bottom
BH-01-23	212.80	213.91	202.0	200.5
BH-01-23	210.30	211.38	199.0	197.5
BH-03-23	212.80	213.75	200.9	199.4
BH-04-23	212.20	213.33	200.0	198.5

Table 1: Installation Summary

Based on the borehole logs the monitoring represent the shallow (unconfined) water table aquifer within the surficial sand/gravel deposit at the site.

4.2 WATER LEVEL MONITORING RESULTS

Water level measurements were obtained and reported in May and June 2023. As part of this assessment regular (monthly) water level measurements were resumed in February 2025 by Groundwater Science Corp. personnel. Measurements are ongoing in 2025. The monitoring results to date are summarized in **Appendix C**.

High water table conditions in this type of setting in southern Ontario would be expected in spring or early summer conditions. The highest water table conditions observed to date occurred in May 2023. High water table elevations applicable to the proposed licence are summarized in **Table 2**.

High Water Table Elevation (mASL)	
Location	High Water Table
BH-01-23	202.70
BH-01-23	200.60
BH-03-23	200.50
BH-04-23	205.20

Table 2: High Water Table Elevations

Interpreted high water table contours for the site and existing pit area, based on the measured water level elevations in May 2023, are shown in **Figure 5**. As shown, shallow groundwater flow is generally from east to west, toward off-site portion of the tributary

system. In the area of BH-04-23 some localized groundwater flow occurs toward the tributary creek where some isolated discharge was noted during high water table conditions.

Comparing the water level elevations observed at BH-04-23 to the borehole log indicates that the water table is consistently within the silt layer that occurs below the surficial sand deposit. At this location the silt deposit elevation (206.6 mASL) is higher as compared to the rest of the site (i.e. forms a localized “mound”. The water table high in this area, and localized flow toward the tributary, is likely a result of the silt deposit “mound”.

Total observed seasonal to annual water table fluctuation at the site is generally 0.8 m or less, which is within a typical range in this type of setting. Additional discussion regarding water levels at the site is provided in **Section 5.0**.

.

5.0 HYDROGEOLOGIC SETTING

The hydrogeologic setting of the site is discussed in context of the known regional setting, information review undertaken for this site, and, monitoring and assessment completed as part of this study.

In order to illustrate the hydrogeologic setting in the area of the site 2 schematic cross-sections were developed based on reported topographic contours, select water well records and site-specific testing. The section locations are shown on **Figure 6**. The sections are attached to this report as **Figure 7** and **Figure 8**.

Section A (**Figure 7**) runs west to east through the site and existing Thompson Pit. The section illustrates the local variation in topography and generalized geologic sequence Note the existing Pit extraction occurs between the site and the Lynn Creek tributary to the east. As shown, the site situated within a surficial sand/gravel deposit underlain by a layered deposit that includes silt and clay. This layered deposit extends to bedrock. We note that the overburden material descriptions can vary, which is likely a reflect of both the highly variable nature of the overburden and limitations of soil sampling and description capabilities of the various types of drilling methods used by different contractors.

Within the existing Pit and proposed licence area a transition to a predominantly silt/clay layered deposit occurs at depth, with the localized water table developing in the surficial sand. Based on observed static levels at the proposed Kelly Pit, the water table is assumed to intercept, and discharge to, the Lynn Creek tributary east of the site.

Most local wells are developed within the overburden, within sand or gravel layers at surface or at depth (overlain by clayey layers). One well extends to bedrock, which occurs at an estimated elevation of approximately 170.5 mASL. This bedrock well extends to approximately 107 m depth (elevation approximately 108 mASL).

Section B (**Figure 8**) runs northwest to southeast through the proposed expansion area and existing pit. The section illustrates the incised nature of the tributary within the surficial sand deposit. Again, the localized water table is developed within the surficial sand deposits. Based on static levels observed at BH-03-23 (and as observed on-site in early 2025) the water table is expected to intercept the creek, discharge occur, on a seasonal basis. Summer low water levels appear to be below the tributary channel invert.

The surficial sand and gravel in this area forms a local unconfined aquifer where saturated. The primary groundwater function of the proposed extraction area is recharge. This recharge supports local groundwater conditions and flow to the tributary system.

Other sand and gravel layered deposits occur at depth in the overburden, and represent confined aquifers within the till sequence. The surficial sand/gravel deposit (proposed for extraction) is isolated from the localized confined aquifers that occur at greater depth and the bedrock system.

Local water wells, where in use, utilize all available aquifer systems, including the surficial sand/gravel, confined overburden sand/gravel deposits and the confined bedrock.

6.0 PROPOSED EXTRACTION

The following general description of the proposed Kelly Pit extraction is provided as a framework for the impact analysis. For specific details regarding existing site conditions or the extraction plan please refer to the Site Plan(s).

The proposed Kelly Pit licenced area is approximately 25.0 ha in size. The proposed expansion pit extraction area is approximately 22.4 ha.

As a first step in the extraction process topsoil within a working area will be stripped and stored in perimeter berms or used to rehabilitate areas in which extraction is complete. Extraction within each working area will extend to approximately 0.5 m above the actual water table. Topsoil replacement during rehabilitation would then raise the ground surface an additional 0.5 m. The final ground surface would be approximately 1.0 m above the actual water table. No actual below water extraction is to occur and no extraction pond would be created through extraction or rehabilitation.

Post extraction drainage within the total rehabilitated area would be maintained on-site, directed toward infiltration areas. There are no proposed water use, diversion, storage or drainage facilities on-site.

As shown on the Site Plan, a spills response program will be in place at the pit.

7.0 MAXIMUM PREDICTED WATER LEVEL REPORT

The proposed extraction would occur within unconsolidated surficial sand and gravel deposits. Therefore, the following definitions are used:

> *"ground water table" means*
>
> *a) for unconsolidated surficial deposits, the ground water table is the surface of an unconfined water-bearing zone at which the fluid pressure in the unconsolidated medium is atmospheric. Generally, the ground water table is the top of the saturated zone.*
>
> *"maximum predicted water table" means the maximum ground water elevation (metres above sea level) predicted by a qualified person who has considered conditions at the site and mean annual precipitation levels.*

The water table at the site was measured and determined by the installation and monitoring of 4 water table wells. The measured water table at the site corresponds to the top of the saturated zone within the unconfined surficial sand and gravel aquifer.

At the proposed Kelly Pit site the maximum predicted water table elevation is shown on **Figure 5** and is summarized in **Table 2**.

The maximum predicted water table elevation within the Kelly Pit extraction area from approximately 200.5 mASL (near BH-03-23) to 205 mASL (near BH-04-23).

8.0 WATER REPORT LEVEL 1

The purpose of the Water Report Level 1 is to identify if the site is within a WHPA-Q area (and identify if related Source Protection Policies should be implemented), and, to determine the potential for adverse effects to groundwater and surface water resources and their uses (e.g. water wells, ground water aquifers, surface water courses and bodies, springs, discharge areas).

Based on our review of publicly available information, the Kelly Pit site is not located within an identified WHPA-Q area as set out in an applicable source water protection plan under the Clean Water Act.

As no below water table extraction is to occur there are no direct physical changes to the groundwater system associated with to the proposed Kelly Pit. The reconfiguration of the site (as an internally drained catchment) may result in an indirect water balance related change to the groundwater system.

To assess the significance of potential on-site water table effects due to the proposed extraction on water wells and natural environment features in the area of the site, a Water Report Level 2 evaluation is required. The Level 2 evaluation is included as **Section 9** of this report.

9.0 WATER REPORT LEVEL 2

The Level 2 evaluation is completed to examine issues related to the potential for the proposal to affect the local water balance at the site. In addition, any potential related impacts to local aquifers, water wells and natural environment features (springs, surface water courses and bodies and wetlands) are also assessed.

9.1 POTENTIAL IMPACTS

The potential for impact is examined in the context of the site setting, existing extraction and proposed new extraction.

9.1.1 Site Water Balance

The water balance assessment area consists of the proposed licence (25 ha). Water balance calculations are included in **Appendix D**.

The water balance is based on long-term average climate monthly conditions (1991 – 2020 Climate Normals) reported by Environment Canada for the DELHI station. The calculated average annual precipitation is approximately 965.4 mm/year.

Evapotranspiration rates for existing and future land surfaces are calculated using the Thornthwaite and Mather method, assuming a Soil Moisture Retention of 150 mm (representative of moderate to deep rooted crops on fine sandy loam). The annual Actual Evapotranspiration rate at the site is estimated to be 583.60 mm/yr.

Land surface runoff and infiltration rates at the site (primarily farm fields in) are estimated in accordance with MECP development application guidelines (*Hydrogeological Technical Information Requirements for Land Development Applications*, April 1995) and stormwater management guidelines (*Stormwater Management Planning and Design Manual*, March 2003).

Within the MECP methodology, the difference between precipitation falling on the land surface within the assessment area (direct input) and evaporation/evapotranspiration (direct initial output) is termed the water "surplus". The calculated surplus value for the site is 381.80 mm/yr.

Surplus water within an assessment area can either infiltrate to recharge the groundwater system or form surface water runoff. Land surface runoff rates at the site are calculated according to the MECP development application guidelines methodology, which assigns an infiltration factor to apply to the water "surplus" in order to calculate recharge. The infiltration factor depends on individual factors related to topography, soil type and vegetation/cover. Based on a characterization of the site (rolling landscape, open sandy loam soil, cultivated lands) an infiltration factor of 0.7 (70%) is estimated. The remainder of the surplus (30%) becomes runoff.

Based on the infiltration/runoff factors the existing average annual groundwater recharge volume is estimated to be 66,815 m^3/yr (2.12 L/s). This equates to a site average unit recharge rate of 0.267 m/yr. Total average annual runoff is estimated to be 26,635 m^3/yr (0.91 L/s). We note that most of the runoff generated on the site would move toward the existing pit or adjacent farm fields where it would continue to recharge the groundwater system. As shown on **Figure D1**, approximately 9.5 ha of the site has potential to contribute

runoff to the Lynn Creek tributary reach and associated wetland along the south edge of the site.

After extraction, all runoff would be retained within the site and infiltrated. Based on the retention of runoff the annual site recharge after rehabilitation is projected to be 95,450 m^3/yr (3.03 L/s at the site). This equates to a site unit recharge rate of 0.382 m/yr. The calculation indicates an increase in recharge would be expected due to runoff retention.

The site water balance does indicate that on a site-specific basis no net loss would be expected within the groundwater system at the Kelly Pit area. The calculation also indicates that no significant negative effect on water availability is expected within the surrounding groundwater system due to the proposed new extraction. Overall, moderate to high groundwater recharge rates within the Source Protection identified Significant Groundwater Recharge Area will be maintained.

Runoff from an area of approximately 9.5 ha would be diverted from the Lynn Creek tributary reach south of the site. However, this runoff would be converted to groundwater recharge, and still has the potential to contribute to moisture conditions within the creek, creek valley and associated wetland. The tributary catchment area upstream of the Kelly Pit was estimated using the Ontario Watershed Information Tool (available at: https://www.ontario.ca/page/ontario-watershed-information-tool-owit). As shown on **Figure D2**, using the tool the upstream catchment is estimated to be approximately 4.524 km^2. Therefore, the potential runoff area reduction is approximately 2% of the total available runoff catchment.

9.1.2 Potential Impact to Water Supply

The water balance analysis indicates overall groundwater quantity (and therefore levels) will be maintained or enhanced. Therefore, no impact to local private wells is expected.

9.1.3 Potential Impact to Natural Environment Features

The Lynn Creek tributary system adjacent to the site relies on a combination of catchment runoff and any localized groundwater inputs. As indicated by the water balance assessment, while some runoff reduction may occur, the magnitude is change is small, and would be off-set by the potential for additional groundwater inputs.

Therefore, based on this assessment there is no significant potential impact to local natural environment features associated with the proposed Kelly Pit.

9.2 MONITORING, MITIGATION AND CONTINGENCY PLAN

In order to confirm water table elevations at the site, the following monitoring program is recommended:

1. *Water level measurements shall be obtained on a quarterly (seasonal) basis during the first three years of active extraction operations at BH-01-23, BH-02-23, BH-03-23 and BH-04-23 as accessible.*
2. *The monitoring results will be summarized annually by the Operator and made available to MNR upon request.*

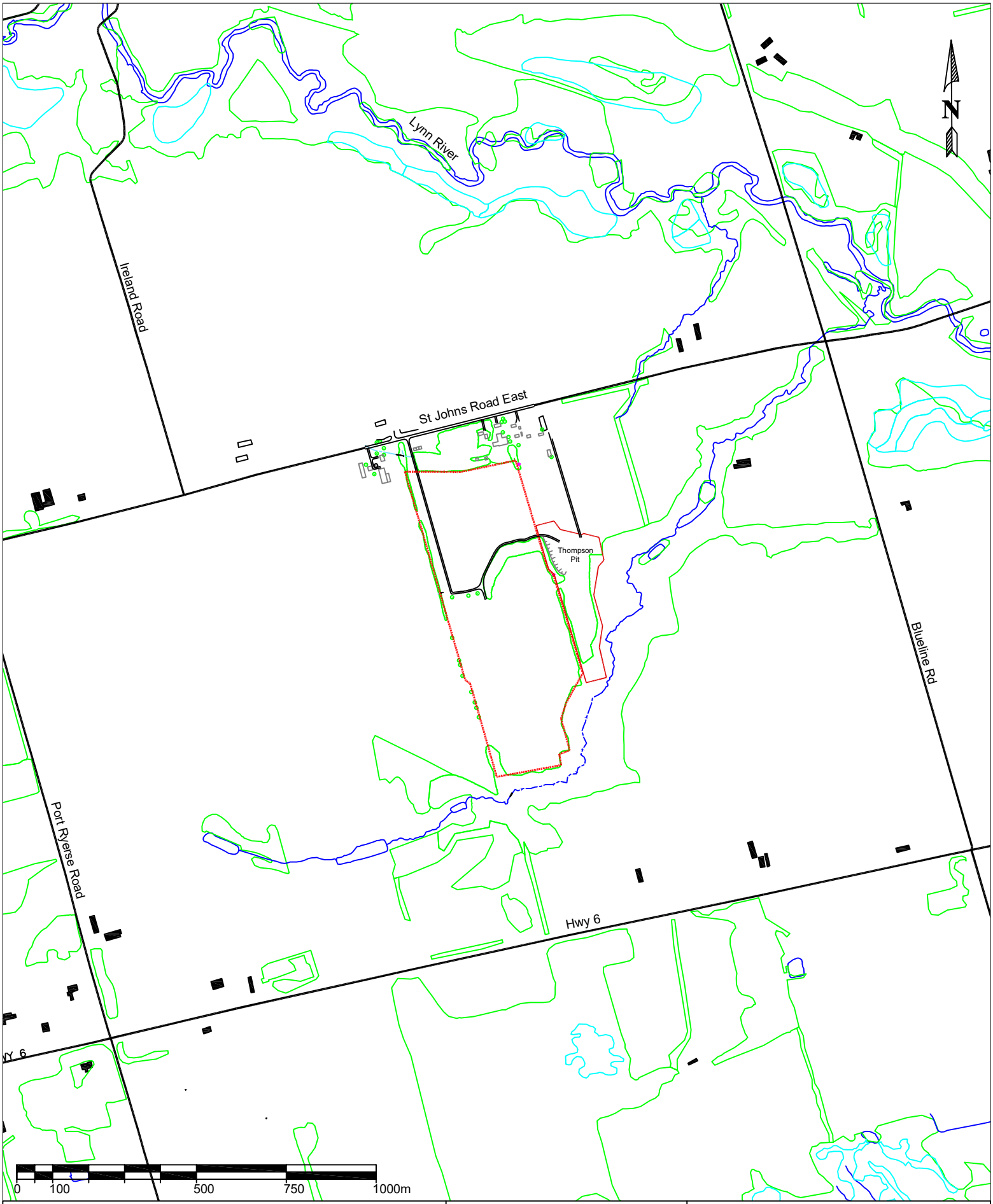
10.0 CONCLUSIONS

Based on the results of the impact assessment, and, proposed monitoring and mitigation plan, there are no potential for significant adverse effects to groundwater and surface water resources and their uses; and, there is no potential for significant impacts to local groundwater aquifers, natural environment features or water supply associated with the proposed Kelly Pit.

All of which is respectfully submitted,

Andrew Pentney, P.Geo.
Senior Hydrogeologist
Groundwater Science Corp.

Figures



Site (approx.)

vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

Modified from: geographic data obtained through Land Information Ontario

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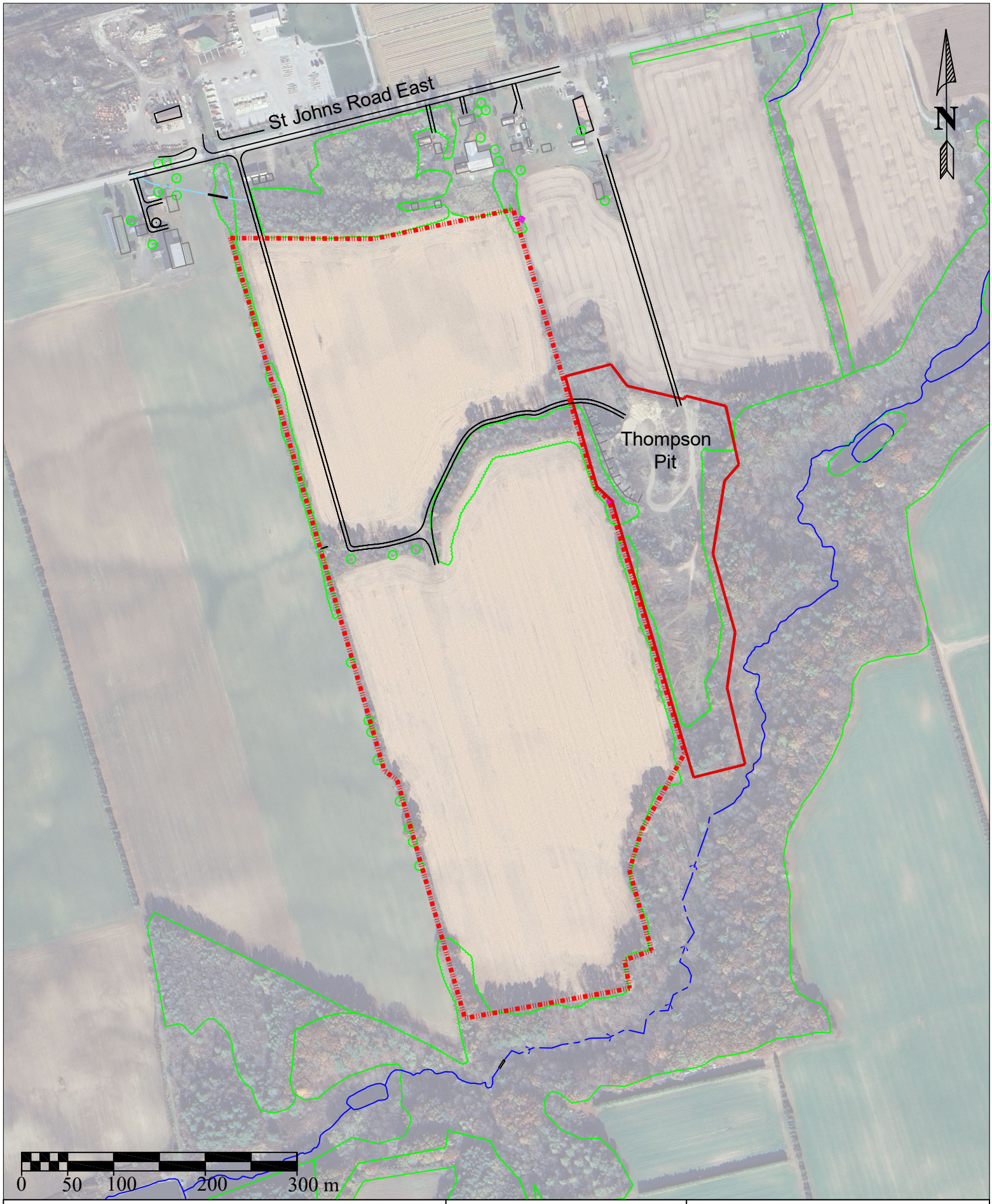
Figure 1: Site Location

June 2025
Scale: as shown

GROUNDWATER SCIENCE CORP.

2690905 Ontario Inc.
Proposed Kelly Pit



Site (approx.)

vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

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June 2025
Scale: as shown

GROUNDWATER SCIENCE CORP.

Figure 2: Site Setting

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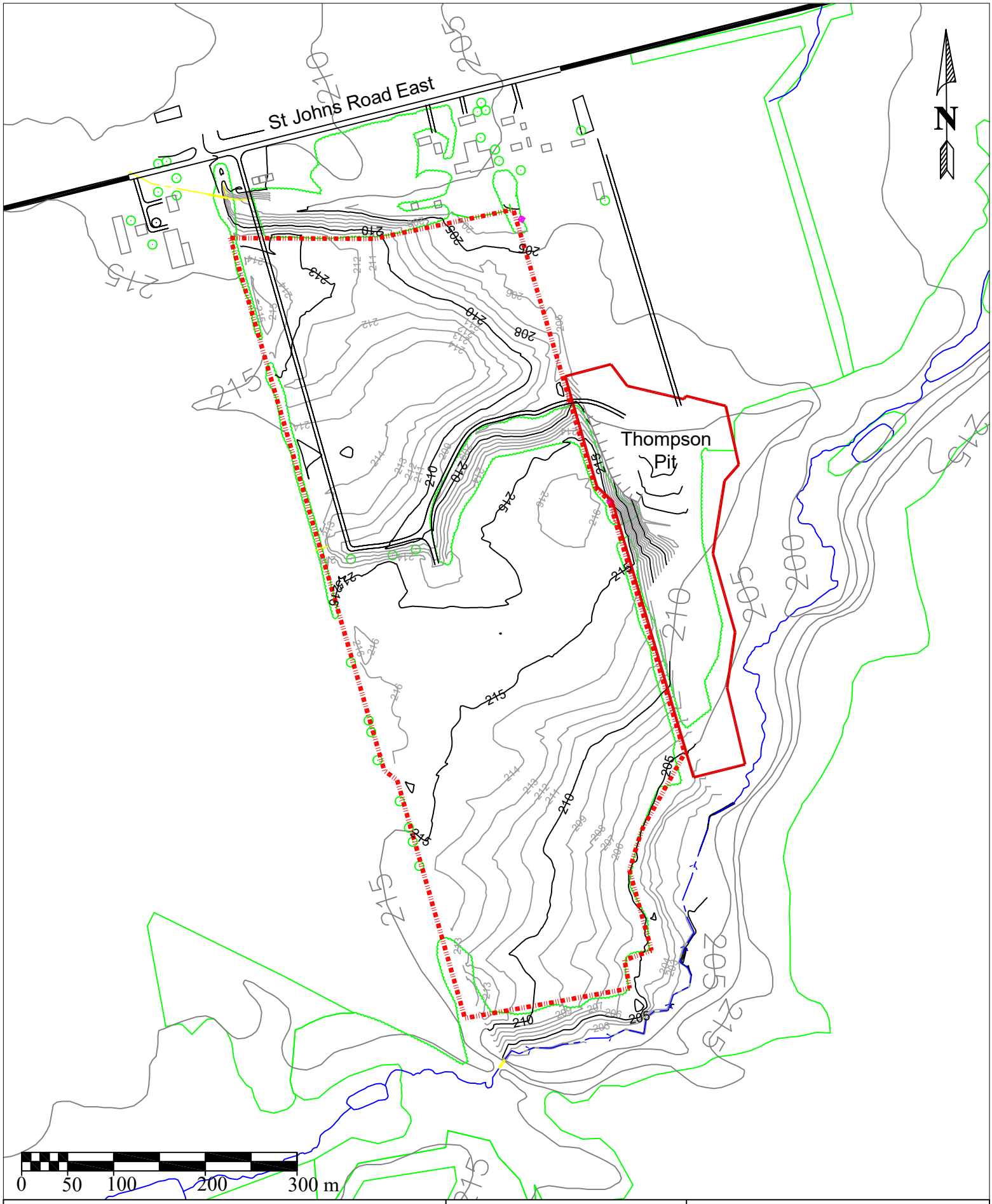
Proposed Kelly Pit



Site (approx.)
topographic contours as shown (mASL)
vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

Modified from: geographic data obtained through Land Information Ontario
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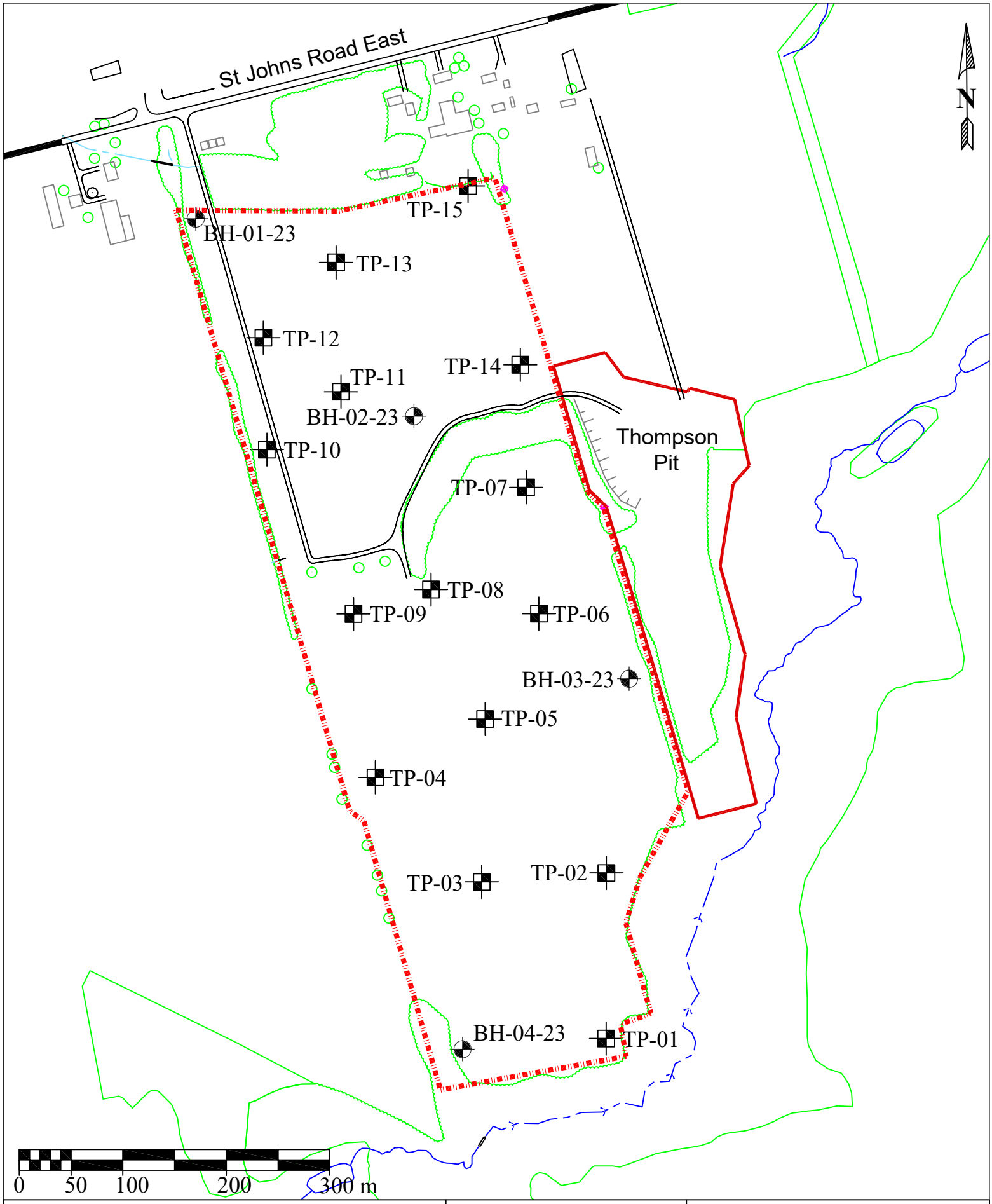
June 2025
Scale: as shown

GROUNDWATER SCIENCE CORP.

Figure 3: Local Topography

2690905 Ontario Inc.
Proposed Kelly Pit



Site (approx.)

monitoring well

test pit

vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

Modified from: geographic data obtained through Land Information Ontario

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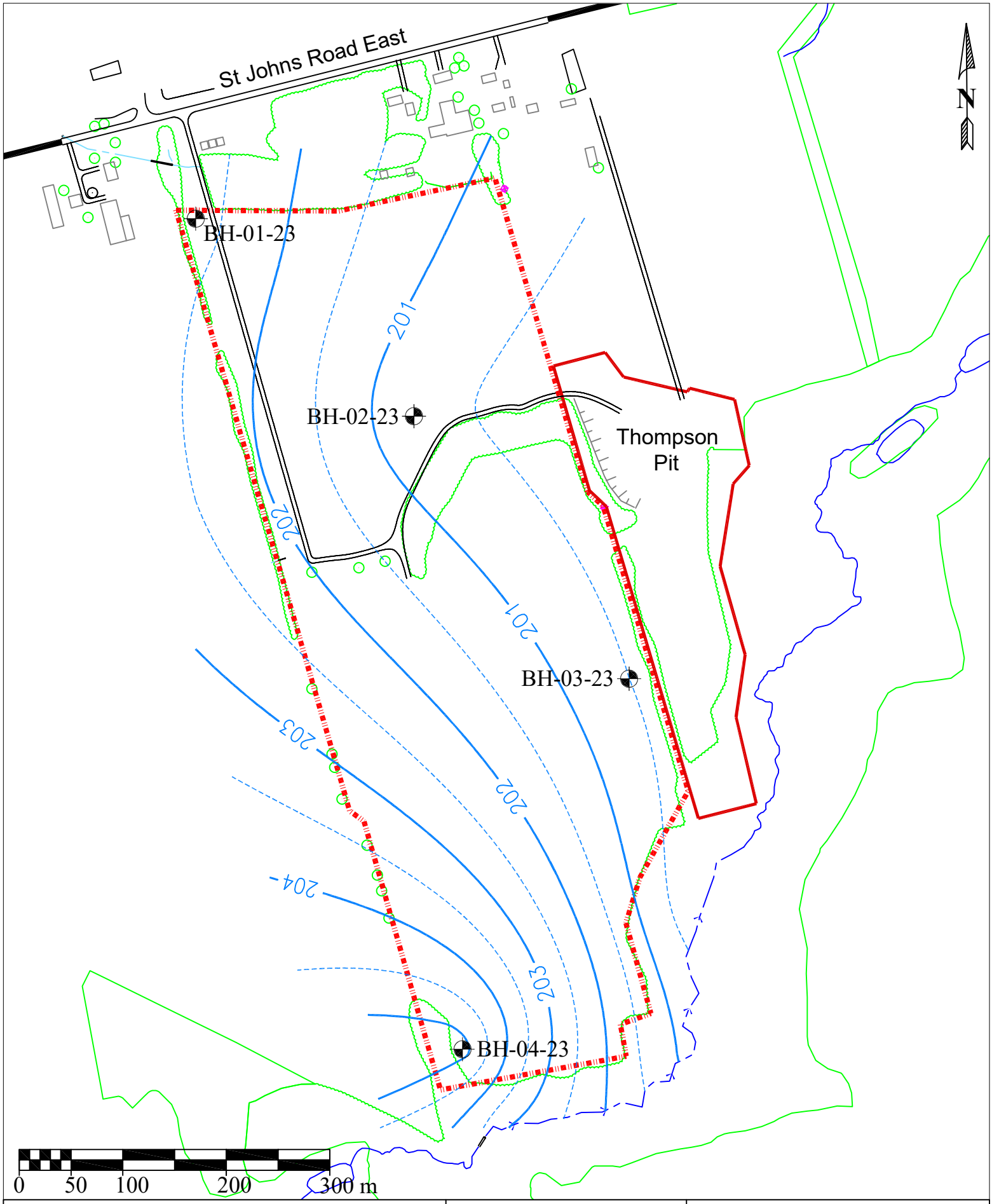
Figure 4: Monitoring Locations

June 2025
Scale: as shown

GROUNDWATER SCIENCE CORP.

2690905 Ontario Inc.
Proposed Kelly Pit



Site (approx.)

projected water table contours (mASL)

vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

Modified from: geographic data obtained through Land Information Ontario

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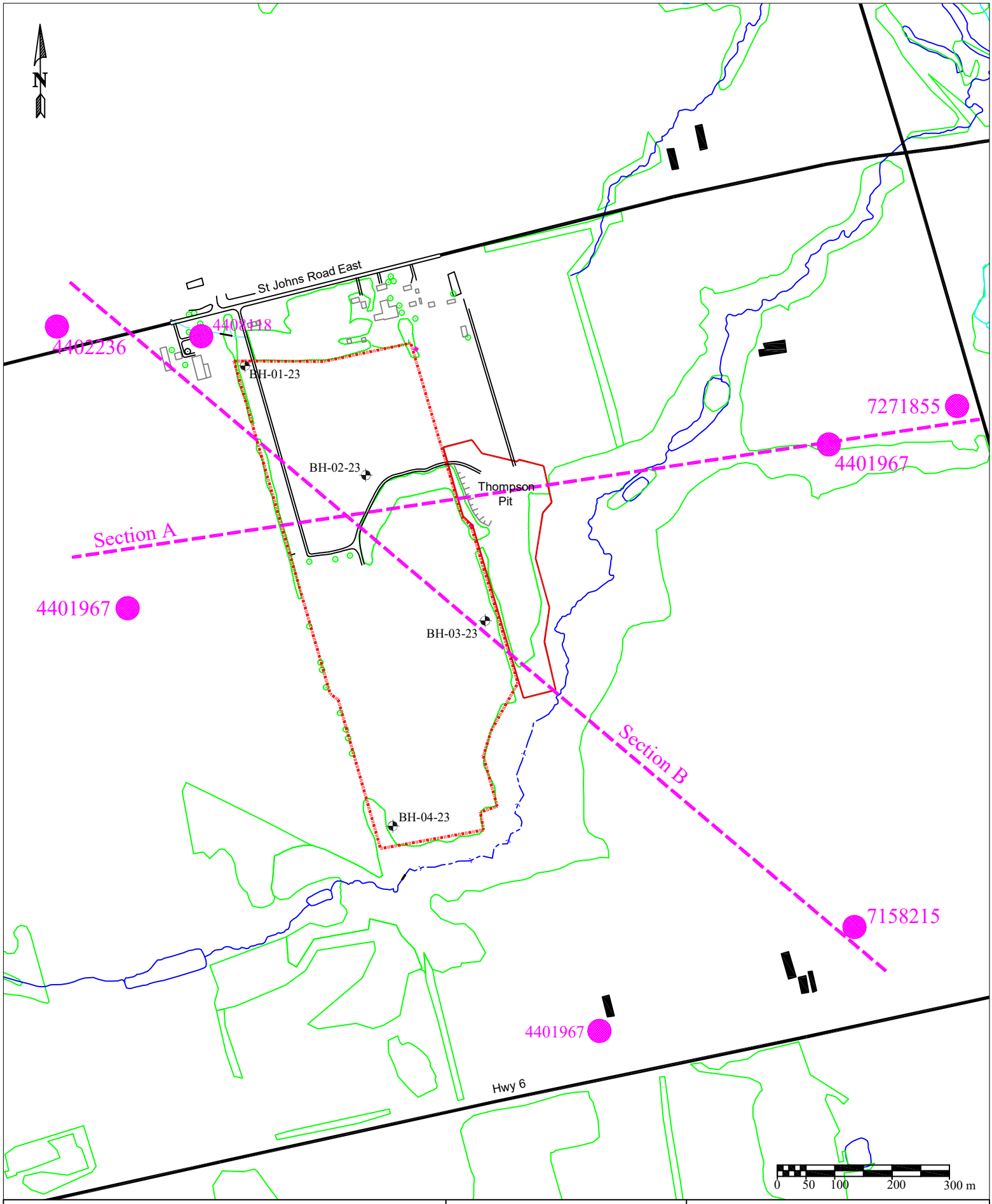
June 2025
Scale: as shown

GROUNDWATER SCIENCE CORP.

Figure 5: High Water Table Conditions

2690905 Ontario Inc.
Proposed Kelly Pit



Site (approx.)
section line
reported water well
vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

Modified from: geographic data obtained through Land Information Ontario
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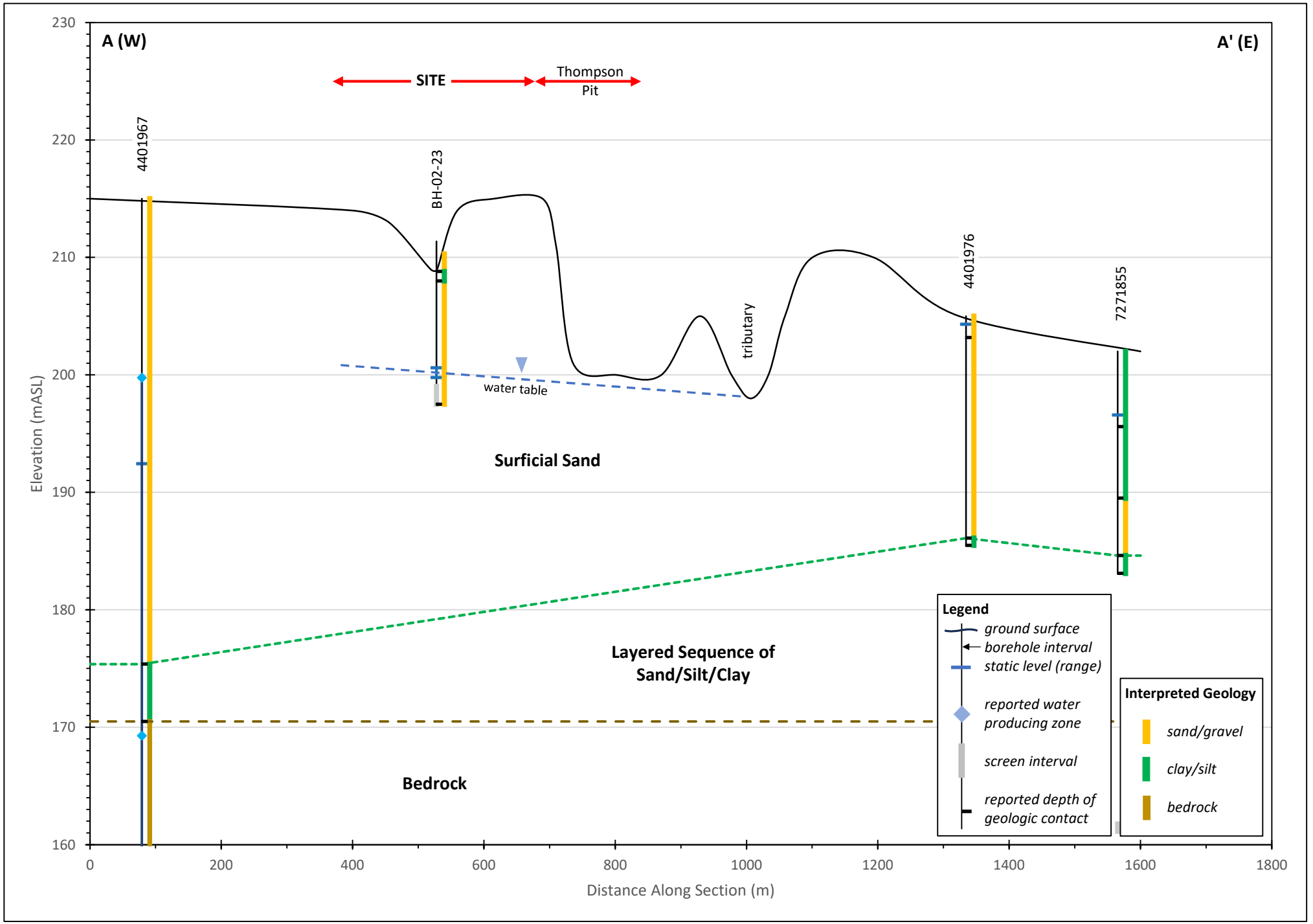
June 2025
Scale: as shown

GROUNDWATER SCIENCE CORP.

Figure 6: Schematic Section Locations

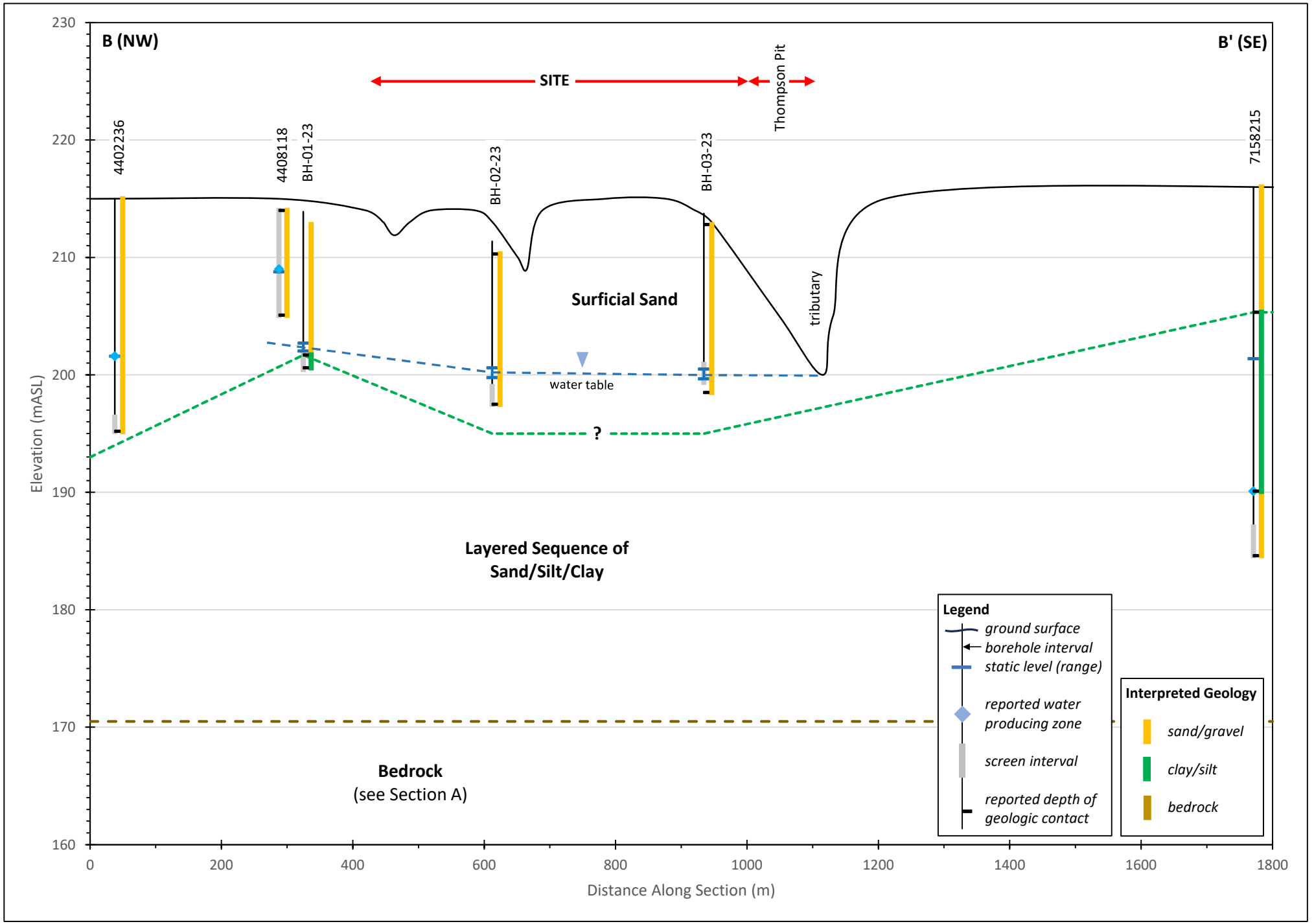
2690905 Ontario Inc.
Proposed Kelly Pit



2690905 Ontario Inc.
Proposed Kelly Pit

Figure 7: Schematic Section A

Groundwater Science Corp.
Hydrogeological Assessment



2690905 Ontario Inc.
Proposed Kelly Pit

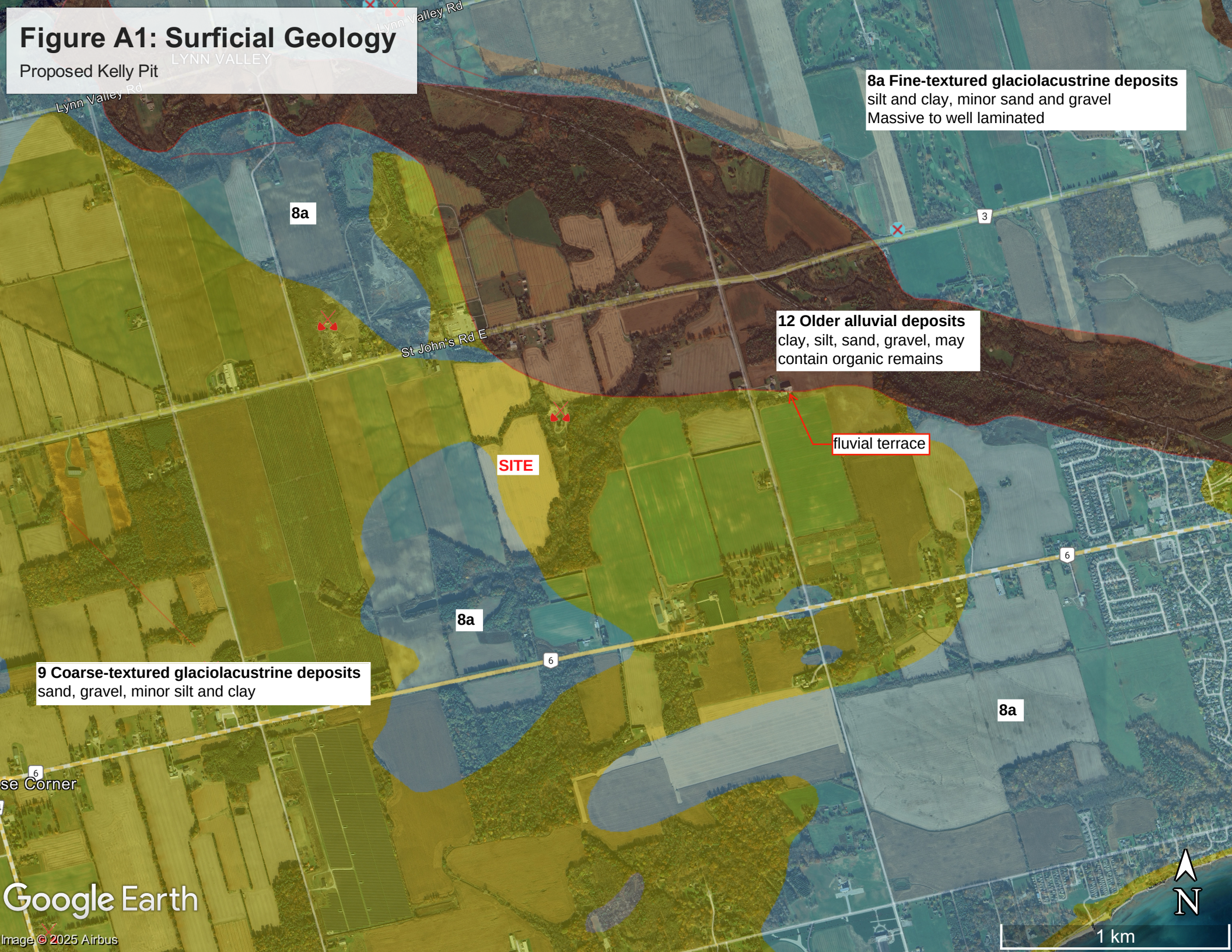
Figure 8: Schematic Section B

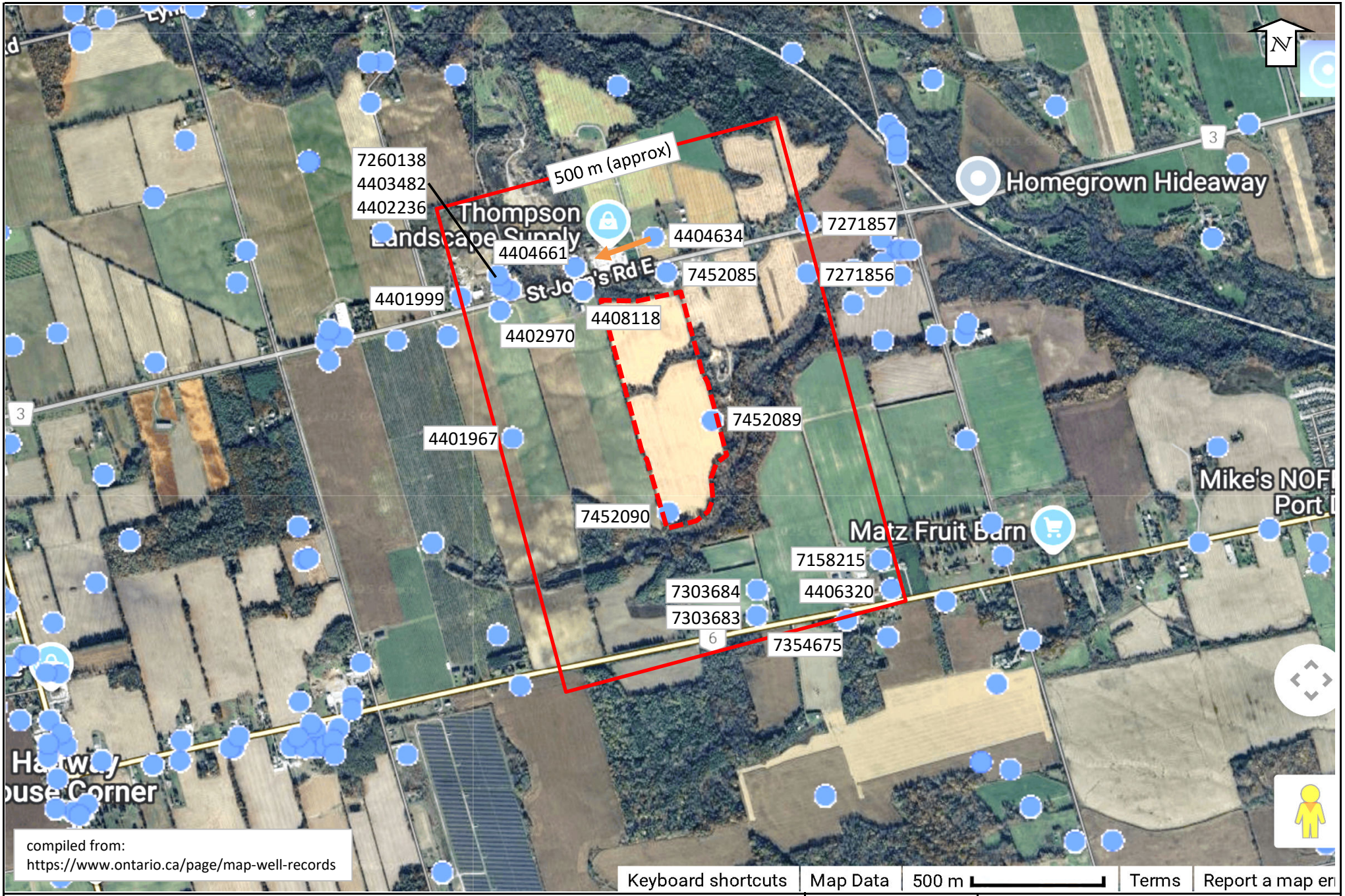
Groundwater Science Corp.
Hydrogeological Assessment

Appendix A
Background Mapping and Water Well Record Review

Figure A1: Surficial Geology

Proposed Kelly Pit





study site (approximate)

reported water well record locations and references as shown

Date: June 2025
scale: not to scale

Figure A2: Reported Water Well Record Locations Near The Site

GROUNDWATER SCIENCE CORP.

2690905 Ontario Inc.
Proposed Kelly Pit

Record No.	Date Constructed	Total Depth (m)	Type		Use	Static Level (m)	Bedrock Depth (m)	Recorded Rate (gpm)	Source Classification
			constr.	source unit					
4401967	24-Mar-61	106.7	drilled	limestone	irrigation	22.6	44.5	225	confined bedrock aquifer
4401999	8-Apr-65	5.5	drilled	sand	industrial	3.0	-	60	unconfined aquifer
4402236	4-Dec-68	19.8	drilled	sand	domestic	13.4	-	9	unconfined aquifer
4402970	5-Aug-72	15.2	drilled	sand	domestic, stock	9.1	-	7	unconfined aquifer
4403482	14-Jul-75	15.5	drilled	sand	domestic	9.8	-	15	unconfined aquifer
4404634	23-Nov-82	13.7	drilled	sand	domestic	9.1	-	20	unconfined aquifer
4404661	4-Jan-83	5.3	bored	sand, silt	domestic	2.4	-	2	unconfined aquifer
4406320	5-Oct-93	30.5	drilled	sand	domestic	15.2	-	10	confined overburden aquifer
4408118	4-Mar-04	8.9	drilled	sand	domestic	5.2	-	5.5	unconfined aquifer
7158215	20-Jan-10	31.4	drilled	sand, clay	domestic	14.6	-	15	confined overburden aquifer
7260138	29-Jan-15	13.1	drilled	not reported	monitoring	0.0	-	-	cluster of wells, no info.
7271856	3-Feb-16	18.9	drilled	sand, silt	domestic	2.9	-	5	unconfined aquifer
7271857	3-Feb-16	21.6	drilled	sand	domestic	3.0	21.6	5	confined overburden aquifer
7303683	10-Aug-17	21.6	drilled	sand	domestic	11.0	-	12	confined overburden aquifer
7303684	11-Aug-17	23.5	drilled	sand	domestic	12.8	-	12	unconfined aquifer
7354675	3-Apr-19	21.3	drilled	sand	domestic	12.8	-	3	confined overburden aquifer
7452085			drilled		on-site observation well - see borehole log				
7452089			drilled		on-site observation well - see borehole log				
7452090			drilled		on-site observation well - see borehole log				

Appendix B
Geotechnical Report

Geotechnical Engineering Report

Aggregate Assessment- Class A License
364 St John's Rd E, Simcoe, ON, N3K 4K2

CJDL Consulting Engineers
Draft Report

August 8, 2024
04-02211899.000-GS-R-0001-0A

ENGLOBE

CJDL Consulting Engineers

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Draft

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Director Geotechnical and Materials Engineering-SWO

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Advisor	Mr. Peter Penner

Englobe Corp.

Senior Project Manager / Brantford Area Manager	Thom Staples, C.E.T.
Director Geotechnical and Materials Engineering-SWO	Mick Prieur, P.Eng.

Revisions and publications log

REVISION No.	DATE	DESCRIPTION
0A	August 8, 2024	Draft Report Issued

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APPENDICES

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1 Introduction

Englobe Corp. (Englobe) was retained by Mr. Peter Penner of CJDL Consulting Engineers on behalf of Mr. Allan Gee (hereinafter referred to as the “Client”) to carry out a geotechnical investigation to evaluate the aggregate resource potential in support of an Aggregate Extraction-Class A License at 364 St John’s Rd E in Simcoe, Ontario (hereinafter referred to as the “Site”). A site location map is provided on **Drawing 1 in Appendix A**.

It is our understanding that the client is applying for a Class A License for Aggregate Extraction above the groundwater. The base of the pit floor will remain 1.5 m above the groundwater table.

The site is located on the south side of St. John’s Road East, south of Simcoe, Ontario. The property is currently used for agricultural purposes. The ground surface is rolling and typically slopes down to the north and south with a topographical relief of approximately 13 m as measured at the borehole locations. A house and barn are located at the north side of the property at St John’s Road and a tree line extends along the east property line and a second tree line cuts across the property (east to west) approximately mid way through the property.

Aggregate resources have been defined as relatively easily mined sand and gravel which may be capable of further processing into saleable aggregate. Soil such as silt and clay are not included in the source potential for this evaluation.

The objective of the Geotechnical Investigation is to determine the stabilized groundwater table at the site through the instrumentation of monitoring wells. Furthermore, the quality of aggregate resources available will be evaluated through laboratory testing (particle size analysis) on samples retrieved from the boreholes and test pits.

The recommendations and opinions provided in this report are applicable only to the proposed site as described above and the Limitations of the Investigation found in **Section 5** are an integral part of this report.

2 Investigation Procedure

2.1 Field Program

The fieldwork for this investigation was performed in two phases, the first phase involved the excavating of 15 test pits on May 11, 2023 and the second phase involved drilling of four boreholes/monitoring wells on May 12,19 and 24, 2023. The summary of borehole/test pit numbers, depth / elevations are provided in **Tables 1 and 2.** The locations of the boreholes and test pits are also shown on **Drawing 2 in Appendix A**.

Table 1: Summary of Boreholes

Borehole ID	Ground Surface Elevation (m)	Depth of Borehole (m)
BH/MW-01-23	212.8	12.2
BH/MW-02-23	210.3	12.8
BH/MW-03-23	212.8	14.3
BH/MW-04-23	212.2	14.3

Table 2: Summary of Test Pits

Test Pit ID	Ground Surface Elevation (m)	Depth of Test Pit(m)
TP-01-23	205.8	3.7
TP-02-23	205.6	3.7
TP-03-23	211.6	3.7
TP-04-23	215.7	3.7
TP-05-23	214.3	4.0
TP-06-23	215.7	4.0
TP-07-23	216.4	3.7
TP-08-23	214.2	3.7
TP-09-23	214.9	3.7
TP-10-23	214.9	3.7
TP-11-23	214.5	3.7
TP-12-23	211.2	4.3
TP-13-23	211.0	4.0
TP-14-23	207.1	3.7
TP-15-23	203.4	3.7

The field investigation was carried out in general conformance with the professional standards set out in the Canadian Foundation Engineering Manual (CFEM 2006, 4th Edition), applicable Ontario Regulations and ASTM International. The following is a summary of field investigation tasks:

— Local utility companies were contacted prior to the start of drilling and excavating activities in order to demarcate underground utilities on site.

— The boreholes were advanced below ground surface (m BGS) using a Diedrich D-70 T drill rig equipped with hollow stem augers supplied and operated by Elements Geo Corp under the supervision of Englobe drilling supervisor. The boreholes were also logged by Englobe geotechnical supervisor.

— The test pits were excavated with a rubber tire backhoe supplied and operated by Allan's Excavating under the supervision of Engobe's field technician.

— The borehole and test pit locations and ground surface elevations were surveyed by client.

— Soil samples were recovered from the boreholes and test pits at regular depth intervals throughout the depths explored. Standard Penetration Tests (SPT) were carried out during the sampling operations in the boreholes using conventional split spoon equipment. The SPT N values are provided on the borehole logs in Appendix B.

— Monitoring wells were installed in four (4) Boreholes to allow measurement of stabilized groundwater levels. The monitoring wells were constructed using 50 mm diameter Trilock pipe with 1.5 m long 10 slot well screen, delivered to the site pre-cleaned in individually sealed plastic bag. The monitoring well was installed in accordance with O.Reg 903, as amended, under the Ontario Water Resources Act.

— Groundwater observations were made, and measurements were carried out in the open boreholes/monitoring wells during and upon completion of drilling and noted on borehole logs.

— Water level measurements were taken on May 12, 19, 24 and June 15, 2023 and the results are provided on the borehole logs and summarized in Table 7.

2.2 Laboratory Testing

All soil samples recovered during this investigation were returned to Englobe laboratory for visual examination and moisture content testing. The moisture content values are shown on the appended borehole logs and selected soil samples were submitted for particle size analysis. The number of tests conducted are shown in the following Table 2.

Table 3: List of Laboratory Tests Conducted as per ASTM Standards

Test	Standard	Number of Samples
Natural Moisture Content	ASTM D2216	47
Particle Size Analysis (Sieve and Hydrometer)	ASTM D7298	12

Detailed description and the results of the laboratory tests are also provided in **Appendix C.**

3 Subsurface Conditions

The subsurface soil and groundwater conditions encountered in the boreholes, and the results of the field and laboratory testing, are shown on the Log of Borehole sheets in **Appendix B**. A list of abbreviations and symbols are provided to assist in the interpretation of the borehole logs. It should be noted that the boundaries between the strata have been inferred from drilling observations and noncontinuous samples. These boundaries generally represent a transition from one soil type to another and should not be inferred to represent exact planes of geological change. The conditions will vary between and beyond the locations investigated.

The following discussion has been simplified in terms of the major soil strata encountered on the site. In general, the reported subsurface conditions indicated that the boreholes penetrated topsoil overlying sand, sand and gravel and silt.

3.1 Topsoil

Topsoil was encountered in all boreholes and test pits. Thickness of topsoil ranged between 250 mm to 675 mm.

Topsoil comprises of dark brown sandy soil.

3.2 Sand

Fine Sand is the predominant soil encountered at the site and was encountered in all the boreholes and test pits completed at the site. Boreholes BH-02-23 and BH-03-23 and Test Pits TP-01-23 to TP-10-23, TP-1-23 and TP-15-23 were terminated in the sand strata.

The Standard Penetration Test results (N Values) recorded within the sand ranged from 2 to 37 blows per 305 mm penetration of split spoon sampler indicating a variable very loose to dense relative density. The density of the sand typically increases with depth.

The natural water content of the samples of the sand ranged from 2.5 to 19.8 percent indicating damp to saturated conditions.

Ten Particle size analyses were carried out on samples of the sand and the results are summarized in Table 4 and provided in Appendix C.

Table 4: Particle Size Distribution Analysis – Native Sand

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH-01-23 SS-9	9.14 - 9.75	SAND, trace gravel, trace Silt, trace Clay	4.0	88.8	5.7	1.5
BH-02-23 SS-4	2.29 - 2.89	FINE SAND, trace Silt, trace Clay	-	95.3	3.1	1.6
BH-03-23 SS-7	6.1 - 6.71	FINE SAND, trace Silt, trace Clay	-	94.0	4.4	1.6
BH-03-23 SS-10	10.67 - 11.28	FINE SAND, trace Silt, trace Clay	-	92.0	6.9	1.1

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH-04-23 SS-7	4.57 - 5.18	FINE SAND, trace Silt, trace Clay	0.1	90.7	7.2	2.0]
TP-03-23 SS-2	2	FINE SAND, trace Silt, trace Clay	-	94.2	4.8	1.0
TP-07-23 SS-2	2	FINE SAND, trace Silt, trace gravel trace Clay	1.7	90.8	6.6	0.9
TP-09-23 SS-3	3.65	FINE SAND, trace Silt, trace Clay	-	96.1	2.9	1.0
TP-10-23 SS-2	2	FINE SAND, trace Silt, trace Clay, trace gravel	0.5	91.6	5.0	2.9
BH-02-23 SS-13	1.52 - 2.13	FINE Silty SAND, trace Clay	-	72.5	23.7	3.8

3.3 Sand and Gravel

Sand and Gravel was encountered at the north end of the site in Borehole BH-01-23 at a depth of 7.6 m and is 1.5 m thick and in Test Pits TP-11-23 to TP-14-23 and is 2.8 m thick in Test Pit TP 14-23 and extends to the termination depth of Test Pits TP-11-23 to TP-13-23.

The Standard Penetration Test results (N Values) recorded within the sand and gravel in Borehole BH-01-23 was 40 blows per 305 mm penetration of split spoon sampler indicating a dense relative density.

The natural water content of the sample of sand and gravel was 3.5 percent indicating damp conditions.

One Particle size analysis was carried out on sample of the sand and gravel and the results are summarized in Table 5 and provided in Appendix C.

Table 5: Particle Size Distribution Analysis - Sand and Gravel

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
TP-13-23 SS-13	3.5	SAND AND GRAVEL, trace Silt, trace Clay	54.7	41.8	2.7	0.8

3.4 Silt

Silt layer encountered in Boreholes BH-04-23 at a depth of 5.6 m and is 8 m thick. The silt ranges in composition from silt with some sand to sandy silt.

The Standard Penetration Test results (N Values) recorded within this layer ranged from 17 to 37 blows per 305 mm penetration of split spoon sampler indicating the cohesive silt has a very stiff to hard consistency and the non cohesive silt has a compact relative density.

The natural water content of the samples of the silt ranged from 17.9 to 20.9 indicating very moist to saturated conditions.

One Particle size analyses were carried out on a sample from this layer and the results are summarized in Table 6 and provided in Appendix C.

Table 6: Particle Size Distribution Analysis – Sandy Silt

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
TP-01-23 SS- 3	3.5	Sandy SILT, trace Gravel, trace Clay	8.4	20.4	66.8	4.4

3.5 Clay

Silty Clay was encountered at a depth of 11.1 m in Borehole BH-1-23 and extends to the termination depth of the borehole.

3.6 Groundwater Conditions

Groundwater observations were made in the monitoring wells as they were drilled and after completion of drilling. The groundwater and cave in conditions as observed in the boreholes upon completion of drilling are summarized in the following Table 7.

Table 7: Summary of Groundwater levels

Borehole ID	Water Levels (m) May 12, 2023	Water Levels (m) May 19, 2023	Water Levels (m) May 24, 2023	Water Levels (m) June 15, 2023	Caving
BH/MW-01-23	-	-	10.11	10.22	Open
BH/MW-02-23	-	9.73	9.61	9.73	Open
BH/MW-03-23	-	12.39	12.37	12.43	Open
BH/MW-04-23	6.71	-	6.98	7.05	Open

4 Aggregate Evaluation

Aggregate resources have been defined as relatively easily mined sand and gravel which may be capable of further processing into saleable aggregate. Soil such as silt and clay are not included in the source potential for this evaluation.

The purpose of this investigation was to determine the subsurface soil conditions on the subject property and provide a general overview of the quality of aggregate resources available at the site.

It is our understanding that the client is applying for a Class A License for Aggregate Extraction above the groundwater. The base of the pit floor will remain 1.5 m above the groundwater table.

The prevalent granular resource at the site is sand. The sand is typically comprised of sand with trace silt, gravel and clay. Locally sand and gravel was encountered at the north end of the property.

4.1 Quality

A total of eleven (11) samples of the sand, and sand and gravel were submitted for grain size distribution analyses and the results are summarized in Tables 4 and 5 above and provided in Appendix C. The samples were compared to the following product specifications: OBC tile bed products, OPSS Muni 1010, OPSS 1002 (Fine Aggregate) and OPSS Muni 1004 (mortar and winter sand) and the results are provided in the following Table 8.

Table 8: Comparison to Local Standards

Sample	Spec													
	OBC			OPSS Muni 1010								OPSS Muni 1002	OPSS Muni 1004	
	Filter Media	<5 Mins	8-10 Min Sand	Gran O	Gran A	Gran S	Gran B-I	Gran B-II	Gran B-III	Gran M	SSM	Fine Agg	Mortar Sand	Winter Sand
TP1 SS3	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP3 SS2	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No	No
TP7 SS2	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
TP9 SS3	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No	No
TP10 SS2	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
TP13 SS3	No	Yes	No	No	No	No	No	No	Yes	No	Yes	No	No	No
BH1 SS9	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
BH2 SS3	No	No	No	No	No	No	No	No	No	No	No	No	No	No
BH3 SS7	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No
BH3 SS10	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No	No
BH4 SS7	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No	No

It may be feasible to produce concrete and mortar sand, and Granular B Type 1 from the medium sand and sand and gravel encountered at the north end of the site (Borehole BH-01-23 and Test Pits TP-11-23 to TP-150; however, the sand would have to be washed and screened. South of Test Pit TP-11-23 the sand typically comprises fine sand and based on the gradation analysis would be generally suitable for use as SSM. The approximate location of medium sand, fine sand and sand and gravel deposits are shown on Drawing 5 in Appendix A.

5 Statement of Limitations

The geotechnical recommendations provided in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report. Since all details of the design may not be known at the time of report preparation, we recommend that we be retained during the final design stage to verify that the geotechnical recommendations have been correctly interpreted in the design. Also, if any further clarification and/or elaboration are needed concerning the geotechnical aspects of the project, Englobe should be contacted. We recommend that we be retained during construction to confirm that the subsurface conditions do not deviate materially from those encountered in the test holes and to ensure that our recommendations are properly understood. Quality assurance testing and inspection services during construction are a necessary part of the evaluation of the subsurface conditions.

The geotechnical recommendations provided in this report are intended for the use of the Client or its agent and may not be used by a Third Party without the expressed written consent of Englobe and the Client. They are not intended as specifications or instructions to contractors. Any use which a contractor makes of this report, or decisions made based on it, are the responsibility of the contractor. The contractor must also accept the responsibility for means and methods of construction, seek additional information if required, and draw their own conclusions as to how the subsurface conditions may affect their work. Englobe accepts no responsibility and denies any liability whatsoever for any damages arising from improper or unauthorized use of the report or parts thereof.

It should be noted that the soil boundaries indicated on the borehole logs are inferred from noncontinuous sampling and observations during drilling and should not be interpreted as exact planes of geological change. These boundaries are intended to reflect approximate transition zones for the purpose of geotechnical design. Also, the subsoil and groundwater conditions have been determined at the borehole locations only.

It is further noted that, depending on the time of year the field work was completed, water levels should be expected to vary, perhaps significantly from those observed at the time of this investigation.

It is important to note that the geotechnical assessment involves a limited sampling of the site gathered at specific test hole locations and the conclusions in this report are based on this information gathered and in accordance with normally accepted practices. The subsurface geotechnical, hydrogeological, environmental and geologic conditions between and beyond the test holes will differ from those encountered at the test holes. Also, such conditions are not uniform and can vary over time. Should subsurface conditions be encountered which differ materially from those indicated at the test holes, we request that we be notified in order to assess the additional information and determine whether or not changes should be made as a result of the conditions.

Englobe will not be responsible to any party for damages incurred as a result of failing to notify Englobe that differing site or subsurface conditions are present upon becoming aware of such conditions.

The professional services provided for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise stated specifically in the report. The recommendations and opinions given in this report are based on our professional judgment and are for the guidance of the Client or its Agent in the design of the specific project. No other warranties or guarantees, expressed or implied, are made.

Appendix A
Drawings

Drawing 1: Location Plan

Drawing 2: Borehole/Test Pit Location Plan

Drawing 3: Section A-A’

Drawing 4: Section B-B’

Drawing 5: Granular Deposits

ENGLOBE

NOTES:

1-REFERENCES: © OpenStreetMap contributors (2023).

2-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

0 200 400 600 800 1000 m

SCALE 1:20000

Project

Aggregate Assessment

364 St John's Rd E, Simcoe , ON

Title

Site Plan

eNGLOBe

353, Bridge Street East
Kitchener (Ontario) N2K 2Y5
Telephone : 519.741.1313
Fax : 519.741.5422

Prepared	N.Raj	Discipline	GEOTECHNICAL	Project manager	T.Staples
Drawn	N.Raj	Scale	1 : 20000	Sequence no.	01 of 05
Checked	T.Staples	Date	2023-05-24		

M. dept.	Project	Disc.	Dwg no.	Rev.
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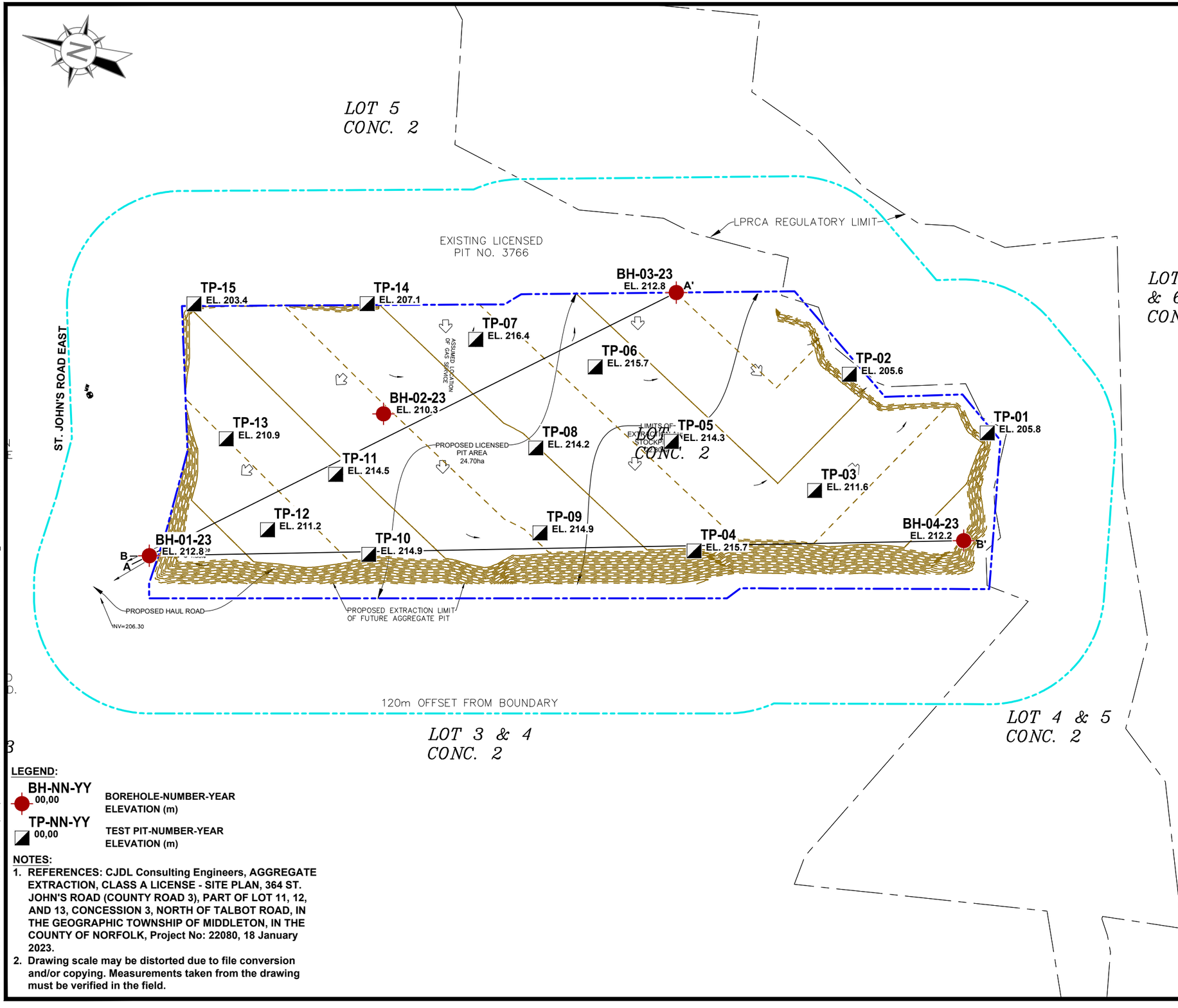

LEGEND:

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00,00 — **BOREHOLE-NUMBER-YEAR ELEVATION (m)**

TP-NN-YY
00,00 — **TEST PIT-NUMBER-YEAR ELEVATION (m)**

NOTES:

1. **REFERENCES: CJDL Consulting Engineers, AGGREGATE EXTRACTION, CLASS A LICENSE - SITE PLAN, 364 ST. JOHN'S ROAD (COUNTY ROAD 3), PART OF LOT 11, 12, AND 13, CONCESSION 3, NORTH OF TALBOT ROAD, IN THE GEOGRAPHIC TOWNSHIP OF MIDDLETON, IN THE COUNTY OF NORFOLK, Project No: 22080, 18 January 2023.**
2. **Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.**

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No.	Version	Date	By	Check	Appr.
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Seal

Scale

0 20 40 60 80 100 150 200 m

1:4 000

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Project

Aggregate Assessment

364 St. John's Road East, Simcoe, Ontario

Title

Borehole / Test Pit Location Plan

Discipline: Geosciences		Prepared by: LK	Checked by: TS
Scale: 1:4 000		Drawn by: LK	Approved by: TS
Date: 31/07/2024		Figure N°:	02 of 05
Page setup: DWG 2	Paper format: ANSI full bleed B (17.00 x 11.00 Inches)	Register N°:	

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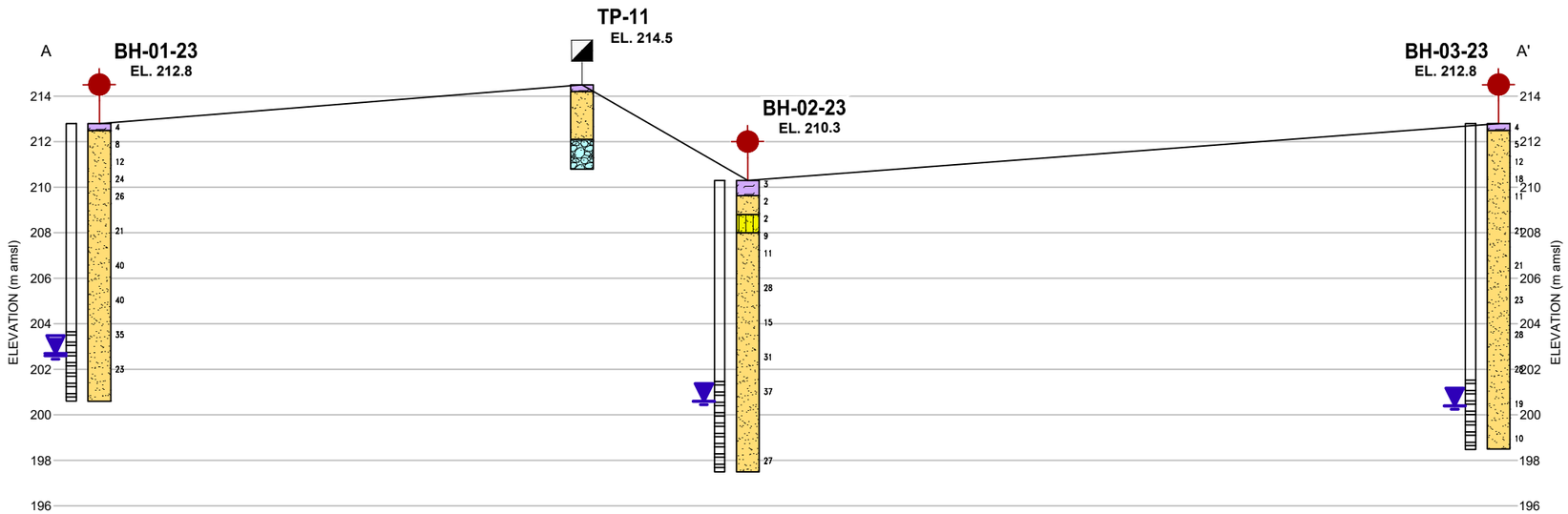

LEGEND:

BH-NN-YY
00,00 — **BOREHOLE-NUMBER-YEAR ELEVATION (m)**

TP-NN-YY
00,00 — **TEST PIT-NUMBER-YEAR ELEVATION (m)**

- TOPSOIL
- SAND AND GRAVEL
- SAND
- SILTY SAND
- SANDY SILT
- SILT

0 10 20 30 50 100 125 m
1:2 500
HORIZONTAL

0 1 2 3 5 10 12.5 m
1:250
VERTICAL

NOTES:
1. **Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.**
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Client: Norfolk County

Project: Aggregate Assessment

364 St. John's Road East, Simcoe, Ontario

Title: Section A-A'

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Page setup: DWG 3	Paper Format: ANSI full bleed B (17.00 x 11.00 Inches)	Register N°:	

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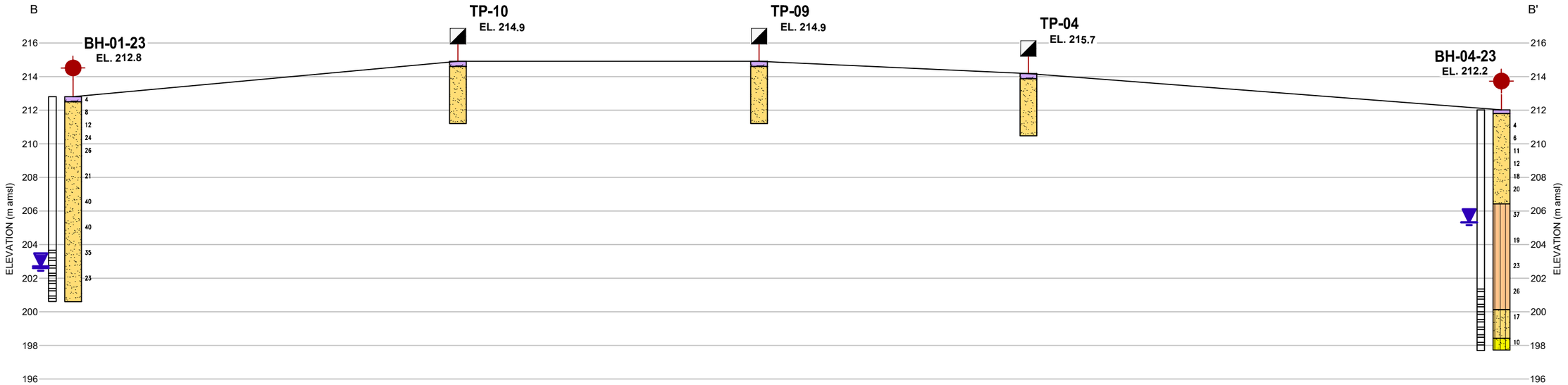

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LEGEND:

BH-NN-YY
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TP-NN-YY
00,00 TEST PIT-NUMBER-YEAR ELEVATION (m)

- TOPSOIL
- SAND AND GRAVEL
- SAND
- SILTY SAND
- SANDY SILT
- SILT

0 10 20 30 50 100 125 m
1:2 500
HORIZONTAL

0 1 2 3 5 10 12.5 m
1:250
VERTICAL

NOTES:
1. Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.
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Norfolk County

Project
Aggregate Assessment

364 St. John's Road East, Simcoe, Ontario

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Discipline: Geosciences		Prepared by: LK	Checked by: TS
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Date: 31/07/2024		Figure N°: 04 of 05	
Page setup: DWG 4	Paper Format: ANSI full bleed B (17.00 x 11.00 Inches)	Register N°:	

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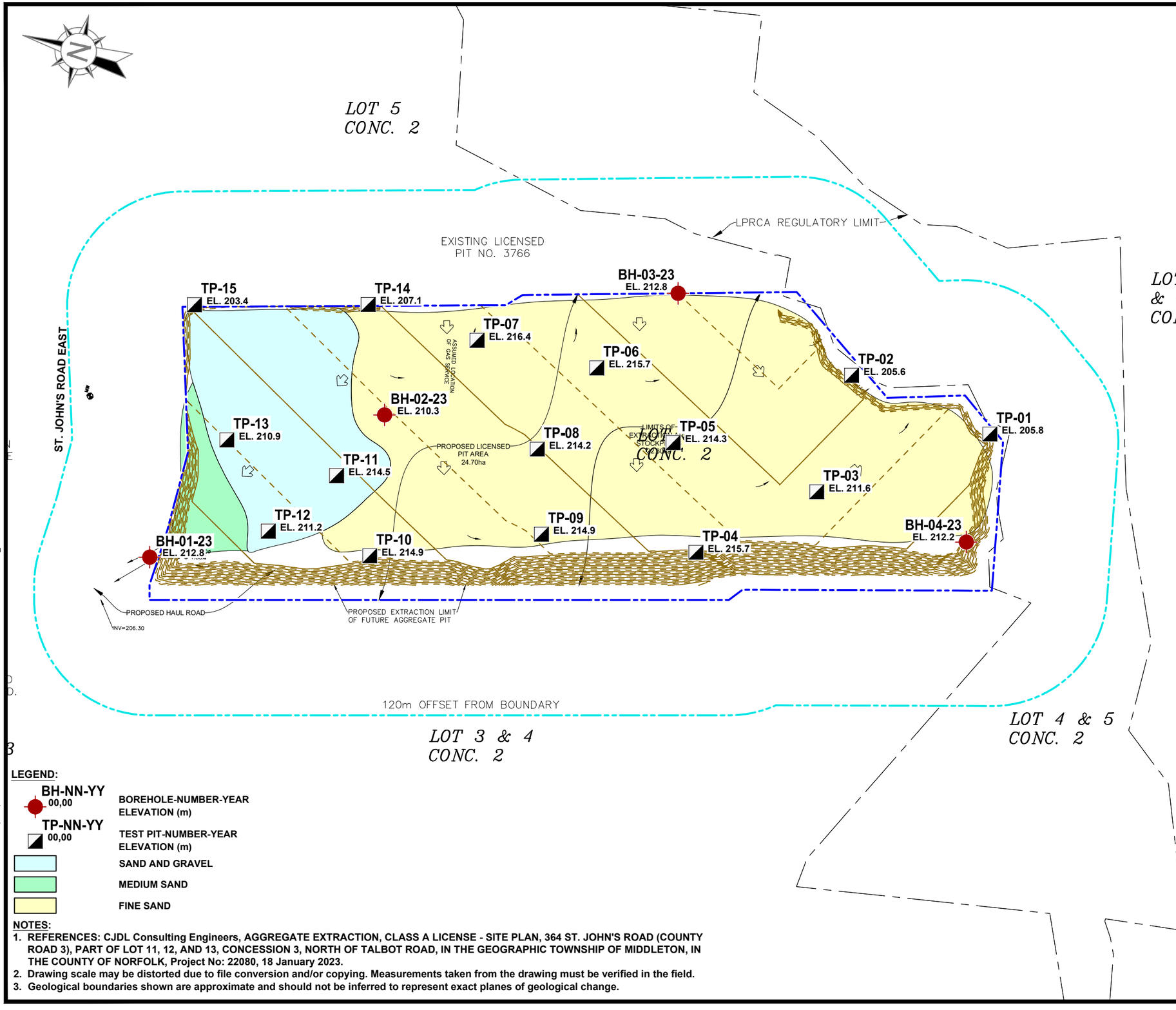

LEGEND:

- **BH-NN-YY 00,00** — BOREHOLE-NUMBER-YEAR ELEVATION (m)
- **TP-NN-YY 00,00** — TEST PIT-NUMBER-YEAR ELEVATION (m)
- SAND AND GRAVEL
- MEDIUM SAND
- FINE SAND

NOTES:

1. REFERENCES: CJDL Consulting Engineers, AGGREGATE EXTRACTION, CLASS A LICENSE - SITE PLAN, 364 ST. JOHN'S ROAD (COUNTY ROAD 3), PART OF LOT 11, 12, AND 13, CONCESSION 3, NORTH OF TALBOT ROAD, IN THE GEOGRAPHIC TOWNSHIP OF MIDDLETON, IN THE COUNTY OF NORFOLK, Project No: 22080, 18 January 2023.
2. Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.
3. Geological boundaries shown are approximate and should not be inferred to represent exact planes of geological change.

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No.	Version	Date	By	Check	Appr.
XX	REVISION	JJ/MM/AA	XX	XX	XX

Seal

Scale

0 20 40 60 80 100 150 200 m

1:4 000

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Project

Aggregate Assessment

364 St. John's Road East, Simcoe, Ontario

Title

Granular Deposits

Discipline: Geosciences		Prepared by: LK	Checked by: TS
Scale: 1:4 000		Drawn by: LK	Approved by: TS
Date: 07/08/2024		Figure N°:	05 of 05
Page setup: DWG 5	Paper format: ANSI full bleed B (17.00 x 11.00 Inches)	Register N°:	

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Appendix B
Borehole Logs

List of Abbreviations

Boreholes BH-01-23 to BH-04-23 and Test Pits TP-01-23 to TP-15-23

ENGLOBE

List of Abbreviations

The abbreviations commonly employed on the borehole logs, on the figures, and in the text of the report, are as follows:

Sample Types		Soil Test and Properties	
AS	Auger Sample	SPT	Standard Penetration Test
CS	Core Sample	UC	Unconfined Compression
RC	Rock Core	FV	Field Vane Test
SS	Split Spoon	ø	Angle of internal friction
TW	Thinwall, Open	γ	Unit weight
WS	Wash Sample	w_p	Plastic Limit
BS	Bulk Sample	w	Water content
GS	Grab Sample	w_L	Liquid Limit
WC	Water Content Sample	I_L	Liquidity Index
TP	Thinwall, Piston	I_p	Plastic Index
		PP	Pocket Penetrometer

Penetration Resistances	
Dynamic Penetration Resistance	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) diameter 60˚ cone a distance 300 mm (12 in.) The cone is attached to 'A' size drill rods and casing is not used.
Standard Penetration Resistance, N (ASTM D1586)	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a standard split spoon sampler 300 mm (12 in.)
WH	Sampler advanced by weight of hammer
PH	Sampler advanced by hydraulic pressure
PM	Sampler advanced by manual pressure

Soil Description		
Cohesionless Soils Compactness Condition	**SPT N-Value** (blows per 0.3 m)	**Relative Density (D_r** (%)
Very Loose	0 to 4	0 to 20
Loose	4 to 10	20 to 40
Compact	10 to 30	40 to 60
Dense	30 to 50	60 to 80
Very Dense	Over 50	80 to 100
Cohesive Soils Consistency	**Undrained Shear Strength (C_u kPa**	**psf**
Very Soft	Less than 12	Less than 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very Stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000
DTPL	Drier than plastic limit	Low Plasticity, W_L<30
APL	About plastic limit	Medium Plasticity, 30< W_L<50
WTPL	Wetter than plastic limit	High Plasticity, W_L>50

LOG OF BOREHOLE 01-23

Project No. : 02211899 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 24, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : | Elevation Datum : Geodetic

Rig type : D70, truck-mounted | Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
	212.8	**GROUND SURFACE**				
0		640mm **TOPSOIL**, Sandy, brown		1	SS	4
	212.2 / 0.6	**SAND**, some gravel, loose, brown, moist		2	SS	8
1						
		...trace gravel, compact		3	SS	12
2						
		...some gravel		4	SS	24
3				5	SS	26
4						
		...trace gravel		6	SS	21
5						
6	206.7 / 6.1	**GRAVELLY SAND**, dense, brown, damp		7	SS	40
7	205.2 / 7.6	**SAND AND GRAVEL**, dense, brown, damp		8	SS	40
8						
9	203.7 / 9.1	**SAND**, trace gravel, trace silt, trace clay, dense, damp		9	SS	35
		...saturated				
10	202.1 / 10.7	**GRAVELLY SAND**, compact, brown, saturated		10	SS	23
11	201.7 / 11.1	**SILTY CLAY**, very soft, grey, saturated				
12	200.6 / 12.2	**END OF BOREHOLE**				

Elevation Scale (m): 212, 211, 210, 209, 208, 207, 206, 205, 204, 203, 202, 201

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane — 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) | Natural Water Content (MC) | Liquid Limit (LL) — 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR SA SI CL

4 89 6 2

Unstabilized water level measured at 10.1 m below ground surface; borehole was open upon completion of drilling.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 24, 2023	10.1	202.7
Jun 15, 2023	10.2	202.6

file: 02211899 bh logs.gpj

LOG OF BOREHOLE 02-23

Project No. : 02211899	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 19, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position :
Elevation Datum : Geodetic
Rig type : D70, truck-mounted
Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	210.3	**GROUND SURFACE**				
		670mm **TOPSOIL**, Sandy, dark brown		1	SS	3
	209.6					
1	0.7	**SAND FINE**, very loose, brown, moist		2	SS	2
	208.8					
2	1.5	**SILTY SAND**, trace clay, very moist		3	SS	2
	208.0					
	2.3	**SAND**, trace silt, trace clay, loose		4	SS	9
3		...compact		5	SS	11
4						
5				6	SS	28
6						
				7	SS	15
7						
		...dense		8	SS	31
8						
9		...very moist		9	SS	37
		...saturated				
10						
11						
12		...some gravel, compact, grey		10	SS	27
	197.5					
	12.8					

END OF BOREHOLE

Unstabilized water level measured at 9.7 m below ground surface; borehole was open upon completion of drilling.

Elevation Scale (m): 210, 209, 208, 207, 206, 205, 204, 203, 202, 201, 200, 199, 198

Penetration Test Values (Blows / 0.3m): Dynamic Cone (10, 20, 30, 40)
Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane (40, 80, 120, 160)

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit (PL, MC, LL; 10, 20, 30)

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR	SA	SI	CL
0	72	24	4
0	95	3	2

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 19, 2023	9.7	200.5
May 24, 2023	9.6	200.6
Jun 15, 2023	9.7	200.5

file: 02211899 bh logs.gpj

LOG OF BOREHOLE 03-23

Project No. : 02211899 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 19, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : | Elevation Datum : Geodetic

Rig type : D70, truck-mounted | Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	212.8	**GROUND SURFACE**				
	212.5	305mm **TOPSOIL**, Sandy, brown		1	SS	4
	0.3	**SAND**, trace gravel, loose / very loose, brown, moist				
1		...trace silt, loose		2	SS	5
		...compact		3	SS	12
2						
				4	SS	18
3						
				5	SS	11
4						
		...damp		6	SS	21
5						
6		...trace silt, trace clay, moist		7	SS	21
7						
				8	SS	23
8						
				9	SS	28
9						
10						
		...damp		10	SS	28
11						
12		...saturated		11	SS	19
13						
		...loose		12	SS	10
14	198.5					
	14.3	**END OF BOREHOLE**				

Elevation Scale (m): 212, 211, 210, 209, 208, 207, 206, 205, 204, 203, 202, 201, 200, 199

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR SA SI CL

0 94 4 2

0 92 7 1

Unstabilized water level measured at 12.4 m below ground surface; borehole was open upon completion of drilling.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 19, 2023	12.4	200.4
May 24, 2023	12.4	200.5
Jun 15, 2023	12.4	200.4

file: 02211899 bh logs.gpj

LOG OF BOREHOLE 04-23

Project No. : 02211899	Client : ALLAN'S EXCAVATING INC	Originated by : MA
Date started : May 12, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position :
Elevation Datum : Geodetic
Rig type : D70, truck-mounted
Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
	212.2	**GROUND SURFACE**				
0		230mm **TOPSOIL**, Sandy, dark brown		1	AS	
1		**SAND FINE**, trace silt, trace clay, loose / very loose, brown, moist		2	SS	4
2		...loose		3	SS	6
3		...compact		4	SS	11
4				5	SS	12
5		...very moist		6	SS	18
	206.6			7	SS	20
6	5.6	**SILT**, some sand, with silty sand seams, hard, brown, saturated		8	SS	37
7						
8		...very stiff		9	SS	19
9						
10				10	SS	23
11				11	SS	26
	200.3					
12	11.9	**SANDY SILT**, with silt layers and silt clay seams, compact, grey, saturated		12	SS	17
13						
	198.6					
14	13.6	**SILTY SAND**, with silt and sandy silt layers, loose to compact, grey, saturated		13	SS	10
	197.9					
	14.3	**END OF BOREHOLE**				

Unstabilized water level measured at 6.7 m below ground surface; borehole was open upon completion of drilling.

Elevation Scale (m): 212, 211, 210, 209, 208, 207, 206, 205, 204, 203, 202, 201, 200, 199, 198

Penetration Test Values (Blows / 0.3m)
Dynamic Cone: 10, 20, 30, 40
Undrained Shear Strength (kPa)
Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160

Moisture / Plasticity
Plastic Limit, Natural Water Content, Liquid Limit
PL, MC, LL: 10, 20, 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments
GRAIN SIZE DISTRIBUTION (%) (MIT)
GR SA SI CL
0 91 7 2

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 12, 2023	6.7	205.5
May 24, 2023	7.0	205.2
Jun 15, 2023	7.1	205.1

file: 02211899 bh logs.gpj

LOG OF TEST PIT 1-23

Project No. : 02211899.000 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 11, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : E: 560895, N: 4738293 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired | Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Number	Type	Elevation Scale (m)
0.0	205.8	**GROUND SURFACE**				205.5
	205.6 / 0.3	**TOPSOIL**, Sandy, brown				
0.5		**SAND**, trace silt, brown, moist				205.0
1.0				1	GS	
1.5						204.5
	204.0 / 1.8					
2.0		**SILTY SAND FINE**, brown, moist		2	GS	204.0
2.5						203.5
3.0						203.0
	202.3 / 3.5			3	GS	202.5
3.5	202.2 / 3.7	**SANDY SILT**, trace gravel, trace clay, brown, moist				
		END OF TEST PIT				

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) — Natural Water Content (MC) — Liquid Limit (LL); 10, 20, 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR SA SI CL

9 20 67 4

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 2-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560907, N: 4738455 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	205.6	**GROUND SURFACE**				205.5
		TOPSOIL, Sandy, brown				
	205.3 / 0.3	**SAND FINE**, trace silt, brown, moist				205.0
0.5						
1.0				1	GS	204.5
1.5						204.0
2.0				2	GS	203.5
2.5						203.0
3.0						202.5
3.5						202.0
				3	GS	
	201.6 / 4.0	**END OF TEST PIT**				

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 3-23

Project No. : 02211899.000 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 11, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : E: 560783, N: 4738451 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired | Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)	Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Unstabilized Water Level	Lab Data and Comments
0.0	211.6	**GROUND SURFACE**				211.5	O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane; 40 80 120 160	Plastic Limit / Natural Water Content / Liquid Limit; PL MC LL; 10 20 30			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	211.4	**TOPSOIL**, Sandy, brown									
0.5	0.3	**SAND**, some silt, brown, moist				211.0					
1.0				1	GS	210.5					
1.5						210.0					
2.0		...trace silt, trace clay		2	GS	209.5					0 94 5 1
2.5						209.0					
3.0						208.5					
3.5	208.0			3	GS	208.0					
	3.7	**END OF TEST PIT**									

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 4-23

Project No. : 02211899.000 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 11, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : E: 560680, N: 4738553 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired | Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	215.7	**GROUND SURFACE**				215.5
	215.4 / 0.3	**TOPSOIL**, Sandy, brown				
0.5		**SAND FINE**, trace silt, brown, moist				215.0
1.0				1	GS	
1.5						214.5
2.0				2	GS	214.0
2.5						213.5
3.0						213.0
3.5						212.5
	212.0 / 3.7	**END OF TEST PIT**		3	GS	

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 5-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560786, N: 4738609 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	214.3	**GROUND SURFACE**				214.0
		TOPSOIL, Sandy				
	214.1 / 0.3	**SAND FINE**, trace silt, brown, moist				
0.5						213.5
1.0				1	GS	
1.5						213.0
2.0				2	GS	212.5
2.5						212.0
3.0						211.5
3.5						211.0
	210.4 / 4.0	**END OF TEST PIT**		3	GS	210.5

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) — Natural Water Content (MC) — Liquid Limit (LL); 10, 20, 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 6-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560840, N: 4738712 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	215.7	**GROUND SURFACE**				215.5
	215.5 / 0.3	**TOPSOIL**, Sandy				
0.5		**SAND FINE**, trace silt, brown, moist				215.0
1.0				1	GS	
						214.5
1.5						
						214.0
2.0				2	GS	
						213.5
2.5						
						213.0
3.0						
						212.5
3.5						
						212.0
				3	GS	
	211.8 / 4.0	**END OF TEST PIT**				

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) — Natural Water Content (MC) — Liquid Limit (LL); 10 20 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 7-23

Project No. : 02211899.000 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 11, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : E: 560829, N: 4738833 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired | Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)	Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Unstabilized Water Level	Lab Data and Comments
0.0	216.4	**GROUND SURFACE**									
	216.1 / 0.3	**TOPSOIL**, Sandy									
		SAND FINE, trace silt, brown, moist		1	GS	216.0					
0.5						215.5					
1.0											
1.5						215.0					
						214.5					
2.0		...trace gravel, trace clay		2	GS						2 91 6 1
2.5						214.0					
						213.5					
3.0											
3.5						213.0					
				3	GS	212.5					
	212.4 / 4.0	**END OF TEST PIT**									

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 8-23

Project No. : 02211899.000 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 11, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : E: 560736, N: 4738735 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired | Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	214.2	**GROUND SURFACE**				214.0
	213.9 / 0.3	**TOPSOIL**, Sandy				
0.5		**SAND FINE**, trace silt, brown, moist				213.5
1.0				1	GS	
						213.0
1.5						
						212.5
2.0				2	GS	
						212.0
2.5						
						211.5
3.0						
						211.0
3.5				3	GS	
	210.5 / 3.7	**END OF TEST PIT**				

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 9-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560659, N: 4738712 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	214.9	**GROUND SURFACE**				214.5
	214.6 / 0.3	**TOPSOIL**, Sandy				
0.5		**SAND FINE**, trace silt, trace clay, brown, moist				214.0
1.0				1	GS	
1.5						213.5
2.0				2	GS	213.0
2.5						212.5
3.0						212.0
3.5						211.5
	211.3 / 3.7	**END OF TEST PIT**		3	GS	

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) — Natural Water Content (MC) — Liquid Limit (LL); 10, 20, 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR	SA	SI	CL
0	96	3	1

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 10-23

Project No. : 02211899.000 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 11, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : E: 560580, N: 4738877 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired | Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)	Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Unstabilized Water Level	Lab Data and Comments
0.0	214.9	**GROUND SURFACE**									
	214.6 / 0.3	**TOPSOIL**, Sandy									
		SAND FINE, trace silt, trace clay, brown to grey, moist				214.5					
0.5											
						214.0					
1.0				1	GS						
1.5						213.5					
						213.0					
2.0		...trace gravel		2	GS						GRAIN SIZE DISTRIBUTION (%) (MIT): GR 1 SA 91 SI 5 CL 3
						212.5					
2.5											
						212.0					
3.0											
						211.5					
3.5				3	GS						
	211.2 / 3.7	**END OF TEST PIT**									

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane. Scale: 40, 80, 120, 160.

Moisture / Plasticity: Plastic Limit (PL) 10 | Natural Water Content (MC) 20 | Liquid Limit (LL) 30.

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 11-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560648, N: 4738930 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	214.5	**GROUND SURFACE**				214.5
	214.3 / 0.3	**TOPSOIL**, Sandy				
0.5		**SAND**, trace gravel, trace silt, brown, moist				214.0
1.0				1	GS	213.5
1.5						213.0
2.0				2	GS	212.5
	212.1 / 2.4	**SAND AND GRAVEL**, trace silt, brown, moist				
2.5						212.0
3.0						211.5
3.5						211.0
	210.9 / 3.7	**END OF TEST PIT**		3	GS	

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 12-23

Project No. : 02211899.000 | Client : ALLAN'S EXCAVATING INC | Originated by : MH

Date started : May 11, 2023 | Project : Aggregate Assessment | Compiled by : NR

Sheet No. : 1 of 1 | Location : 364 St John's Rd E, Simcoe , ON | Checked by : TS

Position : E: 560575, N: 4738983 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired | Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	211.2	**GROUND SURFACE**				211.0
	210.9 / 0.3	**TOPSOIL**, Sandy				
0.5		**SAND**, some gravel, brown, moist		1	GS	210.5
1.0						
1.5						210.0
	209.3 / 1.8					209.5
2.0		**SAND AND GRAVEL**, brown to grey, moist		2	GS	
2.5						209.0
3.0						208.5
3.5						208.0
4.0				3	GS	207.5
	206.9 / 4.3	**END OF TEST PIT**		4	GS	207.0

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 13-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560648, N: 4739053 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)	Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Unstabilized Water Level	Lab Data and Comments
0.0	211.0	**GROUND SURFACE**									
	210.7 / 0.3	**TOPSOIL**, Sandy									
0.5		**SAND**, trace to some gravel, trace silt, brown, moist				210.5					
1.0				1	GS	210.0					
1.5	209.1					209.5					
2.0	1.8	**SAND AND GRAVEL**, trace silt, trace clay, brown, moist		2	GS	209.0					
2.5						208.5					
3.0						208.0					
3.5				3	GS	207.5					GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL: 54 42 3 1
	207.0 / 4.0	**END OF TEST PIT**		4	GS	207.0					

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane. Scale: 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) 10; Natural Water Content (MC) 20; Liquid Limit (LL) 30

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 14-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560827, N: 4738952 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	207.1	**GROUND SURFACE**				207.0
	206.8 / 0.3	**TOPSOIL**, Sandy				
0.5		**SAND AND GRAVEL**, trace silt, brown, moist		1	GS	206.5
1.0						206.0
1.5						205.5
2.0				2	GS	205.0
2.5						204.5
3.0	204.0 / 3.1	**SAND**, trace gravel, trace silt, brown, moist				204.0
3.5	203.4 / 3.7	**END OF TEST PIT**		3	GS	203.5

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

LOG OF TEST PIT 15-23

Project No. : 02211899.000	Client : ALLAN'S EXCAVATING INC	Originated by : MH
Date started : May 11, 2023	Project : Aggregate Assessment	Compiled by : NR
Sheet No. : 1 of 1	Location : 364 St John's Rd E, Simcoe , ON	Checked by : TS

Position : E: 560774, N: 4739127 (UTM 17T) Elevation Datum : Geodetic

Rig type : Backhoe, rubber-tired Drilling Method :

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Sample Number	Sample Type	Elevation Scale (m)
0.0	203.4	**GROUND SURFACE**				203.0
	203.2 / 0.2	**SAND**, trace gravel, trace silt, brown, moist		1	GS	202.5
0.5						
1.0						
1.5				2	GS	202.0
2.0						201.5
2.5						201.0
3.0						200.5
3.5				3	GS	200.0
	199.8 / 3.7	**END OF TEST PIT**				

Undrained Shear Strength (kPa): O Unconfined; ● Pocket Penetrometer; + Field Vane; ■ Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL) 10 — Natural Water Content (MC) 20 — Liquid Limit (LL) 30

Headspace Vapour (ppm)

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Test pit was dry and open upon completion of excavation.

file: 02211899 tp logs.gpj

Appendix C
Figures

Figures 1 to 12 - Particle Size Analyses

ENGLOBE

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1315	**SAMPLE ID:**	BH - 1 / SS- 9	**SAMPLE DEPTH:**	9.1 - 9.8 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

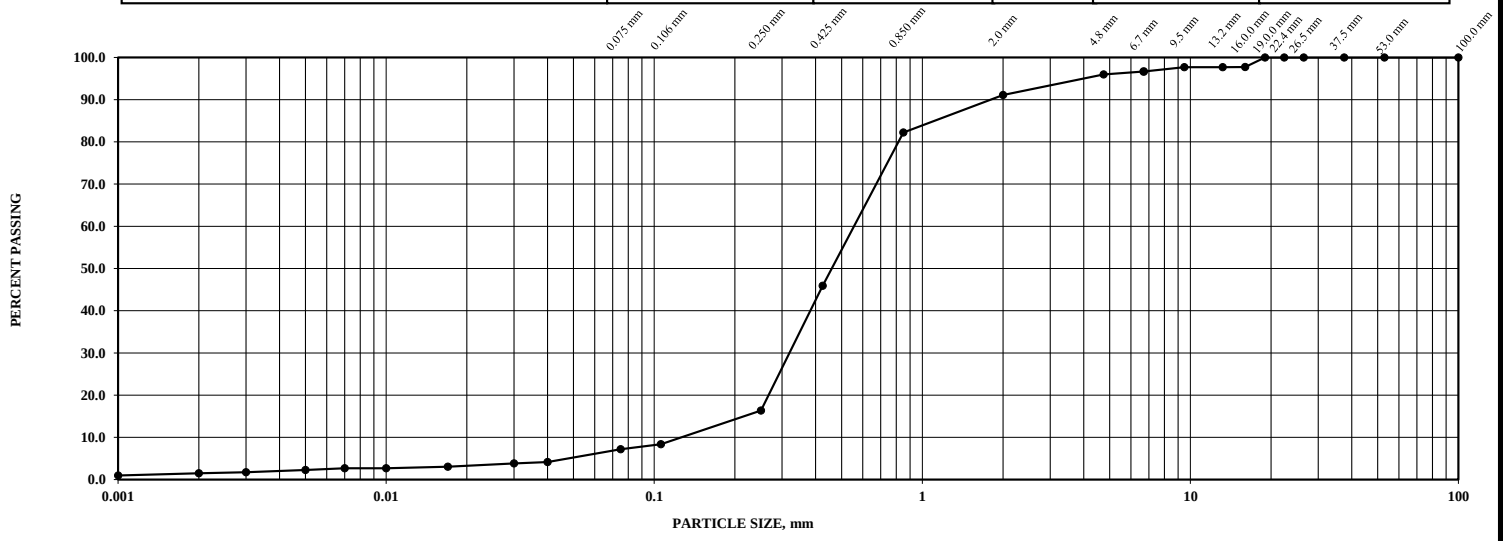
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.590	**D30**	0.331	**D10**	0.135	**Cc**	1.372	**Cu**	4.37

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	4.1
37.5	100.0	0.030	3.8
26.5	100.0	0.017	3.0
22.4	100.0	0.010	2.7
19	100.0	0.007	2.7
16	97.7	0.005	2.3
13.2	97.7	0.002	1.5
9.5	97.7	0.001	1.0
6.7	96.7	**ATTERBERG LIMITS**	
4.75	96.0		
2.00	91.1	Liquid Limit	
0.850	82.2		
0.425	45.9	Plastic Limit	
0.250	16.4		
0.106	8.4	Plastic Index	
0.075	7.2		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		4.0
% SAND (75 µm to 4.75 mm):		88.8
% SILT (2 µm to 75 µm):		5.7
% CLAY (<2 µm):		1.5
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Gravel, Silt and Clay

REMARKS

Figure: 1

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1316	**SAMPLE ID:**	BH - 2 / SS - 3	**SAMPLE DEPTH:**	1.5 - 2.1 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

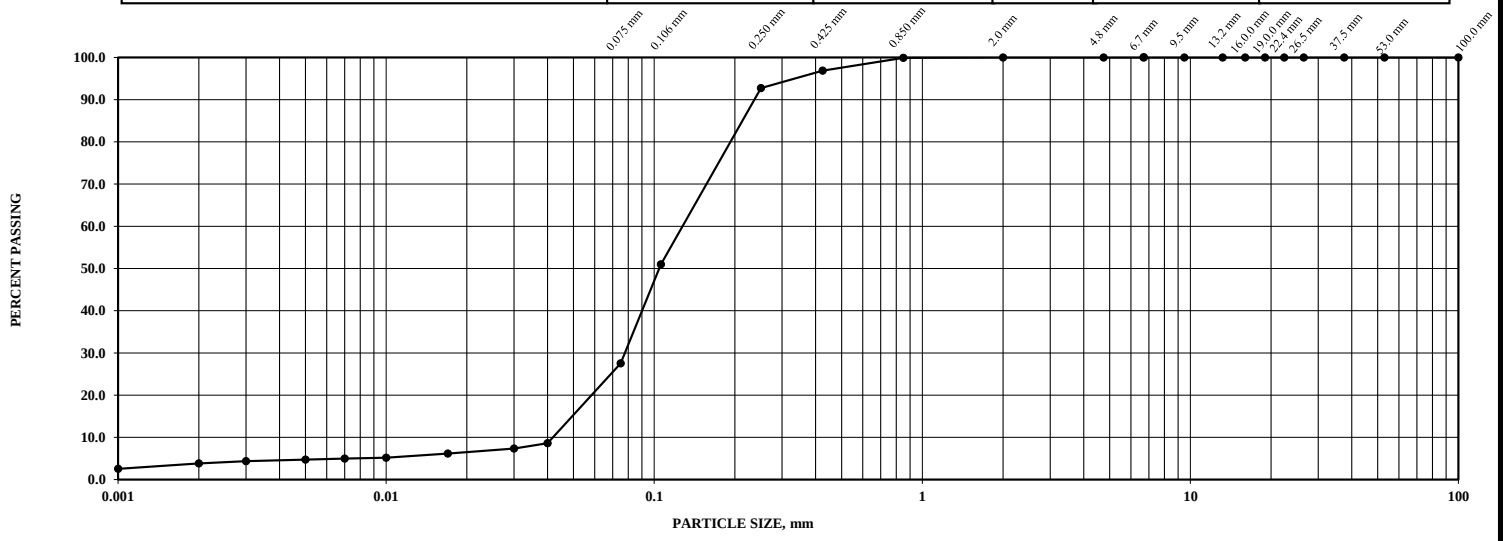
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.137	**D30**	0.078	**D10**	0.043	**Cc**	1.049	**Cu**	3.22

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	8.6
37.5	100.0	0.030	7.3
26.5	100.0	0.017	6.2
22.4	100.0	0.010	5.2
19	100.0	0.007	5.0
16	100.0	0.005	4.7
13.2	100.0	0.002	3.8
9.5	100.0	0.001	2.5
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	100.0	Liquid Limit	
0.850	99.9		
0.425	96.9	Plastic Limit	
0.250	92.7		
0.106	51.0	Plastic Index	
0.075	27.5		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		
% SAND (75 µm to 4.75 mm):		72.5
% SILT (2 µm to 75 µm):		23.7
% CLAY (<2 µm):		3.8
GROUP SYMBOL / SOIL DESCRIPTION:		Silty SAND, trace Clay

REMARKS

Figure: 2

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1317	**SAMPLE ID:**	BH - 2 / SS - 4	**SAMPLE DEPTH:**	2.3 - 2.9 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

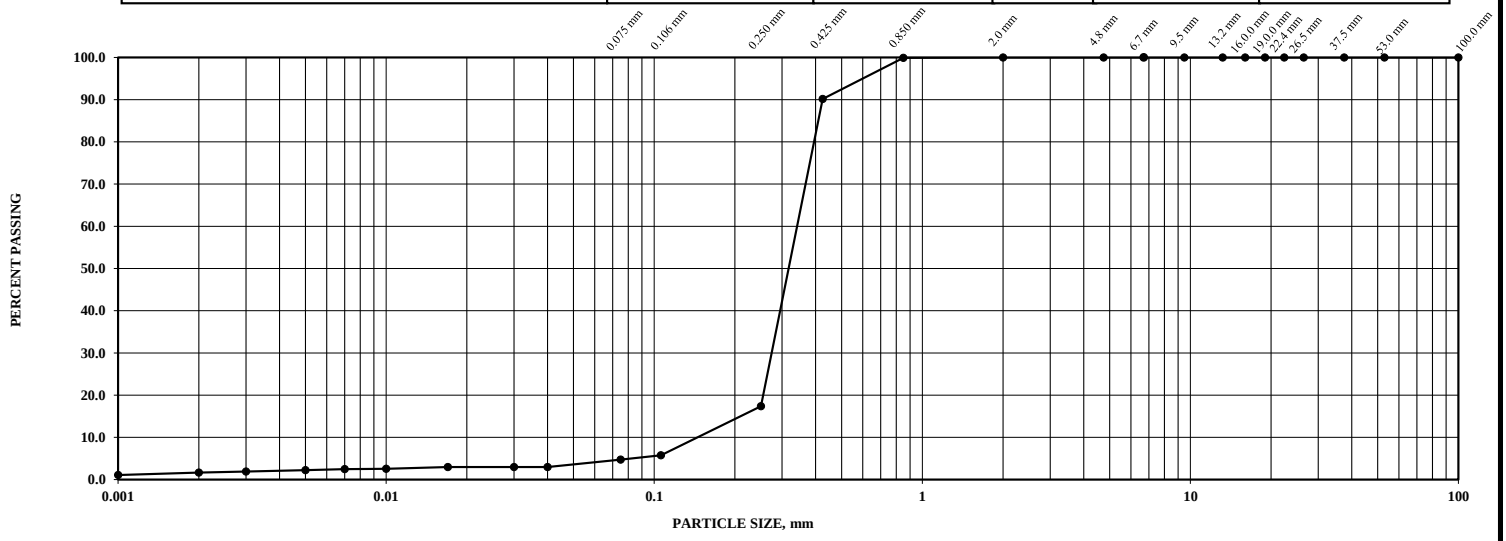
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.352	**D30**	0.280	**D10**	0.159	**Cc**	1.405	**Cu**	2.22

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	3.0
37.5	100.0	0.030	3.0
26.5	100.0	0.017	3.0
22.4	100.0	0.010	2.5
19	100.0	0.007	2.5
16	100.0	0.005	2.2
13.2	100.0	0.002	1.6
9.5	100.0	0.001	1.1
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	100.0	Liquid Limit	
0.850	99.9		
0.425	90.2	Plastic Limit	
0.250	17.4		
0.106	5.7	Plastic Index	
0.075	4.7		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		
% SAND (75 µm to 4.75 mm):		95.3
% SILT (2 µm to 75 µm):		3.1
% CLAY (<2 µm):		1.6
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Silt and Clay

REMARKS

Figure: 3

TESTED BY: Diego Augusto De Arruda, Laboratory Technician

REVIEWED BY: David McBay, CET., Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1318	**SAMPLE ID:**	BH - 3 / SS - 7	**SAMPLE DEPTH:**	6.1 - 6.7 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

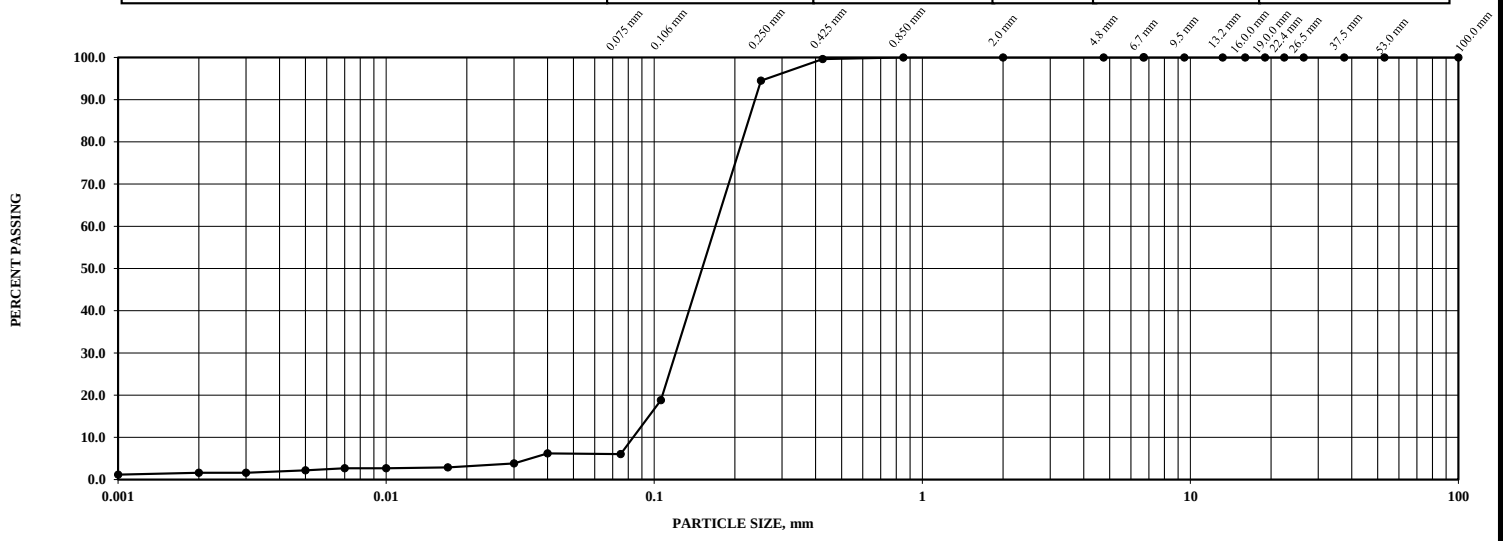
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.184	**D30**	0.127	**D10**	0.085	**Cc**	1.039	**Cu**	2.18

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	6.2
37.5	100.0	0.030	3.8
26.5	100.0	0.017	2.9
22.4	100.0	0.010	2.7
19	100.0	0.007	2.7
16	100.0	0.005	2.2
13.2	100.0	0.002	1.6
9.5	100.0	0.001	1.2
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	100.0	Liquid Limit	
0.850	100.0		
0.425	99.6	Plastic Limit	
0.250	94.5		
0.106	18.8	Plastic Index	
0.075	6.0		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		
% SAND (75 µm to 4.75 mm):		94.0
% SILT (2 µm to 75 µm):		4.4
% CLAY (<2 µm):		1.6
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Silt and Clay

REMARKS

Figure: 4

TESTED BY: Diego Augusto De Arruda, Laboratory Technician

REVIEWED BY: David McBay, CET., Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1319	**SAMPLE ID:**	BH - 3 / SS - 10	**SAMPLE DEPTH:**	10.7 - 11.3 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

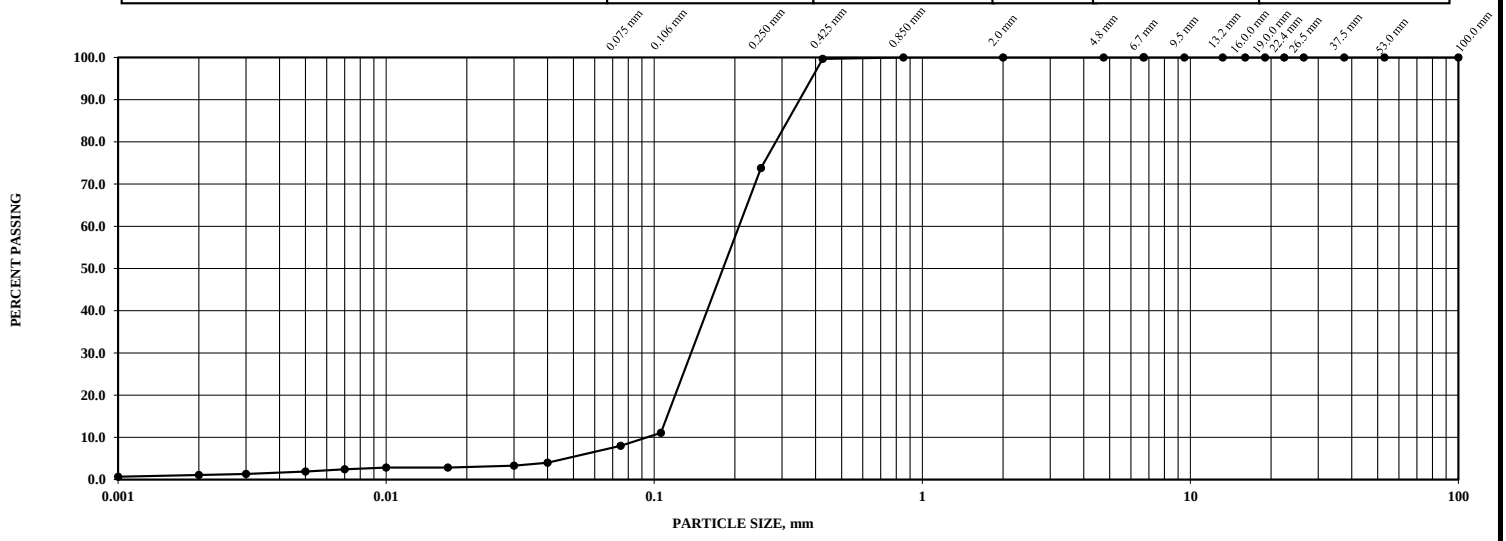
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.218	**D30**	0.150	**D10**	0.095	**Cc**	1.075	**Cu**	2.29

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	4.0
37.5	100.0	0.030	3.3
26.5	100.0	0.017	2.8
22.4	100.0	0.010	2.8
19	100.0	0.007	2.4
16	100.0	0.005	1.9
13.2	100.0	0.002	1.1
9.5	100.0	0.001	0.7
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	100.0	Liquid Limit	
0.850	100.0		
0.425	99.7	Plastic Limit	
0.250	73.8		
0.106	11.1	Plastic Index	
0.075	8.0		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		
% SAND (75 µm to 4.75 mm):		92.0
% SILT (2 µm to 75 µm):		6.9
% CLAY (<2 µm):		1.1
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Silt and Clay

REMARKS

Figure: 5

TESTED BY: Diego Augusto De Arruda, Laboratory Technician

REVIEWED BY: David McBay, CET., Laboratory Supervisor

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GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1320	**SAMPLE ID:**	BH - 4 / SS- 7	**SAMPLE DEPTH:**	4.6 - 5.2 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

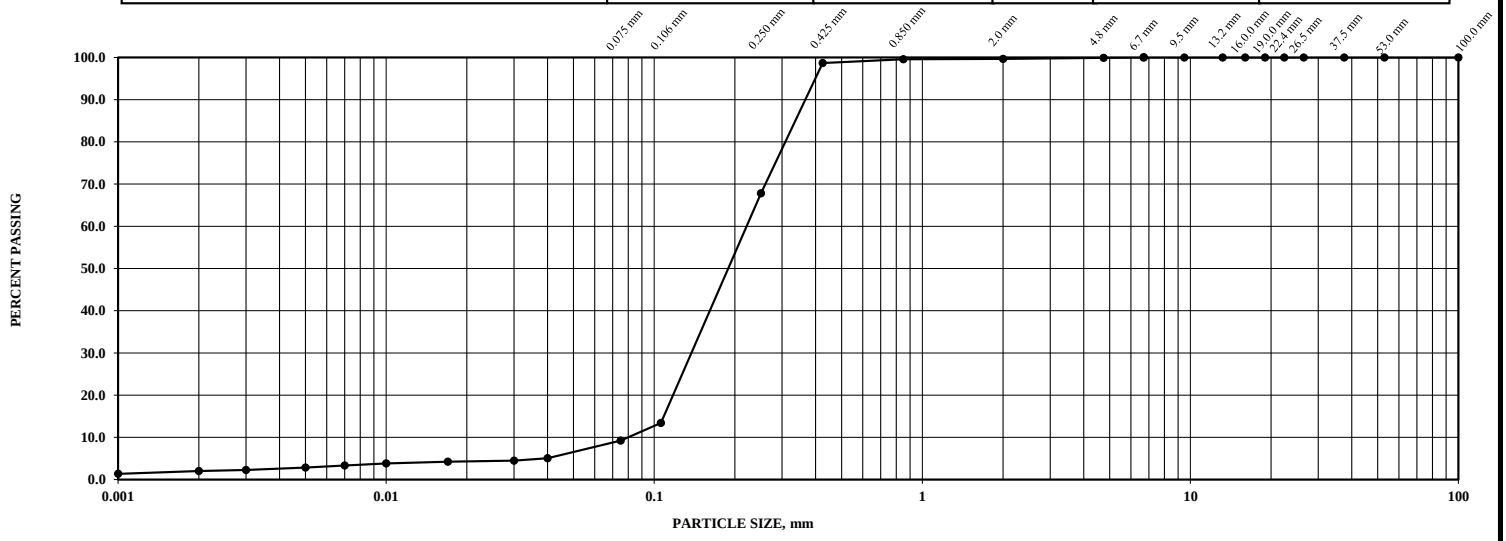
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.229	**D30**	0.150	**D10**	0.081	**Cc**	1.215	**Cu**	2.84

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	5.0
37.5	100.0	0.030	4.5
26.5	100.0	0.017	4.2
22.4	100.0	0.010	3.8
19	100.0	0.007	3.3
16	100.0	0.005	2.8
13.2	100.0	0.002	2.0
9.5	100.0	0.001	1.4
6.7	100.0	**ATTERBERG LIMITS**	
4.75	99.9		
2.00	99.7	Liquid Limit	
0.850	99.6		
0.425	98.7	Plastic Limit	
0.250	67.8		
0.106	13.4	Plastic Index	
0.075	9.2		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		0.1
% SAND (75 µm to 4.75 mm):		90.7
% SILT (2 µm to 75 µm):		7.2
% CLAY (<2 µm):		2.0
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Silt and Clay

REMARKS

Figure: 6

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

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GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregate Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1309	**SAMPLE ID:**	TP - 1 / SS - 3	**SAMPLE DEPTH:**	3.5 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

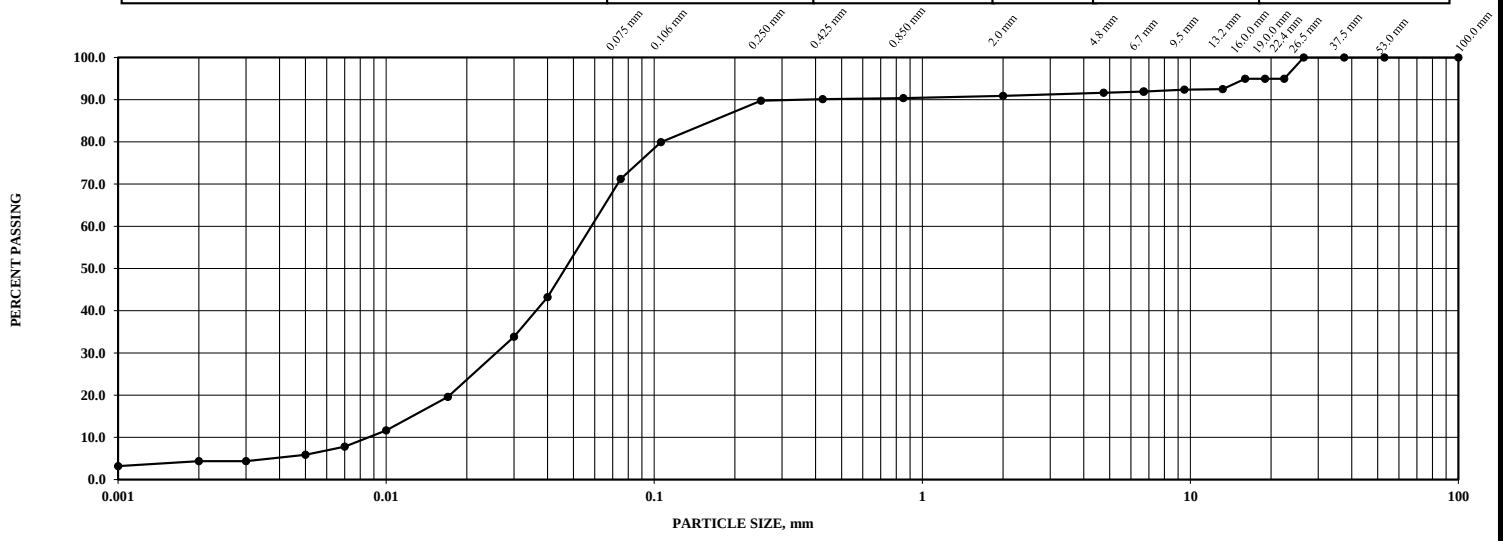
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.061	**D30**	0.026	**D10**	0.009	**Cc**	1.321	**Cu**	7.00

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	43.2
37.5	100.0	0.030	33.8
26.5	100.0	0.017	19.6
22.4	94.9	0.010	11.7
19	94.9	0.007	7.8
16	94.9	0.005	5.9
13.2	92.5	0.002	4.4
9.5	92.4	0.001	3.2
6.7	91.9	**ATTERBERG LIMITS**	
4.75	91.6		
2.00	90.9	Liquid Limit	
0.850	90.4		
0.425	90.1	Plastic Limit	
0.250	89.8		
0.106	79.9	Plastic Index	
0.075	71.2		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		8.4
% SAND (75 µm to 4.75 mm):		20.4
% SILT (2 µm to 75 µm):		66.8
% CLAY (<2 µm):		4.4
GROUP SYMBOL / SOIL DESCRIPTION:		Sandy SILT, trace Gravel, trace Clay

REMARKS

Figure: 7

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregate Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1310	**SAMPLE ID:**	TP - 3 / SS- 2	**SAMPLE DEPTH:**	2.0 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

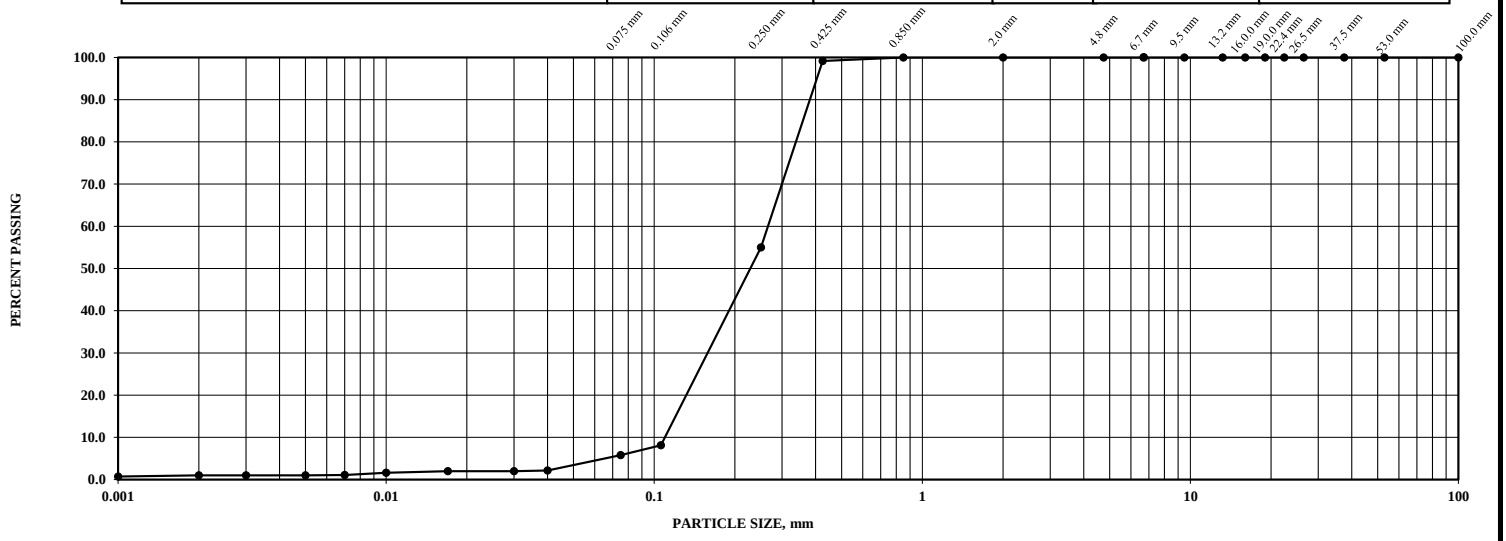
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.270	**D30**	0.173	**D10**	0.112	**Cc**	0.995	**Cu**	2.41

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	2.1
37.5	100.0	0.030	2.0
26.5	100.0	0.017	2.0
22.4	100.0	0.010	1.6
19	100.0	0.007	1.1
16	100.0	0.005	1.0
13.2	100.0	0.002	1.0
9.5	100.0	0.001	0.7
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	100.0	Liquid Limit	
0.850	100.0		
0.425	99.2	Plastic Limit	
0.250	55.0		
0.106	8.1	Plastic Index	
0.075	5.8		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		
% SAND (75 µm to 4.75 mm):		94.2
% SILT (2 µm to 75 µm):		4.8
% CLAY (<2 µm):		1.0
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Silt and Clay

REMARKS

Figure: 8

TESTED BY: Diego Augusto De Arruda, Laboratory Technician

REVIEWED BY: David McBay, CET., Laboratory Supervisor

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GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1311	**SAMPLE ID:**	TP - 7 / SS- 2	**SAMPLE DEPTH:**	2.0 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

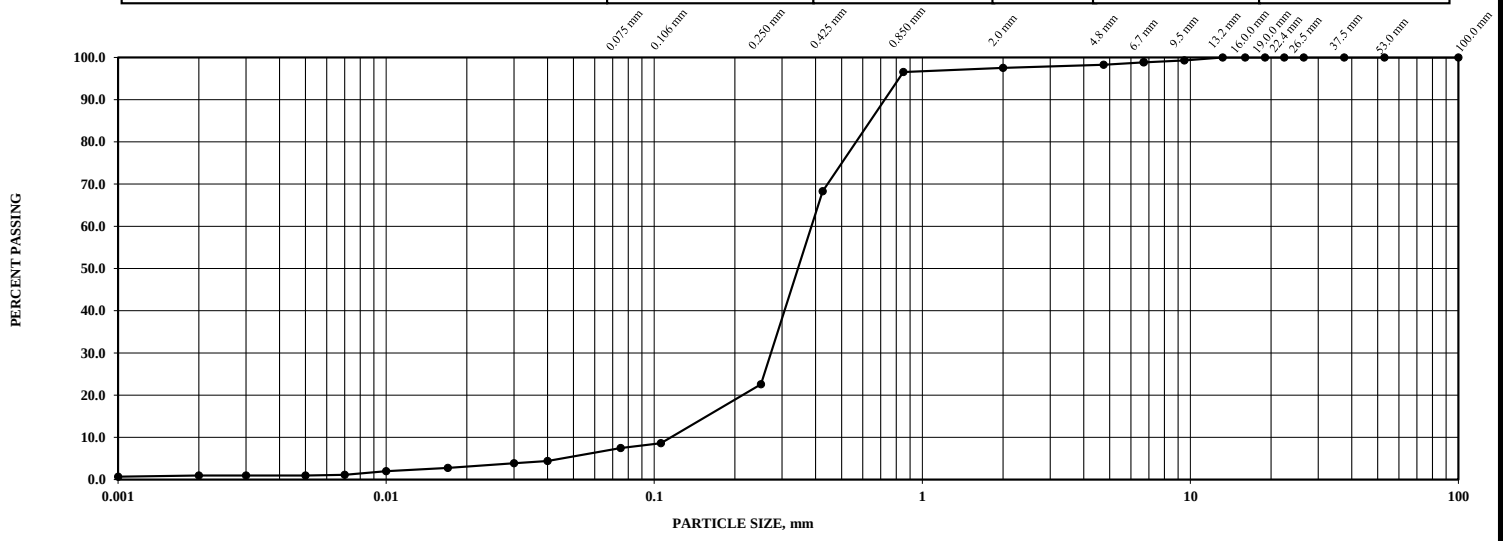
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.393	**D30**	0.278	**D10**	0.120	**Cc**	1.640	**Cu**	3.27

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	4.4
37.5	100.0	0.030	3.9
26.5	100.0	0.017	2.8
22.4	100.0	0.010	2.0
19	100.0	0.007	1.1
16	100.0	0.005	0.9
13.2	100.0	0.002	0.9
9.5	99.3	0.001	0.7
6.7	98.9	**ATTERBERG LIMITS**	
4.75	98.3		
2.00	97.5	Liquid Limit	
0.850	96.5		
0.425	68.3	Plastic Limit	
0.250	22.6		
0.106	8.6	Plastic Index	
0.075	7.5		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		1.7
% SAND (75 µm to 4.75 mm):		90.8
% SILT (2 µm to 75 µm):		6.6
% CLAY (<2 µm):		0.9
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Gravel, Silt and Clay

REMARKS

Figure: 9

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1312	**SAMPLE ID:**	TP - 9 / SS - 3	**SAMPLE DEPTH:**	3.65 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

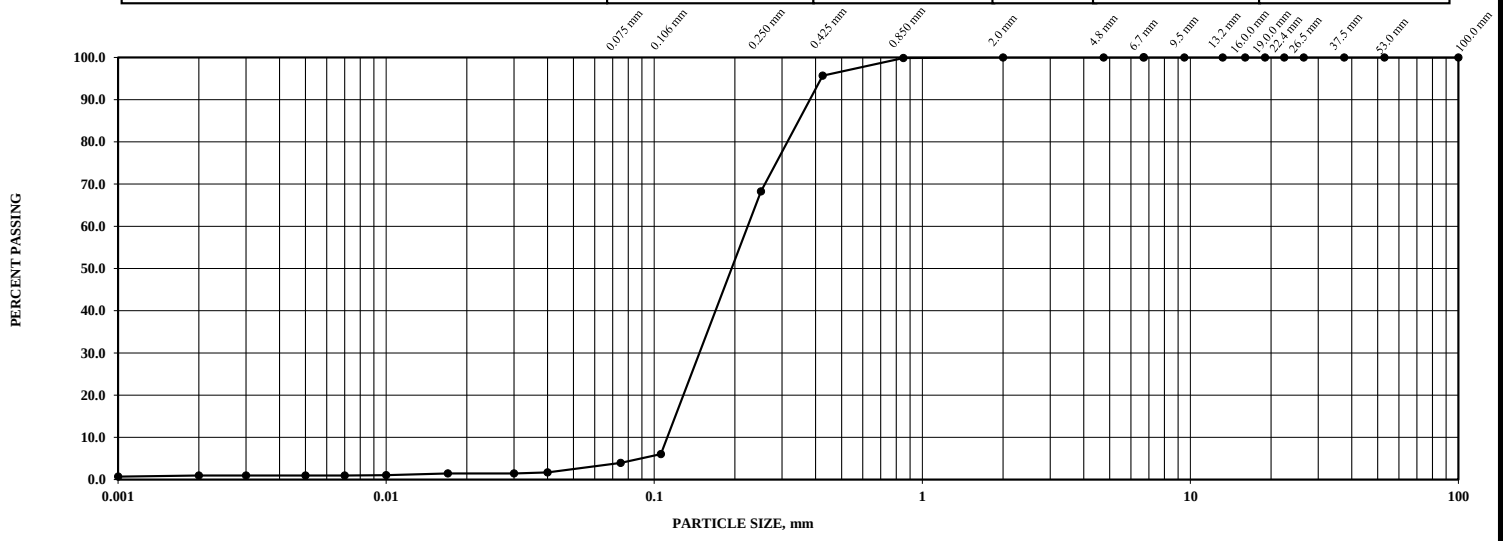
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.231	**D30**	0.161	**D10**	0.115	**Cc**	0.980	**Cu**	2.01

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	1.7
37.5	100.0	0.030	1.4
26.5	100.0	0.017	1.4
22.4	100.0	0.010	1.1
19	100.0	0.007	1.0
16	100.0	0.005	1.0
13.2	100.0	0.002	1.0
9.5	100.0	0.001	0.7
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	100.0	Liquid Limit	
0.850	99.9		
0.425	95.7	Plastic Limit	
0.250	68.3		
0.106	6.1	Plastic Index	
0.075	3.9		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		
% SAND (75 µm to 4.75 mm):		96.1
% SILT (2 µm to 75 µm):		2.9
% CLAY (<2 µm):		1.0
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Silt and Clay

REMARKS

Figure: 10

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

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GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1313	**SAMPLE ID:**	TP - 10 / SS - 2	**SAMPLE DEPTH:**	2.0 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

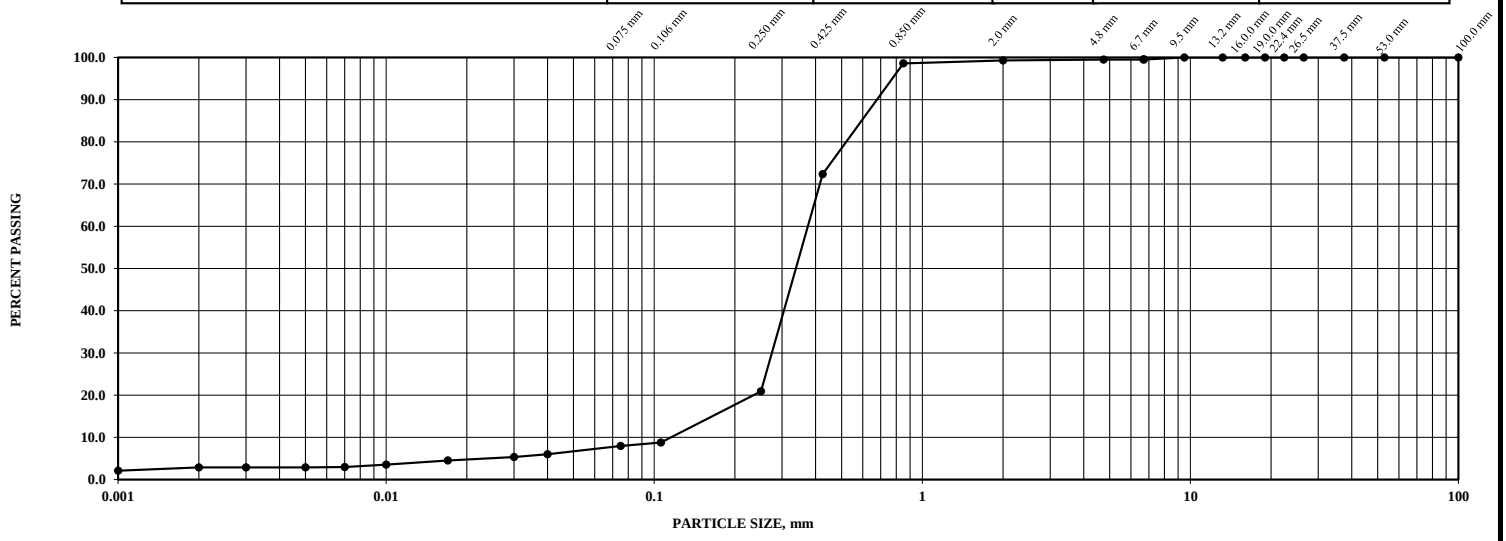
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.383	**D30**	0.281	**D10**	0.120	**Cc**	1.713	**Cu**	3.18

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	6.0
37.5	100.0	0.030	5.3
26.5	100.0	0.017	4.5
22.4	100.0	0.010	3.5
19	100.0	0.007	3.0
16	100.0	0.005	2.9
13.2	100.0	0.002	2.9
9.5	100.0	0.001	2.1
6.7	99.5	**ATTERBERG LIMITS**	
4.75	99.5		
2.00	99.3	Liquid Limit	
0.850	98.6		
0.425	72.3	Plastic Limit	
0.250	20.9		
0.106	8.8	Plastic Index	
0.075	7.9		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		0.5
% SAND (75 µm to 4.75 mm):		91.6
% SILT (2 µm to 75 µm):		5.0
% CLAY (<2 µm):		2.9
GROUP SYMBOL / SOIL DESCRIPTION:		SAND, traces of Gravel, Silt and Clay

REMARKS

Figure: 11

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

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GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02211899.000	**PROJECT NAME:**	Aggregates Assessment 364 St. Johns Road	**CLIENT:**	Allan's Excavating Inc.
LAB NUMBER:	1314	**SAMPLE ID:**	TP - 13 / SS - 3	**SAMPLE DEPTH:**	3.5 m
SAMPLED BY:	Englobe	**DATE RECEIVED:**	May 31, 2023	**DATE COMPLETED:**	June 14, 2023

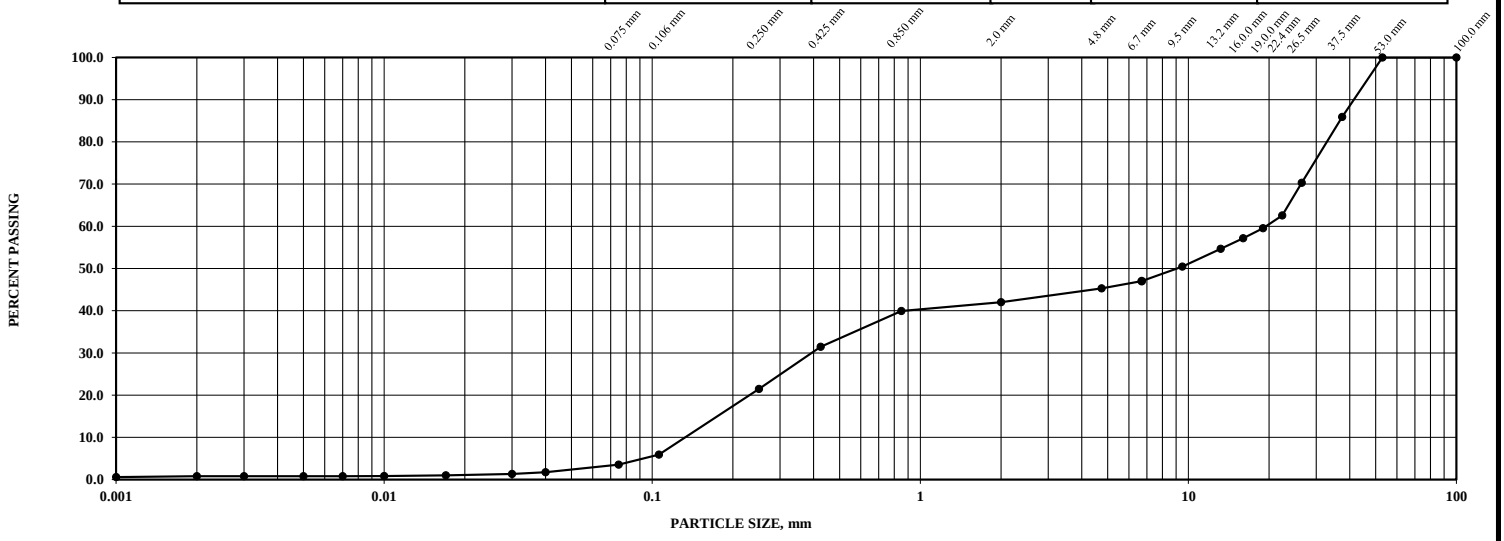
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	19.521	**D30**	0.400	**D10**	0.144	**Cc**	0.057	**Cu**	135.74

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	1.7
37.5	85.9	0.030	1.3
26.5	70.3	0.017	1.0
22.4	62.6	0.010	0.8
19	59.5	0.007	0.8
16	57.2	0.005	0.8
13.2	54.7	0.002	0.8
9.5	50.4	0.001	0.6
6.7	47.0	**ATTERBERG LIMITS**	
4.75	45.3		
2.00	42.0	Liquid Limit	
0.850	39.9		
0.425	31.4	Plastic Limit	
0.250	21.4		
0.106	5.9	Plastic Index	
0.075	3.5		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		54.7
% SAND (75 µm to 4.75 mm):		41.8
% SILT (2 µm to 75 µm):		2.7
% CLAY (<2 µm):		0.8
GROUP SYMBOL / SOIL DESCRIPTION:		SAND and GRAVEL, traces of Silt and Clay

REMARKS

Figure: 12

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

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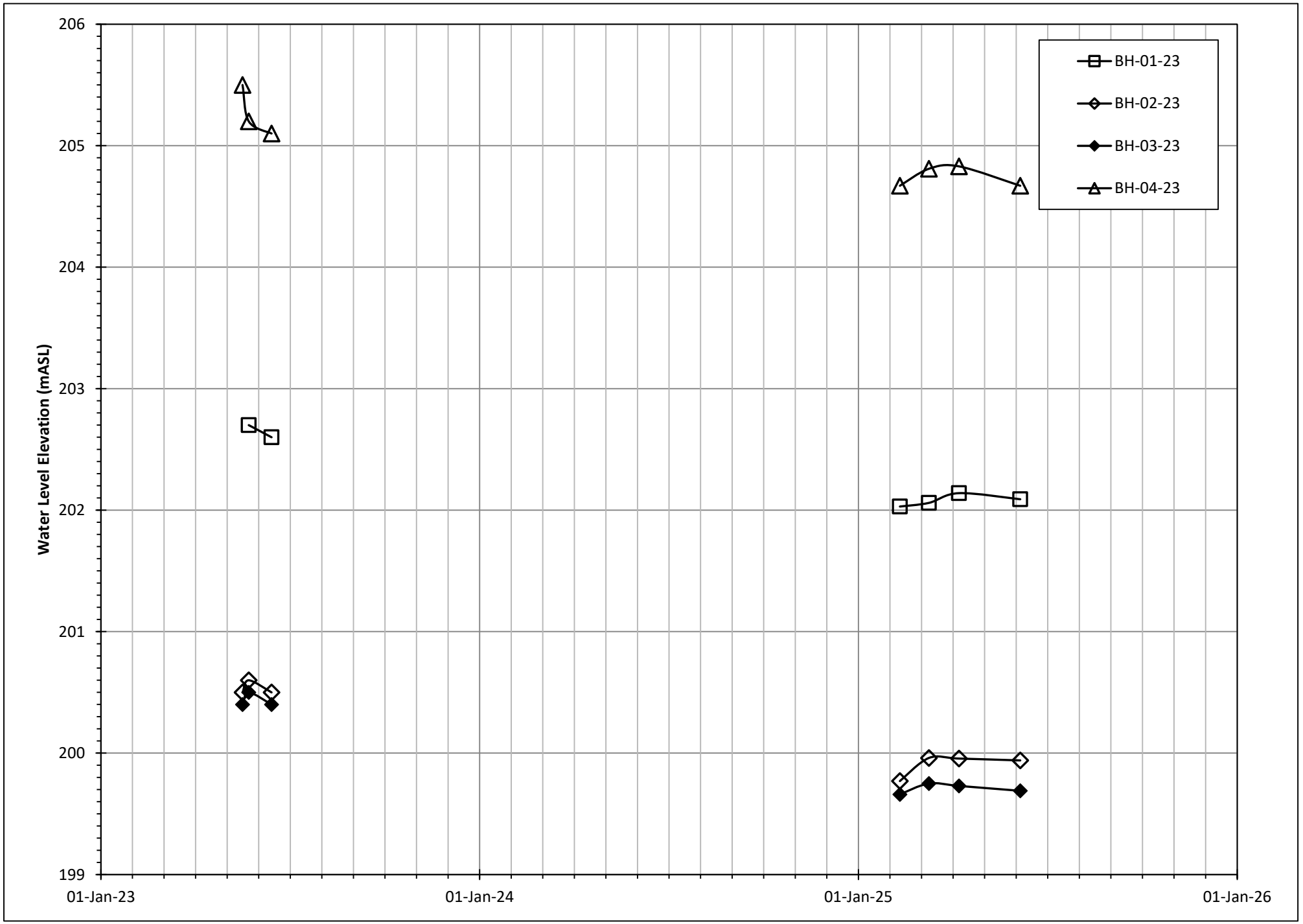
englobecorp.com

Appendix C
Water Level Monitoring Results

Water Level Elevation (mASL)				
Date	BH-01-23	BH-02-23	BH-03-23	BH-04-23
TOW:	213.91	211.38	213.75	213.33
18-May-23	-	200.50	200.40	205.50
24-May-23	202.70	200.60	200.50	205.20
15-Jun-23	202.60	200.50	200.40	205.10
10-Feb-25	202.03	199.77	199.66	204.67
10-Mar-25	202.06	199.96	199.75	204.81
8-Apr-25	202.14	199.96	199.73	204.83
6-Jun-25	202.09	199.94	199.69	204.67

notes:
elevation reference = Site Plan
2023 data from Englobe
mASL = metres above sea level
TOW = top of well



2690905 Ontario Inc
Proposed Kelly Pit

Figure C1: Water Level Hydrograph

Groundwater Science Corp.
Hydrogeologic Assessment

Appendix D
Water Balance Calculations

SMR = Soil Moisture Retention (mm)					
Soil Type	Vegetation Type				
	Shallow Rooted Crops (e.g. beans)	Moderately Deep Rooted Crops (e.g. corn)	Deep Rooted Crops (e.g. pasture)	Orchards	Closed Mature Forest
Fine Sand	50	75	100	150	250
Fine Sandy Loam	75	**150**	150	250	300
Silt Loam	125	200	250	300	400
Clay Loam	100	200	250	250	400
Clay	75	50	200	200	350

Source: *Instructions and Tables For Computing Potential Evapotranspiration And The Water Balance,* C.W. Thornthwaite and J.R. Mather, 1957

Estimated Evapotranspiration Values (mm) using Environment Canada DELHI Weater Station 1991 to 2020 Climate Normals

Month	Daily Average Temperature (C.)	Average Monthly Precipitaiton (mm)	PET (mm)*	AET (mm)* (150 mm SMR)	Surplus (mm)
January	-5.0	81.3	0.0	0.0	81.30
February	-4.5	58.0	0.0	0.0	58.00
March	0.3	70.8	0.0	0.0	70.80
April	6.8	87.4	33.6	33.6	53.80
May	13.6	87.6	79.4	79.4	8.22
June	19.0	81.5	119.0	115.5	-34.00
July	21.2	88.6	135.5	120.6	-32.00
August	20.1	79.5	118.8	98.5	-19.00
September	16.4	85.8	81.1	81.1	4.68
October	10.0	86.1	42.8	42.8	43.35
November	3.9	82.5	12.2	12.2	70.35
December	-1.7	76.3	0.0	0.0	76.30
Annual Total (mm):		965.40	622.29	583.60	381.80

* Source: *Computer Program for Estimating Evapotranspiration Using the Thornthwaite Method* , United States Department of Commerce, National Oceanic and Atmosphere Administration (NOAA) Technical Memorandum ERL GLERL-101 (November 1996)

MOE Infiltration Factors

Topography Factor							
Classification	Criteria					Slope (%)	Value of Infiltration Factor
Flat land	Average Slope Not Exceeding:	0.6	m per	1	km	0.06	0.3
Rolling land	Average slope of:	2.8	m per	1	km	0.28	**0.2**
	to:	3.8	m per	1	km	0.38	
Hilly land	Average slope of:	28	m per	1	km	2.8	0.1
	to:	47	m per	1	km	4.7	

Soil Factor	
Soil Type	Value of Infiltration Factor
Tight impervious clay	0.1
Medium combinations of clay and loam	0.2
Open sandy loam	**0.4**

Cover Factor	
Classification	Value of Infiltration Factor
Cultivated lands	**0.1**
Woodland	0.2

Source:
MOEE Hydrogeological Technical Information Requirements for Land Development Applications,
Ontario Ministry of the Environment and Energy, April 1995

Proposed Kelly Pit - Site Recharge Water Balance

Purpose:

To assess present and future recharge contributions to the local groundwater system

Assumptions:

- climate conditions at the site represented by Environment Canada reported 1991 - 2020 Climate Normals for the DELHI weather station.
- evapotranspiration rates estimated using the Thornthwaite and Mather method.
- runoff rates estimated using MOE Infiltration Factors (*MOEE Hydrogeological Technical Information Requirements For Land Development Applications*, April 1995).
- the assessment area consists of the proposed total licence area, approximately 25.0 ha.
- existing conditions include sandy soil, rolling topography, cropland
- under future conditions all runoff is retained (no pond created)

1) Water Balance Components

Infiltration Factor for Land Surface Within Runoff Areas

Rolling land	0.2	surplus = precipitation - evapotranspiration
Open sandy loam	0.4	
Cultivated lands	0.1	
Factor:	0.7	70 % of surplus becomes infiltration recharge
	0.3	30 % of surplus becomes runoff

General Site Recharge Calculation (includes pond areas)

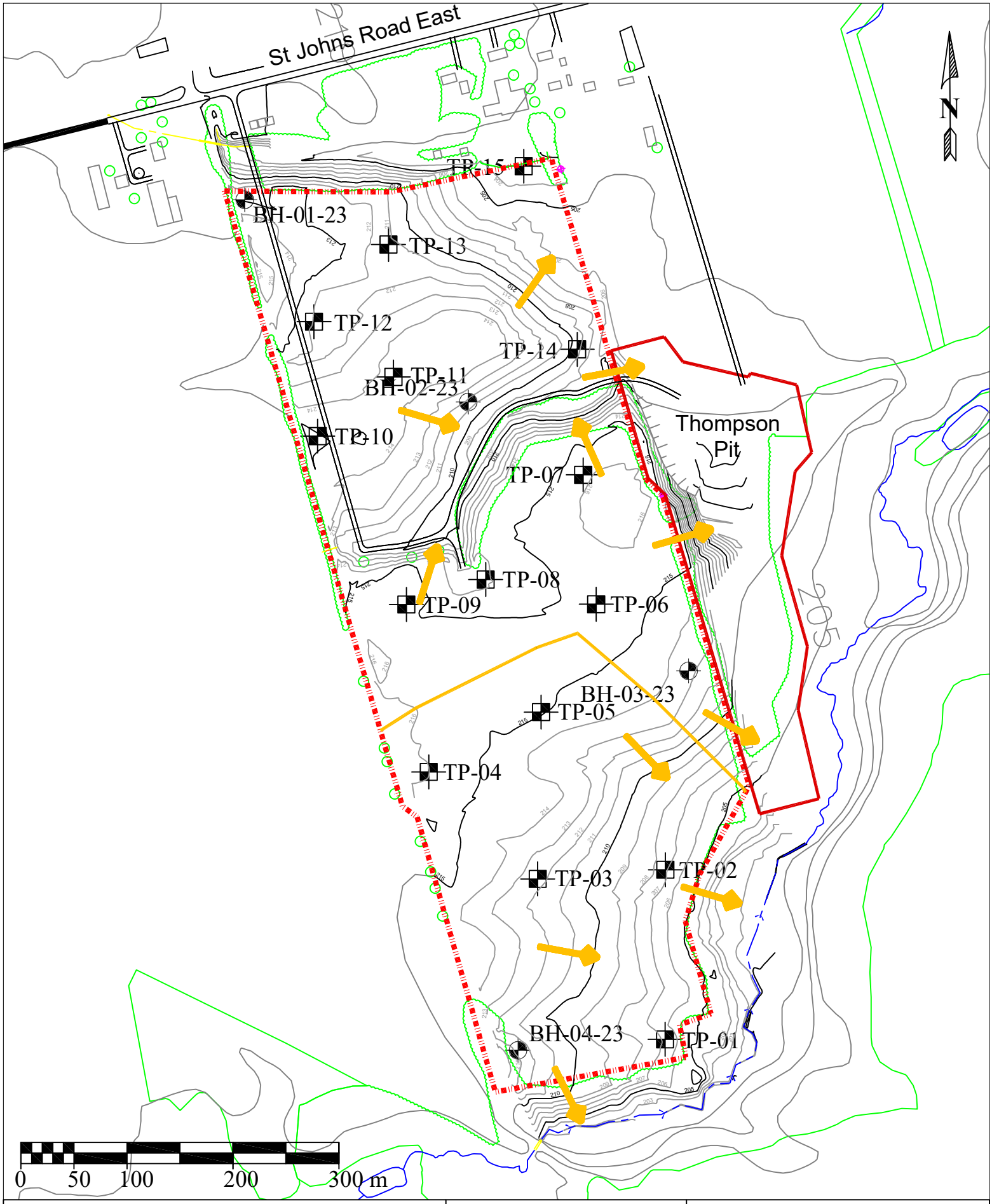
site recharge = precipitation - evapotranspiration - runoff

2) Estimate of Existing Recharge

Precipitation Rate =	0.96540	m/yr
Evapotrans. Rate =	0.58360	m/yr
Surplus Rate =	0.38180	m/yr
Recharge Rate =	0.26726	m/yr
Runoff Rate =	0.11454	m/yr
Assessment Area =	25	ha
=	250,000	m^2
Existing Site Recharge =	66,815	m^3/yr
Recharge Rate =	0.267	m/yr
=	2.12	L/s
Existing Runoff =	28,635	m^3/yr
=	0.91	L/s

3) Estimate of Future Recharge

Precipitation =	241,350	m^3/yr
Evapotranspiration =	145,900	m^3/yr
Runoff =	0	m^3/yr
Future Recharge =	95,450	m^3/yr
Recharge Rate =	0.382	m/yr
=	3.03	L/s



Site (approx.)
local catchment divide, runoff directions shown

vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

Modified from: geographic data obtained through Land Information Ontario
Contains information licensed under the Open Government Licence – Ontario.

June 2025
Scale: as shown

GROUNDWATER SCIENCE CORP.

Figure D1: Runoff Divide

2690905 Ontario Inc.
Proposed Kelly Pit

Ontario

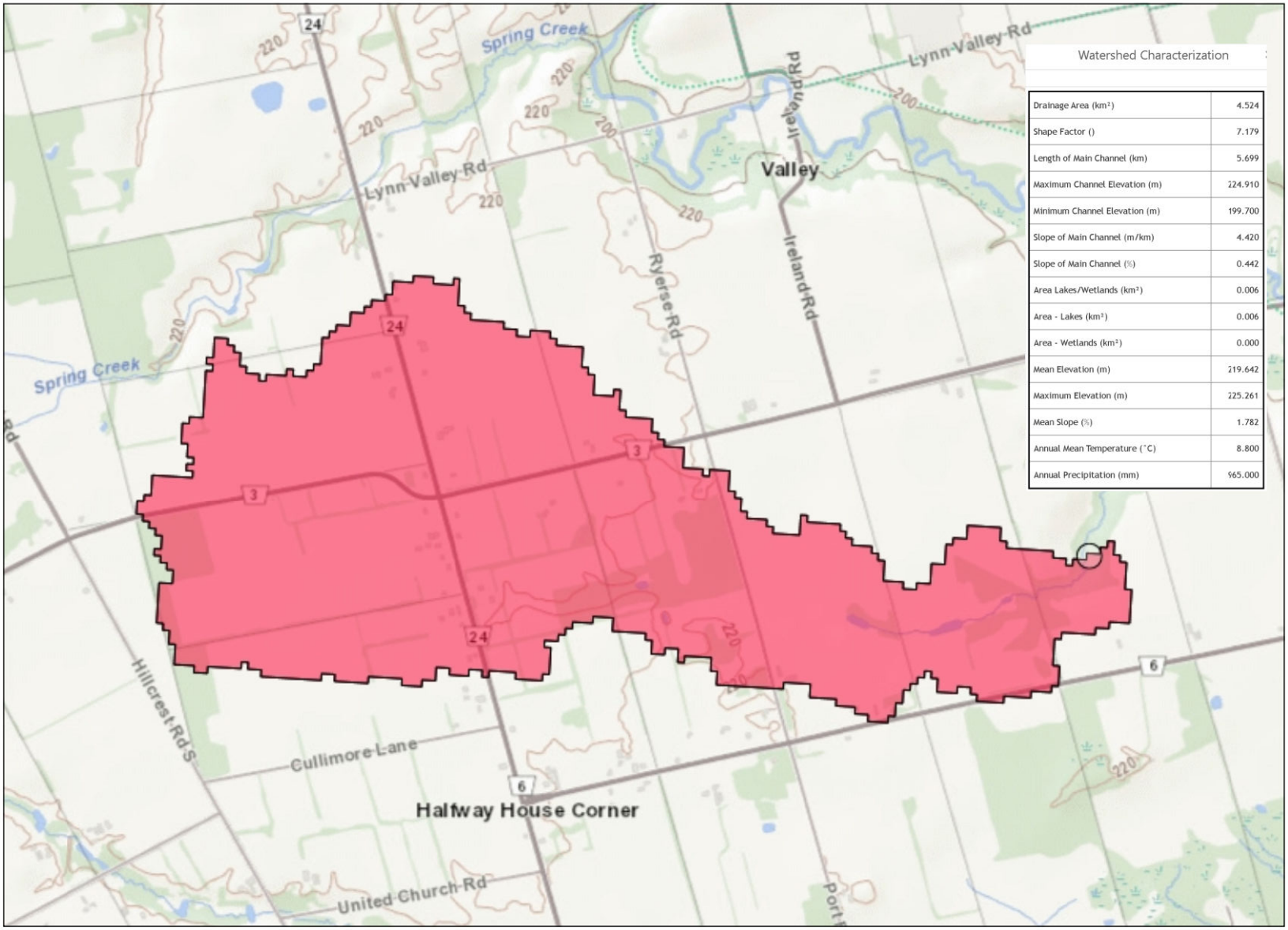
MINISTRY OF NATURAL RESOURCES

Ontario Watershed Information Tool

Kelly Pit Upstream Watershed

Notes:
OWIT output

FIGURE D2



Watershed Characterization

Drainage Area (km²)	4.524
Shape Factor ()	7.179
Length of Main Channel (km)	5.699
Maximum Channel Elevation (m)	224.910
Minimum Channel Elevation (m)	199.700
Slope of Main Channel (m/km)	4.420
Slope of Main Channel (%)	0.442
Area Lakes/Wetlands (km²)	0.006
Area - Lakes (km²)	0.006
Area - Wetlands (km²)	0.000
Mean Elevation (m)	219.642
Maximum Elevation (m)	225.261
Mean Slope (%)	1.782
Annual Mean Temperature (°C)	8.800
Annual Precipitation (mm)	965.000

Legend

- Assessment Parcel
- Secondary Watershed
- Tertiary Watershed
- Quaternary Watershed
- Great Lakes - St. Lawrence Basin
- Hudson - James Bay Basin
- Nelson River Basin
- Hydrometric Monitoring Station
- Diversions
- Waterbody Outlet
- Conservation Authority Dam
- Provincial Dam
- Federal Dam
- OPG Dam
- Other Dam
- Virtual Flow Segment

Land Cover Compilation

- Other
- Cloud/Shadow
- Clear Open Water
- Turbid Water
- Shoreline
- Mudflats
- Marsh
- Swamp
- Fen
- Bog
- Heath
- Sparse Treed
- Treed Upland
- Deciduous Treed
- Mixed Treed
- Coniferous Treed
- Plantations - Treed Cultivated
- Hedge Rows
- Disturbance
- Open Cliff and Talus
- Alvar
- Sand Barren and Dune
- Open Tallgrass Prairie
- Tallgrass Savannah
- Tallgrass Woodland
- Sand/Gravel/Mine Tailings/Extraction
- Bedrock
- Community/Infrastructure
- Agriculture and Undifferentiated Rural Land Use

1.3 0 km 0.67 1.3

Scale: 1 : 26,497

Projection: Web Mercator

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Appendix E
Qualifications

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Andrew Pentney, B.Sc., P.Geo.

Qualifications

June 2025

Current Position

Principal, Senior Hydrogeologist

Groundwater Science Corp., Stratford, ON

- Providing hydrogeological consulting expertise to regulatory agencies, environmental consultants and industry. Services ranging from individual consulting and assessments to project support for larger study teams, including testimony at OMB (OLT) hearings.
- Over 35 years of hydrogeologic consulting experience.

Education

B.Sc. (1987) : University of Waterloo, Waterloo, ON

- General Science, including Geology courses (stratigraphy, quaternary geology and hydrogeology).

Professional memberships

Registered Professional Geoscientist in Ontario

Licenced MECP Contractor

Range of Experience

- Technical consultation for 8 Subwatershed Scale characterization studies (GRCA, CVC). Focus on assessing groundwater – surface water interaction (at rivers, streams, wetlands, ponds).
- Planning approval and environmental peer review, watershed planning support to Credit Valley Conservation on an as-needed basis from 2001 to 2014. Focus on protecting stream and wetland systems.
- Community Scale Septic System Impact studies for Alton, Cheltenham and Erin as part of Village Planning Assessments.
- Water supply development, testing and impact assessment, Permit To Take Water consulting, Source Water Protection characterization and water balance studies for municipal water supplies, golf courses, industrial supply (over 20 assessments).
- Aggregate Resource Act groundwater assessments, and associated Zoning and Official Plan amendment impact assessments, at over 50 above water and 30 below water extraction sites (pits and quarries). Extensive assessment and analysis of groundwater impact potential, private wells, groundwater-surface water interactions (most studies assessed, rivers, streams, wetlands, springs and/or ponds).
- Aggregate Resource Act compliance monitoring at over 70 above water or below water extraction sites. Includes measurement and analysis of water level, water quality, private well impact potential, thermal impact potential and groundwater-surface water interaction.

Level 1 and 2 Natural Environment Report

364 St. Johns Road East, Norfolk County 2690905 Ontario Inc.

Aug 2025

1.0 INTRODUCTION

This Level 1 and 2 Natural Environment Report is being prepared for Allan Gee (the applicant), occurring on the entire tablelands of 364 St. Johns Road East, Norfolk County, ON (Figures 1 & 2). CJDL and Esher Planning have been retained by the applicant to apply for the extraction licence under the *Aggregate Resources Act 2021* for the properties.

The proponents intend to utilize the tablelands of approximately 25 ha for a Class A Below Water aggregate extraction pit. The proposed extraction will not extend into the water table, but will be within 1.5 metres of the maximum predicted high water table and is therefore considered to be a Below Water Table Licence application.

Vroom + Associates was retained to complete a Level 1 and 2 Natural Environment Report to support a sand extraction licence application under the *Aggregate Resources Act 2021* for the property noted above. In this report, the term "license boundary" refers to any part of the land that will be licensed for extraction. "Adjacent land" refers to the areas within 120 m of the license boundary, and "legal parcel" refers to the entire legal parcel where the license boundary is located.

1.1 Purpose and Objectives

"The purposes of the Natural Environment Report are to determine the presence of natural heritage environment/areas and fish habitat in accordance with the Aggregate Resources of Ontario Provincial Standards and to ensure that any necessary preventative, mitigate or remedial measures are undertaken for their protection."

A Natural Environment Level 1 Report identifies, through a records review and site investigations, whether one or more of the following features exists on-site or within 120 m:
_habitats of endangered and threatened species
_wetlands
_woodlands
_valleylands
_significant wildlife habitat
_Areas of Natural and Scientific Interest (ANSIs)
_fish habitat

The natural heritage features that are present within the license boundary and/or the 120 m adjacent lands are evaluated for provincial significance based on the Natural Heritage Reference Manual (MNRF, 2010) and the Significant Wildlife Habitat Criteria Schedules for Region 7E (MNRF, 2105).

If the natural heritage features are evaluated to be significant, the features require further review in a subsequent Level 2 Report. The Level 2 Report is an Environmental Impact Study (EIS) where recommendations on avoidance, mitigation, restoration, and/or compensation measures are provided.

Acts, guidelines, and land use plans reviewed as part of this evaluation process include:
_Conservation Authorities Act: Ontario Regulation 178/06,
_Norfolk County Official Plan 2023

_Norfolk County Zoning By-Law No. 1-Z-201421 (2020),
_Natural Heritage Reference Manual (MNRF, 2010),
_Significant Wildlife Habitat Criteria Schedules for Region 7E (MNRF, 2015),
_Natural Heritage Information Centre (NHIC) Database - Lands Information
_Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) AgMaps Database - Lands Information, and
_Ministry of Environment, Conservation, and Parks (MECP) Source Water Protection Information Atlas Database - Water Information

1.2 License Boundary and Description

The proponent is proposing a Class "A" Pit (up to 325,000 tonnes/year) above the groundwater table aggregate extraction operation. The proposed 24 ha license boundary is located on the entire tablelands of the legal parcel at 364 St. Johns Rd East, Norfolk County, ON. The proposed license pit area extends over a single agricultural lot, legally described as part of Lot 5, Concession 2, Woodhouse (Figures 1 & 2). Agricultural fields and natural heritage features surround the proposed license boundary. There is one residential building within 120 m of the proposed license boundary.

1.3 Report Format

The following sections provide an assessment of natural heritage features and functions, determining the boundaries of natural features and evaluating the significance of these features.

Level 1 Report Requirements
Section 2: Records Review - Review existing information to identify any natural heritage features within 120m of the license boundary.

Section 3: Site Investigations - A summary of site-specific investigations and/or reconnaissance to update information obtained through the records review. Natural heritage features or functions no longer present or not previously identified in the records review are noted.

Section 4: Natural Heritage Considerations Summary - Identifies which features, if any, within the license boundary or adjacent lands that merit further consideration of the application.

Level 2 Requirements (if needed)
Section 5: Environmental Impact Assessment - This section provides an overview of provincially significant features and/or functions with recommendations for avoidance, mitigation, restoration, and/or compensation, which should be included in the application.

2.0 LEVEL 1 NATURAL ENVIRONMENT REPORT

A review of provincial and municipal records was completed to determine whether the proposed license boundary and/or the adjacent 120m is:

a) In or adjacent to a provincial park or conservation reserve,
b) In or adjacent to a natural feature, including:
    _Habitat of Endangered and Threatened Species
    _wetlands
    _woodlands
    _valleylands

_wildlife habitat
_Areas of Natural or Scientific Interest (ANSIs)
_fish habitat

We have reviewed the following resources to determine the presence or absence of natural heritage features on or within 120 m of the proposed aggregate limits:

Federal
_ Department of Fisheries and Oceans Species at Risk Mapping
Provincial
_ Natural Heritage Information Centre (NHIC) Database - Lands Information Ontario database and mapping website
Municipal
_ Norfolk County Official Plan (2023),
_ The Natural Areas Inventory of the Regional Municipality of Haldimand-Norfolk (1987)
Conservation Authority
_Long Point Region Conservation Authority Regulated Areas mapping
Others
_ Quaternary Geology
_ Physiography
_ Topography
_ Soils
_ Well Records or Bore Hole Data

2.11 Provincial Records

Several stipulations are outlined by Ontario Regulation 244/97 under the *Aggregate Resources Act* (2021) regarding aggregate resource extraction within 120 m of a Natural Heritage area. The policy defines eight natural heritage features where resource extraction operations are not permitted in or within 120 m unless it has been demonstrated by a Level 2 Natural Environment Report that there will be no negative impacts on the natural features or their ecological functions. These eight natural heritage features and their applicability to the proposed resource extraction operation based on database screenings include:

Table 1: Natural Heritage Features [O. Reg 244/97 *Aggregate Resources Act* (2021)]

Significant Wetlands	Not present
Other Coastal Wetlands in Ecoregions 5E, 6E and 7E	Not present
Fish Habitat	Present within 120 m
Significant Woodlands and Significant Valleylands in Ecoregions 6E and 7E	Present within 120 m
Habitat of endangered or threatened species	To be discussed in this study

Significant Wildlife Habitat (SWH)	To be discussed in this study
Significant areas of natural and scientific interest (ANSI's)	Not present
Within the area of one or more provincial plans, any key natural heritage features not included above	Not present outside area of listed provincial plans (See Appendix A)

The Ministry of Environment, Conservation, and Parks (MECP) has taken over the responsibility of the Endangered Species Act (ESA), 2007. The MECP protocol consists of conducting a self-screening and submitting an Information Gathering Form (IGF) if a project is likely to contravene the ESA and require permitting.

According to the Natural Heritage Information Centre (NHIC) 1km^2 mapping, seven species at risk may be found within 1km of the license boundary and the 120m adjacent lands. The species at risk include the following:

Table 2: NHIC Species At Risk Habitat Preferences

Species	Rank	Habitat Description	Likelihood of occurrence within Subject Lands
American Badger	[COSEWIC: END / COSSARO: END]	In Ontario, badgers are found in a variety of habitats, such as tall grass prairie, sand barrens, and farmland. (https://www.ontario.ca/page/american-badger)	Unlikely, given lack of suitable habitat.
Louisiana Waterthrush	[COSEWIC: THR / COSSARO: THR]	Inhabits steep, forested ravines with fast flowing streams, especially clear coldwater. Will inhabit swamps with openings and pools of water.	Potential within the forested ravine on-site.
Wood Thrush	[COSEWIC: THR / COSSARO: SC]	Inhabits mature deciduous and mixed forests. Seek moist strands of trees with well-developed undergrown and tall trees. Larger forests are preferred. Nests are built in living samplings, trees or shrubs, typically Sugar Maple or Beech.	Potential within the woodlands on-site.

		Migrates to Mexico and South America.	
Bobolink	[COSEWIC: SC / COSSARO: THR]	Inhabit tall grass prairies and other open meadows. They may also inhabit hayfields. Nesting occurs on the ground within dense grass patches.	Unlikely given lack of prairie and meadow habitat.
Bank Swallow	[COSEWIC: THR / COSSARO: THR]	Nests in burrows in natural or human made settings where there are vertical faces in silt and sand deposits. Nests are commonly found in banks of rivers and lakes. Migratory bird for overwintering.	Potential within the eastern aggregate pit slopes.
Fowlers Toad	[COSEWIC: END / COSSARO: END]	Habitats include: open beaches, dunes, sandy shorelines, rocky pools, creek and stream mouths, backshore wetlands, and marshes along the northern shore of Lake Erie.	Unlikely given lack of suitable habitat.
Eastern Milksnake	[COSEWIC: Not Ranked / COSSARO: Not Ranked]	Inhabits environments including prairies, meadows, pastures, hayfields, rocky outcrops, rocky hillsides and forests, both mixed and deciduous. They prefer areas with abundant high forest cover. Require corridors to allow movement between breeding, basking and hibernation habitats. Eggs are laid in areas including rotting logs, stumps, mammal burrows, manure piles, leaf mounds, sawdust piles, sand or loose soil. Hibernation habitats may include old burrows and rock crevices, or even anthropogenic structures.	Potential given the wide range of suitable habitats and the presence of woodlands.

There are no provincial parks, conservation reserves or ANSI's on or adjacent to the license boundary or the 120m adjacent lands (NHIC website,

https://www.lioapplications.lrc.gov.on.ca/Natural_Heritage/index.html?viewer=Natural_Heritage.Natural_Heritage&locale=en-CA, October 2023).

There are no significant wetlands or watercourses within the proposed license boundary. There is a watercourse within the legal parcel, at the south end, within 120 m of the proposed license boundary.

2.1.2 LPRCA Records

Under the *Conservation Authorities Act* Ontario Regulation 178/06, the Long Point Region Conservation Authority (LPRCA) regular abiotic factors relating to Natural Hazards such as flooding and erosion, wetlands and watercourses as well as lands within 30 m of these features.

Based on the LPRCA regulation limits mapping, LPRCA-regulated lands cover the woodlot and watercourse on the south end of the property which are outside of the proposed extraction limits. As long as no intrusion occurs within the LPRCA regulated lands no permit will be required.

2.1.3 Municipal Records

Norfolk County Official Plan, 2023

Land Use Designations - Schedule "B-4": The license boundary is designated Agriculture and Hazard Lands (Figure 3).

Natural Heritage Designations - Schedule "C-3": There are Significant Woodlands within the proposed license boundary or within the 120m study area. There are Significant Woodlands within the legal parcel at the south end of the property. This wooded feature continues northeast off-site (Figure 4).

Norfolk County Zoning By-law

Zoning Schedule A-3: The proposed license boundary is zoned as Agricultural. The 120m adjacent lands are zoned as Agricultural, Hazard Lands surrounding the forested ravine to the south, and Extractive Industrial as there is an existing aggregate pit to the east.

The Norfolk County OP Section 4.6.1 states that:

> "The County shall not permit new pits and quarries in Provincially Significant Wetlands, as identified in Section 3.5 (Natural Heritage Systems) and shown on Schedule "B" of this Plan. Prior to the development of new pits and quarries on lands adjacent to the habitat of endangered species and threatened species, and Environmental Impact Study shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study) demonstrating to the satisfaction of the County and any other required approval agency that the proposed pit or quarry will have no negative impact on the natural features or their ecological functions.
>
> The County shall generally not permit new pits and quarries in Natural Heritage Features, as identified on Schedule "J" to this Plan and listed in Table 2 of Section 3.5.2. Prior to the development of new pits and quarries within or adjacent to a Natural Heritage Feature, an Environmental Impact Study shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study). When and where the quality

> of available aggregate or the market changes significantly, new pits and quarries may be considered within Significant Woodlands close to an Urban Area."

There are a number of stipulations regarding requirements for Environmental Impact Studies (EIS) within the Norfolk County OP; this report complies with those stipulations. These requirements are fully described in Appendix B.

The proposed license boundary is located within an Aggregate Resource Area, according to the Norfolk County OP, Schedule "J" mapping. The applicant is proposing a site-specific Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA). The Norfolk County OP, Section 4.6.1 k) iv) states:

"k) Applications for Official Plan and/or Zoning By-law amendments, as referenced in Subsections i) and j) shall be reviewed on the basis of the following:

> iv) potential impact on groundwater quality and quantity, Provincially Significant Features, Natural Heritage Features, and the broad natural environment;"

2.1.4 Other Records

Physiography

The proposed license boundary and the 120m adjacent lands are located within the Norfolk Sand Plain (OGS).

Topography

Topographically, the surface generally slopes to the northern and southern ravine features. Contour lines shown on OMAFRA AgMaps identify a peak elevation level of 215 m within the southern end of the legal parcel, surrounded by steep contour lines to the south and a gentle slope to the north. This area of topographic movement is located within the license boundary. The northern end of the legal parcel has minimal rolling topography.

Soils

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) AgMaps and the Soils of the Regional Municipality of Haldimand-Norfolk (Volume 1 and 2) identify that are four soil types within the proposed license boundary, with a total of eight within the legal parcel. The soils present within the proposed license boundary include Fox (FOX1/C), Walsher (WSH3/D>B) and Brant (BRT13/G>B, BRT1/E).

The Fox soils are mainly lacustrine sand and loamy sand. Their dominant drainage capabilities are rapid to well-draining. The dominant sloping within this soil type is defined as smooth and very gently sloping (2-5%).

The Walsher soil type present consists of mainly 40-100 cm sandy textures over lacustrine silt loam. The drainage capabilities are dominantly well-drained. Within this soil type, the dominant slopes are smooth to very gentle sloping (2-5 %).

There are two Brant soils present. Brant 1 soils are mainly lacustrine silt loam. Their drainage capabilities are well drained. The sloping within this soil type is smooth to moderate (10-15%). Brant 13 soils are 15-40 cm sandy textures over lacustrine silt loam, with secondary textures

including 40-100 cm sandy over lacustrine silt loam. The drainage capabilities are dominantly well drained. Within this soil type, the dominant slopes are smooth to very steeply sloping (16-30%).

Ontario well records were retrieved from a well south of the subject lands and outside the study area. The 2018 record reported 3.6 m of brown sand, over 6.1 m of brown clay, over 5.8 m of brown fine sand, over 1.9 m of grey sand, over 3.7 m of grey fine sand, terminating in 2.4 m of grey fine sand. There is an elevation difference between this well at 215m and the proposed license boundary at 215-203m.

Englobes 2023 data determined that the groundwater levels were observed at 6.71-12.43 below grade among 4 borehole between May 12- June 15 2023.

The presence of sandy soils within the subject lands implies that infiltration of groundwater to adjacent communities could occur. The MECP Source Protection Information Atlas provides the following conditions for the subject lands:

Source Protection Area: **Long Point**
View Source Protection Plan
Wellhead Protection Area: **No**
Wellhead Protection Area (WHPA-E): **No**
Intake Protection Zone: **No**
Issue Contributing Area: **No**
Significant Groundwater Recharge Area: **Yes** ;
Highly Vulnerable Aquifer: **Yes** ;
Event Based Area: **No**
Wellhead Protection Area Q1: **No**
Wellhead Protection Area Q2: **No**
Intake Protection Zone Q: **No**
Information is current as of: **April 19, 2024**

The proposed license boundary is within a Significant Groundwater Recharge Area, as well as a Highly Vulnerable Aquifer, with a score of 6.

2.2 Records Review Summary

There are Significant Woodlands and a watercourse within the proposed license boundary and the 120m adjacent lands. The Significant Woodland extends onto the subject lands 100-145 m from the southern and southeastern parcel boundaries. This woodlot is a part of a larger 30 Ha woodland system extending to the northeast and south. Species at Risk (SAR) and Significant Wildlife Habitat (SWH) are present within 120m of the proposed license boundary (Figure 5).

Section 3 will assess the habitat suitability for the species of provincial interest and the SAR listed by NHIC and the SAR listed by NHIC, on and within 120m of the proposed license boundary. Site investigations are required and discussed in the next section.

3.0 SITE INVESTIGATIONS

Vroom + Associates attended the site in several visits during Spring and Summer 2023 to review the attributes of the subject lands and their 120 m adjacent lands. Field work for Ecological Land Classification (ELC) and floral inventory was completed on April 6th, April 14th, May 17th, June 5th, July 8th, August 16th and September 21st by floral specialist Paul O'hara (Blue Oak Native Landscapes) (Appendix 1). Three in-season site visits were completed on April 14th, May 29th, and June 22 2023, by faunal specialist James Holdsworth.

As noted, no floral species were listed in the NHIC 1 km^2 database screening as being known to occur within the vegetation communities in the study area.

As noted, the NHIC 1 km^2 database screening demonstrated the following faunal Species at Risk have historically been recorded within the general area of the subject lands:

_Louisiana Woodthrush [COSSARO: THR/COSEWIC: THR]
_Wood Thrush [COSSARO: SC /COSEWIC: THR]
_Bobolink [COSSARO: THR/ COSEWIC: SC]
_Bank Swallow [COSSARO: THR / COSEWIC: THR]
_American Badger [COSSARO: END/ COSEWIC: END]
_Eastern Milksnake [COSSARO: NR/ COSEWIC: NR]
_Fowlers Toad [COSSARO: END / COSEWIC: END]

3.1 Vegetation Communities

Classification of vegetation communities is based on the Ecological Land Classification System for Southern Ontario (ELC, 1998, 2008) (Figure 6). Field investigations and ELC field surveys were conducted on April 6th, April 14th, May 17th, June 5th, July 8th, August 16th and September 21st, 2023, by Paul O'Hara (Blue Oak Native Landscapes).

The proposed license boundary is 25 ha in size. 20.5 ha is agriculture, 1.5 ha of Significant Woodlands (FOCM6-3) and the remaining 3 ha is composed of natural and cultural hedgerows (THMM1-1). The southern feature and the periphery hedgerows will be retained. The central 1.3 Ha central swathe is proposed to be removed.

There are ten Ecosites as identified by the Ministry of Natural Resources and Forestry (MNRF) Ecological Land Classification (ELC 1998 and 2008). The following communities are illustrated in Figure 6 and include:

Non-Natural Heritage Areas
_FOCM6-3 Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type (North Ravine) 2.76 ha
_FOCM6-3 Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type (Central Sawthe) 1.32 ha
_THMM1-1 Native Mixed Regeneration Thicket Type (West Hedgerow) 1.24 ha
_THMM1-1 Native Mixed Regeneration Thicket Type (East Hedgerow) 1.25 ha

Within Natural Heritage Areas
_MEMM3 Dry-Fresh Mixed Meadow Ecosite 0.95 ha
_WODM3-2 Dry Black Oak Woodland Type
_FOMM9-2 Fresh-Moist White Pine-Hardwood Mixed Forest 1.95 ha + 0.87 ha
_MAMO2-1 Jewelweed Forb Organic Meadow Marsh Type 2.29 ha

_FOMC5 Naturalized Coniferous Hedgerow Ecosite
_FOCM6-1 Dry-Fresh White Pine Naturalized Coniferous Plantation Type

Non-Natural Heritage Areas:
The Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type, **FOCM6-3**, combined with Dry-Fresh Mixed Meadow Ecosite, **MEMM3**, at the northern border of the legal parcel and is a mix of dry cultural meadows and thicksts with naturalized coniferous plantation dominated by Scots Pine. Other species include Old Growth Oak species (Black Oak, Red Oak), Common Milkweed (Asclpias syriaca), asters (Symphytotrichum spp.) and goldenrods (Solidago spp.). Two individuals of Endangered Flowering Dogwoods (Cornus florida) were documented around the homestead in the northeast. A total of 93 species were recorded in the FOCM6-3/MEMM3

The eastern and western Native Mixed Regeneration Thicket Type, **THMM1-1**, are hedgerows located on the border of the legal parcel and are dominated by non-native herbaceous flora, with other species including high-quality native trees and shrubs. Original Black Oak (Quercus veluntina) are the most common tree within the eastern hedgerow. Other native trees include White Oak (Quercus alba), Red Oak (Quercus rubra), Black Cherry (Prunus serotina), Black Walnut (Juglans nigra), Cottonwood (Populus deltoides), White Elm (Ulmus americana), Hackberry (Celtis occidentalis), Red Cedar (Juniperus virginiana) and Pagoda Dogwood (Cornus alternifolia). Native shrubs and vines in the hedgerows include American Hazel (Corylus americana), Gray Dogwood (Cornus racemosa), Carolina Rose (Rosa carolina), Cottony Willow (Salis eriocephala), Chokecherry (Prunus virginiana), Staghorn Sumac (Rhus typina), Bittersweet (Celastrus scandens), Poison Ivy (Toxicodendron radicans) and brambles (Rubus occidentalis, R. canadensis. R. alleghaniensis). Within the western Ecosite, there is the largest Black Oak (Quercus veluntina) in Ontario at 163 cm dbh, located towards the southern end of the legal parcel. Within the western Ecosite, a White Oak (Quercus alba) located in the northern end of the legal parcel. This tree is considered a heritage tree, over 200 years old based on balding and plated bark, right-angled and twisting branches as well as knobby growth forms on the tree.

The Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type, **FOCM6-3**, is a group of naturalized Scots Pine plantations traversing the agricultural lands, extending east to west. Vegetation within this Ecosite include original prairie and oak woodland vegetation such as original Black and Red Oaks and American Hazel (Corylus americana). Prairie and savanna affinity species in these areas include Howell's Pussytoes (Antennaria howellii), Muhlenberg's Sedge (Carex muhlenbergii), Long-headed Anemone (Anemone cylindrica), Sand Dropseed (Sporobolus cryptandrus) and Round-headed Bushclover (Lespedeza capitata). This Ecosite is located on a dry sandy hill.

Natural Heritage Areas
TheDry-Fresh Mixed Meadow Ecosite, **MEMM3**, to the west of the subject lands, is a dry sandy meadow located within the 120 m study area, in the eastern subject lands, adjacent to the existing Aggregate Pit. This area, although disturbed and dominated by non-native grasses and forbs, is habitat to many prairie and savanna indicator species including Butterfly Milkweed (Asclepias tuberosa), Round-headed Bushclover (Lespedeza capitata), Pearly Everlasting (Anaphalis margaritacea), Narrow-leaved Tick-trefoil (Desmodium paniculatum), Few-flowered Panicgrass (Dichanthelium oligosanthes), Sand Dropseed (Sporobolus cryptandrus) and Northern Dewberry (Rubus flagellaris).

The Dry Black Oak Woodland Type, **WODM3-2**, to the south of the proposed pit limits are high-quality Ecosites located within three upland portions in the subject lands. A 4.70 Ha Ecosite is located on the southern border of the legal parcel, extending to the northeast. North of this Ecosite is an additional WODM3-2 Ecosite 1.60 ha in size, located along the western adjacent lands extending to the southernmost portion of the agricultural lands. The third WODM3-2 Ecosite is 0.73 ha in size, located outside the legal parcel, within the adjacent eastern woodlands. These Ecosites are considered to be a Provincially Rare Habitat Type. WODM3-2 are dominated by Black Oak (Quercus veluntina), White Oak (Quercus alba), Red Oak (Quercus rubra), White Pine (Pinus strobus), Pignut Hickory (Carya glabra), Shagbark Hickory (Carya ovata), as well as tolerant hardwoods like Sugar Maple (Acer saccharum), Red Maple (Acer rubrum), Basswood (Tilia americana) and Black Cherry (Prunus serotina). Native sub-canopy and shrub layer species include Ironwood (Ostrya virginiana), Showy Serviceberry (Amelanchier arborea), Chokecherry (Prunus virginiana), American Hazel (Corylus americana), Witch-hazel (Hamamelis virginiana), Alternate-leaved Dogwood (Cornus alternifolia), Maple-leaved Viburnum (Acer acerifolium), American Currant (Ribes americanum) and Prickly Gooseberry (Ribes cynosbati). A wide variety of native ferns, grasses, sedges and forbs are found in the ground layer, Frosted Hawthorn (Crataegus pruinosa var. Pruinosa, Ebony Spleenwort (Asplenium platyneuron) Large Tick-trefoil (Hylodesmum glutinosum)Many-flowered Woodrush (Luzula multiflora), rooping Bluegrass (Poa cf. salutensis ssp. salutensis), Orange-fruited Horse-gentian (Triosteum aurantiacum). An endangered species, Butternut (Juglans cinerea), was found within the most southern WODM3-2 Ecosite. Two individuals were identified. Provincially rare species within the Ecosite include Ebony Spleenwort (Asplenium platyneuron), Pignut Hickory (Carya glabra), Frosted Hawthorn (Crataegus pruinosa var. pruinosa), Many-flowered Woodrush (Luzula multiflora), Drooping Bluegrass (Poa cf. salutensis ssp. salutensis), Orange-fruited Horse-gentian (Triosteum aurantiacum), and Red Elm (Ulmus rubra). Characteristics of old growth forests are present with some Black Oak, White Oak, Shagbark Hickory, Pignut Hickory species demonstrating old growth features such as large size, balding and plated bark, right-angled branching and sinuous stems, indicating that the trees are over 150 years old.

Original crown survey records for the subject property and surrounding area indicate oak-pine woodlands and savannas and, to the west, open tallgrass prairies dominated the rolling, well-drained sands on the west side of Port Dover in pre-European settlement times (Findlay 1973). The dominance of Black Oak (and the many tallgrass prairie and savanna indicator species) on the subject property, indicate that these habitats were shaped by fire. Black Oak is a fire adapted tree who sends out suckers when above ground stems are killed (Waldron 2003, Nowacki and Abrams 2008).

The Jewelweed Forb Organic Meadow Marsh Type, **MAMMO2-1**,at the base of the southern ravine feature, is a dynamic, high-quality wetland located on the Lynn River Floodplain, within the southern end of the subject lands, extending to the northeast. The organic soils support meadow marshes dominated by Jewelweed (mpatiens capensis), skunk Cabbage (Symplocarpus foetidus), Marsh Marigold (Caltha palustris), Fowl Bluegrass (Poa palustris), Tall Mannagrass (Glyceria grandis), Rice-cut Grass (Leersia oryzoides) and wetland ferns like Marsh Fern (Thelypteris palustris), Interrupted Fern (Claytosmunda claytoniana) and Cinnamon Fern (Osmundastrum cinnamomeum). This Ecosite has very few non-native species. Within this Ecosite are small thickets swamps dominated by dogwoods (Cornus sericea, C. obliqua and C.

racemosa), Canada Elderberry (Sambucus canadensis), Spicebush (Lindera benzoin) and White Meadowsweet (Spiraea alba), as well as scattered floodplain trees like Black Walnut (Juglans nigra), Basswood (Tilia americana), Black Maple (Acer nigrum), Peachleaf Willow (Salix amygdaloides), Manitoba Maple (Acer negundo) and Red Elm (Ulmus rubra). Provincially rare species within the ecosite include Black Maple (Acer nigrum), American Golden-saxifrage (Chrysosplenium americanum), Crested Wood Fern (Dryopteris cristata), Tall Mannagrass (Glyceria grandis), Cow Parsnip (Heracleum maximum), Tall Blue Lettuce (Lactuca biennis), Hairy Honeysuckle (Lonicera hirsuta), Red Elm (Ulmus rubra), American Speedwell (Veronica americana).

There are two patches of Fresh-Moist White Pine-Hardwood Mixed Forest, **FOMM9-2**, are mesic woodlands on each side of the Lynn Creek Floodplain. These Ecosites are dominated by Black Maple (Acer nigrum) and Yellow Birch (Betula alleghaniensis), as well as wetland herbaceous species like Skunk Cabbage (Symplocarpus foetidus) and Ostrich Fern (Matteuccia struthiopteris).

The Naturalized Coniferous Hedgerow, **FOCM5**, the south end of the legal parcel is an open sandy area that is currently used for anthropogenic activities. Black Oak (Quercus velutina), Pignut Hickory (Carya glabra) (in the woods on the edge of the polygon), American Hazel (Corylus americana), Muhlenberg's Sedge (Carex muhlenbergii) and Sand Dropseed (Sporobolus cryptandrus) indicate savanna and prairie habitat types.

3.11 Anthropogenic Communities

The agricultural field within the license boundary and in the 120 m study area are actively farmed to date. Farm ploughing encroaches within the driplines of the adjacent treed areas. (FOCM6-3, FOCM6-3/MEMM3, THMM1-1, FOMM9-2, WODM3-2 Ecosites). Based on 1954 Aerial photography, the northern and central woodland patches were cleared and have since revegetated. Additionally, these patches are not considered Significant Woodland on the Norfolk County Official Plan.

3.2 Natural Features and Functions

A wildlife habitat reconnaissance was completed in season on three separate visits in Spring and Summer 2023, by James Holdsworth (Appendix 1). The lands within the license boundary and the adjacent 120 m study area were investigated on this site visit.

3.2.1 Habitat of Endangered and Threatened Species

The following background information is provided in relation to the discussion of significant species.

_Any Species at Risk (SAR) listed as endangered (END) or threatened (THR) are protected from killing, harming, or harassment under the provincial Endangered Species Act 2007 (ESA).

_Additionally, their habitat is protected from damage or destruction.

_Species listed as Special Concern or Provincially Rare Species (S1-S3) are not afforded special protection under the ESA 2007. However, their presence qualifies the community as Habitat for

Species of Conservation Concern according to the MNRF Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (2015) (SWHCSE 7E).

_Regionally rare species are also not protected under the ESA (2007), nor do they qualify an ELC as SWH.

_The Committee on the Status of Species at Risk in Ontario (COSSARO) provide the provincial rankings on species at risk (SAR). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) provides the federal rankings of SAR.

Within the license boundary, there were endangered or threatened species and habitats observed during site investigations. Floral and Faunal species observed are discussed below.

Flora

Two floral SAR were noted in the study area during field investigations:

_Observed within the southern WODM3-2 Ecosite, shown in Figure 7, were two individual potential Butternuts (Juglans cinerea) which are listed as Endangered in Ontario. Any intrusion into the WODM3-2 would require an additional site visit to assess the trees for hybridity and complete a Butternut Health Assessment (BHA) if hybridity was not observed. The two specimens are on the south side of the ravine >150 m from the pit limits. If given the distance from site alteration, and the avoidance of the wooded feature in its entirety, no further assessments are required.

_Observed within the FOCM6-3/MEMM3 Ecosite were two individual Flowering Dogwoods (Cornus florida) which are listed as Endangered in Ontario. However, the botanist noted that these individuals are likely planted given their proximity to the house as well as the other ornamental plantings and lack of habitat. O.Reg 242/ Section 5.1 states that the ESA does not apply to ornamental cultivars.

Provincially Rare Species

One provinically rare species, Pignut Hickory (S3) was recorded on or adjacent to the subject lands and are listed in Appendix 1. ninety-four individual stems from small saplings to large mature trees were documented in the high-quality woodlands along the watercourse corridor. These are all beyond the proposed pit limits and are not afforded any legal protection.

Regionally Rare or Uncommon Species

Thirty-five provincially rare, regionally rare or uncommon species in the Carolinian Zone and/or Haldimand-Norfolk County, were recorded on or adjacent to the subject lands and are listed in Appendix 1.

Most of these species are within the Natural Heritage feature which will not be directly impacted by the proposed aggregate extraction. However, the following regionally rare or uncommon species may/will be impacted:

Northern ravine

- Canada Lettuce (Lactuca canadensis)

- Sand Dropseed (Sporobolus cryptandrus)

Central Swathe
- Long-headed Anemone (Anemone cylindrica)
- Howell's Pussytoes (Antennaria howellii)
- Muhlenberg's Sedge (Carex muhlenbergii)
- Poor-man's Peppergrass (Lepidium virginicum)
- Round-headed Bushclover (Lespedeza capitata)
- Sand Dropseed (Sporobolus cryptandrus)

Eastern Hedgerow
- Hackberry (Celtis occidentalis)
- Canada Lettuce (Lactuca canadensis)
- Poor-man's Peppergrass (Lepidium virginicum

Western Hedgerow
- Carolina Rose (Rosa carolina)
- Canada Blackberry (Rubus canadensis) (New Record for the County)

Again, these species are not afforded any legal protection but avoidance where possible is recommended.

Provincially Rare Habitat Types

The high-quality southern WODM3-2 is ranked as S3, it is considered Rare to Uncommon in Ontario with 20-100 occurrences throughout the province (Appendix J: Natural Heritage Resources of Ontario: S-Ranks for communities in site regions 6 and 7). These remnant oak woodlands were likely pre-settlement prairie, oak savanna and oak woodlands habitats of the Norfolk Sand Plain. These habitats are increasingly rare because of habitat loss and that fire suppression has allowed trees and shrubs or more mesic, closed-canopy forests to move in (Nowacki et al. 2008).

Fauna

Birds

Several SAR birds were observed during site investigations. These include Barn Swallow, Bank Swallow, Eastern Wood Pewee and Wood Thrush. The likelihood of SAR species occurring on-site was evaluated based on known ranges and habitat preferences. In relation to this, seven SAR birds were evaluated as they are known to breed in the habitats found within the legal parcel and occur within Norfolk County, ON.

Barn Swallow [SC/SC]: Observed, the Barn Swallow prefers human made structures to build their nest (MECP, 2022). There is no suitable breeding habitat within the proposed license boundary or the 120 m study area. There is a potential breeding habitat within the barn located at the northern end of the legal parcel. This species was observed flying from the man-made structure, however, no nests were discovered.

Bank Swallow [THR/THR]: Observed, the Bank Swallow prefers to nest in burrows in both natural and human made settings with vertical faces in silt and sand deposits. There is no suitable breeding habitat within the proposed license boundary, or within the 120 m study area. There is potential habitat off-property to the east, within a gravel/sand extraction pile. This species was observed foraging over the study area, however no suitable habitat is present.

Eastern Wood-pewee [SC/SC]: Observed, the Eastern Wood-pewee prefers the mid-canopy layer of forest clearing and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation (MECP, 2022). There is minimal suitable habitat within the proposed license boundary. There is suitable habitat within the 120 m study area, within the wooded ravine to the south and east. This species was observed as territorial within both the southern and northern end of the legal parcel, outside the 120 m study area.

Wood Thrush [SC/SC]: Observed, the Wood Thrush prefers mature deciduous and mixed forests, large forests with moist stands of trees with well-developed undergrowth and tall trees are sought after. There is minimal suitable habitat within the proposed license boundary. There is also suitable habitat within the 120 m study area, within the wooded ravine to the south and east. This species was observed within the southern wooded ravine.

Red-Headed Woodpecker [END/END]: Not observed, the Red-Headed Woodpecker prefers open woodland and woodland edges and is often found in parks, golf courses and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching (MECP, 2022). There is minimal suitable habitat within the proposed license boundary, as well in the 120 m study area within the wooded edges and hedgerows, as well as the wooded ravine.

Cerulean Warbler [END/END]: Not observed, the Cerulean Warbler prefers mature, deciduous forests with large, tall trees and open understory. There is no suitable habitat within the proposed license boundary. There is suitable habitat within the wooded ravine to the south.

Acadian Flycatcher [END/END]: Not observed, the Acadian Flycatcher prefers mature, shady forests with ravines, or in forested swamps with maple and beech trees. There is no suitable habitat within the proposed license boundary. There is suitable habitat within the wooded ravine to the south.

Bobolink [SC/THR]: Not observed, the Bobolink prefers tall grass prairies and open meadows, including hayfields. There is no suitable habitat within the proposed license boundary, or within the 120 m study area. There is no suitable habitat within the legal parcel.

Bats

There are four bat species listed as Endangered in Ontario. This includes Small-footed Myotis (*Myotis leibil*), Little Brown Bat (*Myotis lucifugus*), Tri-coloured Bat (*Perimyotis subflavus*), and Northern Myotis (*Myotis septentrionalis*).

Given their Endangered status, their habitat is protected under the Endangered Species Act (ESA) 2007. Additionally, Bat Maternity colonies are a type of Significant Wildlife Habitat which are to be considered under the Provincial Policy Statement (PPS) 2024 and Norfolk County Official Plan 2023. Only the southern wooded feature could provide candidate habitat for Bat Maternity Colonies based on size and structure. The northern and central wooded features are too small and young to provide significant wildlife habitat. However, the hedgerows exhibit old growth trees that may provide roosting habitat.

Surveys indicated limited potential maternal bat breeding habitat location within the 120 m study area. The majority of the potential habitat occurs within the southern Ecosites where

there are large, living trees with suitable size and shaped cavities and habitat for maternal bats. This candidate habitat is outside of the proposed Pit limits.

Additionally, although not considered significant habitat, the numerous anthropogenic structures at the north end of the property, such as barns, shed and houses may also provide bat roosting habitat.

Herptiles

Based on known ranges and habitat suitability, there is suitable habitat for four SAR snakes within the study area.

Eastern Milksnake [NR/NR]: Prefers both natural and anthropogenic habitats including prairies, meadows, pastures, hayfields, rocky outcrops, rocky hillsides and forests. The forest edges and open sandy habitats within the study area are suitable for this species. There is suitable habitat within the 120 m study area in the form of edge habitat and open sandy habitat.

Eastern Hog-nosed Snake [THR/THR]: Prefers well-drained soil, loose or sandy soil in open woodlands/brushland/forest edges that is in proximity to water and wetlands. Altered habitats, including plantations, roads, field edges and residential areas, are also often used (COSEWIC, 2021). The edges and open sandy habitats within the study area are suitable for this species. There is suitable habitat within the 120 m study area in the form of edge habitat and open sandy habitat.

Eastern Fox Snake [END/END]: Prefers habitats including: old fields, marches, along hedgerows, drainage canals and shorelines. There is potential habitat within the 120 m study area in the southern ravine, as well as along wooded edges.

Gray Rat Snake [THR/END]: Prefers habitats such as deciduous forests, wetlands, lakes, outcrops, agricultural fields, and areas where forest meets open environments. They are known to use anthropogenic structures as habitat. There is suitable habitat within the 120 m study area in the southern ravine, as well as to the north, within anthropogenic structures.

Northern Ribbon Snake [SC/NR]: Prefers semi-aquatic habitat such as wetlands and the shorelines of rivers and lakes. There is suitable habitat within the 120 m study area in the wooded ravine at the south of the legal parcel.

Fowler's Toad [END/END]: Prefers open beaches, dunes, sandy shorelines, rocky pools, creek and stream mouths, backshore wetlands and marshes. Typically around the northern shore of Lake Erie. There is no potential habitat within the study area, or within the legal parcel.

Mammals

The study area is within the historical range of American Badger [END/END]. No observations of this species were made during the field season, nor were other indications that the species may be present (i.e., no burrows, tracks, scat or fur were found). However, the American Badger's home range is quite extensive, and the species is difficult to locate without targeted surveys, which were beyond the scope of this study. The subject lands and study area, in general, would not be considered a core portion of their home range.

Lepidoptera and Odonata
Based on known ranges and habitat suitability, there is suitable habitat for one species of SAR Lepidoptera/Odonata species within the study area.

Monarch Butterfly [END/SC]: There is suitable habitat within the license boundary and within the 120 m study area in the form of nectaring areas along the field margins and woodland edges in the form of available food, milkweed.

Significant Species
Self-screening recommended by the MECP and MNRF includes a NHIC 1km^2 grid data search, which identified several faunal SAR within the grids encompassing the study area including Louisiana Waterthrush [THR/THR], Wood Thrush [SC/THR], Bobolink [THR/SC], Bank Swallow [THR/THR], Fowlers Toad [END/END], Eastern Milksnake [NR/NR] and American Badger [END/END]. Endangered and threatened species receive general habitat protection from the Endangered Species Act (ESA), but species of special concern do not.

These species are discussed above in reference to habitat suitability and likelihood on-site.

3.2.2 Wetlands
The database screening did not identify any Significant wetlands, however, in the south and south east one wetland community was identified along the Lynn river floodplain beyond the proposed license boundary.

3.2.3 Woodlands
There are Significant Woodlands within the south end of the legal parcel. This feature is outside of the proposed license boundary. There are also two other woodland patched in the north end as well as a 30 m wide swath traversing east-west through the center of the subject lands. These two areas are not considered significant woodland under the Norfolk County Official Plan 2023 and do not present significant features such as size, age, or species.

3.2.4 Valleylands
There is a significant vallyland present in the south end of the parcel surrounding a watercourse that is +/- 100 m in width. This feature is outside of the proposed license boundary.

3.2.5 Significant Wildlife Habitat
Based on the Significant Wildlife Habitat Guidelines for region 7E and site investigation by Vroom + Associates and our sub-consultants, there are two confirmed Significant Wildlife Habitat (SWH) and three candidate SWH within the proposed license boundary and in the adjacent lands.

The SWH confirmed or candidate in the 120 m study area, shown in Table 3 below, are based on the consideration of ELCs and features present on-site in comparison with the MNRF Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (2015).

Table 3: Significant Wildlife Habitat on or within the 120 m adjacent lands

SWH Type	Candidate or	Location

	Confirmed	
Other Rare Vegetation Communities	Confirmed	The high-quality southern WODM3-2 Dry Black Oak Woodland Type Ecosite is ranked as S3 in Ontario
Special Concern and Rare Wildlife Species	Confirmed	- Barn Swallow (SC) northern barn - Eastern Wood-Pewee (SC) northern wooded ravine - Eastern Wood-Pewee and Wood Thrush (SC) southern wooded ravine - Monarch (SC) field edges)
Bat Maternity Colonies	Candidate	The WODM3-2 and FOMM9-2 Ecosites present within the southern wooded riparian corridor could provide candidate habitat.
Amphibian Breeding Habitat (Woodland)	Candidate	The WODM3-2 and FOMM9-2 along the Lynn River corridor have mesic properties and the proximity to the watercourse suggest this may qualify as amphibian breeding habitat
Terrestrial Crayfish	Candidate	Surveys did not detect any burrows, however the proximity to the watercourse with wet meadows are potentially suitable habitat

3.2.6 Fish Habitat

There is a watercourse that would provide fish habitat that runs through the south wooded feature northeast where it connects with the Lynn River. This feature is outside of the proposed license boundary.

3.3 Site Investigations Summary

Within the Proposed License Boundary

There are no natural heritage features as designated in the Norfolk County Official Plan present within the proposed license boundary. Additionally, there is no confirmed Habitat of Threatened or Endangered species and Significant Wildlife Habitat within the proposed License Boundary.

Habitat of Threatened or Endangered Species

There is potential for the following Threatened or Endangered Species within the proposed license boundary

_Eastern Milksnake [NR/NR]: The edges and sandy soils on-site may provide suitable habitat for this species.

_Eastern Hog-nosed Snake [END/END]: The edges and sandy soils on-site may provide suitable habitat for this species.

_Gray Rat Snake [THR/END]: The woodlands, edges and sandy habitat on-site may provide suitable habitat for this species.

_Monarch Butterfly [END/SC]: The woodland edges and field margins may provide suitable habitat for this species.

_American Badger [END/END]: The study area is within the historical range of this species. It is possible that the species could use the area sporadically for dispersal, hunting and potential denning.

_SAR bats [END/END]: the old barn in the north has potential to provide roosting habitat for SAR bats.

Significant Wildlife Habitat
There is only potential for Special Concern and Rare Wildlife Species SWH within the proposed license boundary for Monarchs along the field edges and the Eastern-Wood-Pewee in the northern ravine. The old Barn features in the north also have potential to support Barn Swallows (SC).

Within the 120 Adjacent Lands
There is an unidentified wetland along the floodplain of the watercourse in the south, Significant valleylands, Significant Woodlands, and fish habitat within the 120 m study area.

These features are all beyond the proposed license boundary, and setbacks will be discussed in the Level 2 report.

Significant Wildlife Habitat within the 120 m adjacent lands is confirmed in southern wooded ravine that follows the watercourse northeast. The WODM3-2 Dry Black Oak Woodland Type is confirmed as Other *Rare Vegetation Communities* SWH as it is ranked S3 in Ontario. Additionally, this southern feature is confirmed to support Special Concern and Rare or Uncommon species (Eastern Wood-Pewee and Wood Thrush). The southern woodland also has potential to support amphibian breeding, terrestrial crayfish and bat maternity colonies.

In regard to habitat for Threatened or Endangered species, site investigations determined there is suitable habitat within the hedgerows/woodlands in the 120 m adjacent lands for the following species:

_Red-headed Woodpecker [END/END]: The wooded ravine and surrounding woodlands may provide suitable habitat for this species.

_Cerulean Warbler [END/END]: The wooded ravine and surrounding woodlands may provide suitable habitat for this species.

_Gray Rat Snake [THR/END]: The woodlands, edges and sandy habitat on-site may provide suitable habitat for this species.

_SAR bats [END/END]: the woodlands contain suitable mature trees with snags that would provide roosting habitat.

4.0 FEATURES OR FUNCTIONS THAT REQUIRE FURTHER REVIEW

The following table summarizes the natural heritage features or functions that are recorded on or within 120 m of the proposed aggregate pit and whether or not they require further assessment in a Level 2 report.

Table 4: Level 1 Natural Features Summary

Natural Feature	**Identified in Records Review**	**Identified in Site Investigations**	**Level 2 Assessment Required**
Provincial Parks/Conservation Reserves	No	No	No
Habitat of Endangered and/or Threatened Species	Yes	-Potential SAR snakes -Potential SAR birds -Potential SAR bats -Potential SAR Badger	Yes
Wetlands	No	Yes	Yes
Woodlands	Yes	Yes	Yes
Valleylands	Yes	Yes	Yes
Significant Wildlife Habitat	Potential	-Confirmed Other Rare Vegetation Communities -Confirmed and Candidate Special Concern and Rare Wildlife Species -Potential Bat Maternity Colonies -Potential Woodland Amphibian Breeding -Potential Terrestrial Crayfish	Yes
Areas of Natural and Scientific Interest	No	No	No
Fish Habitat	Yes	Yes	Yes

LEVEL 2 NATURAL ENVIRONMENT REPORT

6.0 Environmental Impact Assessment

Allan Gee (the applicant), occurring on the tablelands of 364 St. Johns Road East, Norfolk County, ON (Figures 1 & 2). The applicant has retained CJDL Consulting Engineers and Esher Planning to apply for the property extraction licence under the Aggregate Resources Act 2021.

The proponents intend to utilize the tablelands of approximately 25 ha for a Class A aggregate pit licence with a proposed maximum extraction limit of 325,000 tonnes of aggregate annually.

This section identifies potential direct and indirect impacts on the significant natural heritage features within or adjacent to the license boundary identified in Level 1. Appropriate protection and mitigation measures for the impacts are also presented with recommendations to be shown on the Site Plan.

Based on the analysis in Level 1 - Section 4.0, provincially significant features on or within 120 m of the proposed license boundary include:

_Significant Woodlands, Fish Habitat, and an unidentified Wetland to the south and east of the proposed license boundary within the Lynn River Tributary corridor

_Potentially suitable habitat for the following Endangered or Threatened Species:

- Southern Feature: Red-headed Woodpecker [END/END], Cerulean Warbler [END/END], SAR Bats [END/END], and Gray Ratsnake [THR/END]
- License boundary periphery: SAR Bats [END/END], Gray Ratsnake [THR/END], Eastern Hog-nosed Snake [END/END], American Badger [END/END] and Monarch Butterfly [END/SC]

_ The southern woodland feature, which includes Dry Black Oak Woodland Type **WODM3-2** and Fresh-Moist White Pine-Hardwood Mixed Forest, **FOMM9-2,** provides the following confirmed and candidate Significant Wildlife Habitat:

- Confirmed *Special Concern and Rare Wildlife Species* SWH for Eastern Wood-pewee [SC/SC], Wood Thrush [SC/SC], and Monarch Butterfly [END/SC]
- confirmed *Rare Community* as the high-quality southern WODM3-2 is ranked as S3, it is considered Rare to Uncommon in Ontario
- candidate SWH for *Amphibian Breeding Habitat (woodland)*
- candidate *Bat Maternity Colonies*

6.1 Impacts and Mitigations

Vegetation Removal: No designated natural heritage features are present within the proposed license boundary. It is our understanding that the southern and northern woodlots will remain intact. The only vegetation that will require removal is the central 30m wide strip of FOCM6-3,

with no significant candidate SAR habitat or SWH. Timing requirements for vegetation removal are required under the Migratory Breeding Bird Act (MBBA).

> Migratory Breeding Bird Act 1994: The Migratory Breeding Bird Act (MBBA 1994), protects 386 migratory bird species in Canada. It states, "No person shall disturb, destroy, or take a nest, egg,…." (SOR/80-577, s. 4.). Birds protected under the MBBA 1994 may be present on-site, since they can occur nearly anywhere in southern Ontario. Tree cutting should occur outside the region's nesting season (see Section 5).
>
> Recommendation #1: Tree-cutting should not occur between March 15th and October 1st to avoid the risk of removing trees used by potential roosting SAR bats. Following these timing restrictions will also include the regional nesting period of migratory birds (March 31st – August 25th).

Significant Woodland: The southern woodlot that extends up towards the east is high-quality and significant in regards to the habitat it provides, the species diversity, the watercourse, and the unidentified wetland feature along the floodplain of the Lynn River tributary. Setbacks should be maintained to protect this feature. This setback protects any tree roots from compaction and mechanical disturbance, maintains soil moisture regimes, and avoids edge effects such as increased light, wind, and temperature changes in the southern wooded feature. The buffer also helps minimize encroachment from equipment, dust deposition, and potential contamination from fuels or sediment.

> Recommendation #2: A minimum dripline setback of 20 m from the southern natural heritage feature and a dripline setback of 5 m from the northern woodland feature is recommended to provide a protective buffer from the construction and the extraction-related impacts. These setbacks are based on the quality of the features following our assessment presented in Section 3.
>
> Recommendation #3: To enhance ecological function as well as soil stabilization, the 20 m setback shall be seeded with an appropriate native meadow mix, including Common Milkweed, along with a nurse crop.

We have been informed that dust controls are provided on the site plans along with phasing to keep inactive zones vegetated for soil stabilization.

The following practical recommendations are made to enhance the survival potential of the adjacent vegetation in the east and west hedgerows, northern woodlot, and southern significant woodland that will be retained.

> Recommendation #4: Prior to any extraction operations, the natural heritage setbacks of areas to be preserved shall be clearly marked, and protective fencing should be installed. This fencing will protect the root zones of the remaining trees and protect against physical damage to trunks and limbs. Tree protection/sediment and erosion control fencing is to be installed according to the applicable standards established in the Ontario Provincial

Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD) documents. End configurations of all fencing shall be suitable for snake exclusion.

Recommendation #5: All tree protection/sediment and erosion control fencing shall be inspected prior to any site excavation and monitored regularly to ensure that it was installed correctly. Regular maintenance inspections shall occur and shall include a maintenance inspection immediately following snowmelt or heavy rainfall.

Recommendation #6: Fencing shall not be removed until all excavation activities are completed and lands adjacent to the fencing are restored to agriculture.

We have been informed that the site plan demonstrates that all disturbed areas on-site will be rehabilitated to agriculture using MNRF best practices in order to stabilize soils and reduce sediment and erosion.

Hydrology: Groundwater Recharge:
As noted in Section 2.1.4, the subject lands are within a significant groundwater recharge area and within a highly vulnerable aquifer. The aggregate extraction operation is within approximately 70 m of the Lynn River Tributary, and its meadow marsh riverine floodplain is approximately 5+ m below the grades of the agricultural field at the south end.

We have been informed that the proposed aggregate extraction operation will remain 0.5 m above the groundwater table; and the hydrogeological report confirms that no direct impacts are expected on the quality or quantity of groundwater, its flow or the vulnerable aquifer.

Fish Habitat/Surface Water:
Again, the proposed aggregate operation will not directly impact fish or fish habitat. The southern watercourse is > 70 m from the license boundary. As previously noted, this is a below-water application but extraction will not extend into the water table; therefore, groundwater that might be functionally connected to the fish habitat will not be directly impacted. As a result, no direct impacts are anticipated on these features or their function as fish habitat or amphibian breeding habitat.

Modifying surface drainage could affect the distribution and abundance of vegetation found within the adjacent Natural Heritage areas as they are generally a function of the soil and moisture regimes provided by surface runoff and groundwater.

The southern Natural Heritage feature is generally susceptible to alterations in soil moisture, groundwater levels, and surface flow. We have been informed that the hydrogeological report includes a water balance, to confirm the wetland and watercourse sources noted above concerning soil moisture/drainage characteristics, surface inputs, and groundwater influences, including pre-development discharge locations to watercourses and valleylands, as well as documentation of the existing groundwater levels and direction of flow. Additionally, we have been informed that the hydrogeological report demonstrates post-extraction flows match pre-development conditions to protect groundwater recharge within the subwatershed, as well as to ensure that the edaphic conditions supporting the surrounding Natural Heritage features are maintained during and post-extraction.

Indirect impacts on fish habitat can generally include downstream impacts of sedimentation

during extraction, erosion from uncontrolled surface drainage, and alterations of flow quality and quantity from the redirection of surface flows. As noted in Recommendations 6-9 Best Practices for silt control as set out in the OPSS and OPSD will be referenced/depicted in the construction drawings to prevent erosion or sediment transport into the adjacent Natural Heritage Features.

We have been informed that the hydrogeological report demonstrates that input flows to the south and east will be maintained to preserve flows that support wetlands and potential fish habitat.

> Recommendation #7: With the sensitivities of the habitat to the south, a shallow vegetated swale within the outer edge of the Natural heritage buffer shall be installed to slow and infiltrate runoff, reduce sediment transport, and enhance habitat.

Habitat of Threatened or Endangered Species:
No floral Species at Risk were discovered on-site that would require habitat protection or MECP review and approval. The marginal habitat loss from the proposed development will not significantly impact any faunal habitat noted in other sections of this report.

Red-headed Woodpecker [THR] may be present in the future within the adjacent vegetation; however, given that in-season surveys did not detect this species, and the distance of site alteration from suitable habitat, we do not see the need for further investigations or MECP review and approval.

As previously noted, the subject lands are considered suitable habitat for SAR snakes, including Eastern Hog-nosed Snake [THR/THR], Eastern Foxsnake [END/END], Gray Ratsnake [END/END] and Eastern Ribbonsnake [SC/THR]. All four of these species are considered potentially present, and may occur within the adjacent vegetation and/or open sandy areas on-site in the future. Given that in-season surveys did not detect any of these species, we do not see the need for further investigation or MECP review and approval. However, we do provide the following recommendation.

> Recommendation #8: Given the potential for SAR snakes based on habitat suitability and location, temporary herptile exclusion fencing targeted for SAR snakes should be installed along the perimeter of adjacent fencerows and woodlands prior to any earthwork. Exclusion fencing must extend 30 m (min) beyond the influence of the access roads and the active area of the pit. Reptile exclusion fencing should be buried 10-20 cm below grade and 1 m in height above grade. Fencing should be installed prior to emergence from hibernation (April). Longer-term or permanent fencing projects require more durable materials such as – heavy-duty geotextile, wood, concrete, woven-wire, sheet metal, vinyl panels, or galvanized mesh. Nylon mesh geotextile should be avoid due to the risk of entanglement. Installation and material choice should follow Provincial standards found at the following link: https://www.ontario.ca/page/reptile-and-amphibian-exclusion-fencing.

Significant Wildlife Habitat
As mentioned in Section 3.2.5, the confirmed SWH is the *Special Concern and Rare Wildlife Species* with the presence of Eastern Wood-Pewee [SC/SC], Wood Thrush [SC/SC] and Monarch Butterfly [END/SC], and a *Rare Community* in the southern feature beyond the proposed pit limit.

_ Monarch butterfly [SC] will be directly impacted by the proposed vegetation removal of suitable habitat among the central woodlot. However, the species is generally urban tolerant, and there is a local and regional presence of suitable habitat, including the host plant Milkweed and meadows/wildflowers. As noted in Recommendation #3, Common Milkweed shall be included in the meadow seed mix within the southern buffer zone to mitigate the impacts of any lost Milkweed in the proposed vegetation removal.

Monarch Butterfly, Eastern Wood-pewee, and Wood Thrush, all listed as Special Concern are urban tolerant species and will adapt to the change in land use. Implementing Recommendations #3 will minimize the net loss of suitable habitat for Monarch Butterflies. As previously stated, Eastern Wood-pewee and Wood Thrush will experience a loss of <2% of their suitable habitat within the study area.

These features will be avoided during the aggregate operation and adequate setback recommendations have been provided in this report; therefore, we do not see the need for additional mitigation measures during extraction.

There is also candidate SWH noted below:
Amphibian Breeding Habitat, woodland: Candidate within the woodlands south of the proposed license boundary.

Amphibian Breeding Habitat, wetland: Candidate within the southern tributary and its attendant floodplain.

Bat Maternity Colonies: Candidate within the Significant Woodlands to the south of the proposed license boundary.

Terrestrial Crayfish: Candidaate within the southern floodplain >50 m from the proposed pit limits.

All of these SWH are located in the adjacent lands, with sufficient setbacks and mitigaton requirements. As long as edaphic conditions such as tree cover and groundwater supply are maintained, we do not see the need for additional mitigation strategies as these features will not be directly impacted.

6.2 Rehabilitation

Consistent with the Provincial Planning Statement 2024 Section 4.5.3 "rehabilitation shall be required to accommodate subsequent land uses, to promote land use compatibility, to recognize the interim nature of extraction, and to mitigate negative impacts to the extent possible."

We assume much of the subject lands will be returned to agricultural use post-extraction. However, given the removal of the 1.3 ha of vegetative communities and habitat, we recommend planting the same area post-extraction. Ideally, habitat compensation is done by abutting other existing vegetated areas such as the southern feature or hedgerows that will be retained.

> Recommendation #9: The 20 m dripline setback from the southern Natural Heritage feature will be revegetated with native trees, shrubs and meadow species to satisfy the

habitat loss from the habitat removal in the central swathe at 1:1 replanting. Given that no significant natural heritage features were discovered in the area slated for removal, it is our opinion that this 1:1 compensation is adequate.

Progressive rehabilitation should successively follow the stages of sand extraction. The rehabilitation, topsoil placement, and earth moving should take place when the soil is dry to reduce compacting. The areas requiring fill should be filled with on-site overburden and topsoil only.

6.3 Conclusions

For the reasons outlined in the data presented within this report and the resultant analysis it is our opinion that there are no potential issues nor potential cumulative effects of the development proposed. Consequently, there is no need for additional information or studies relating to the natural heritage component of this application.

It is the opinion of the writers that, given the final extraction plans follow the recommended mitigation measures in this document, the proposed development will be consistent with the Provincial Planning Statement 2024 as well as the policies of Norfolk County.

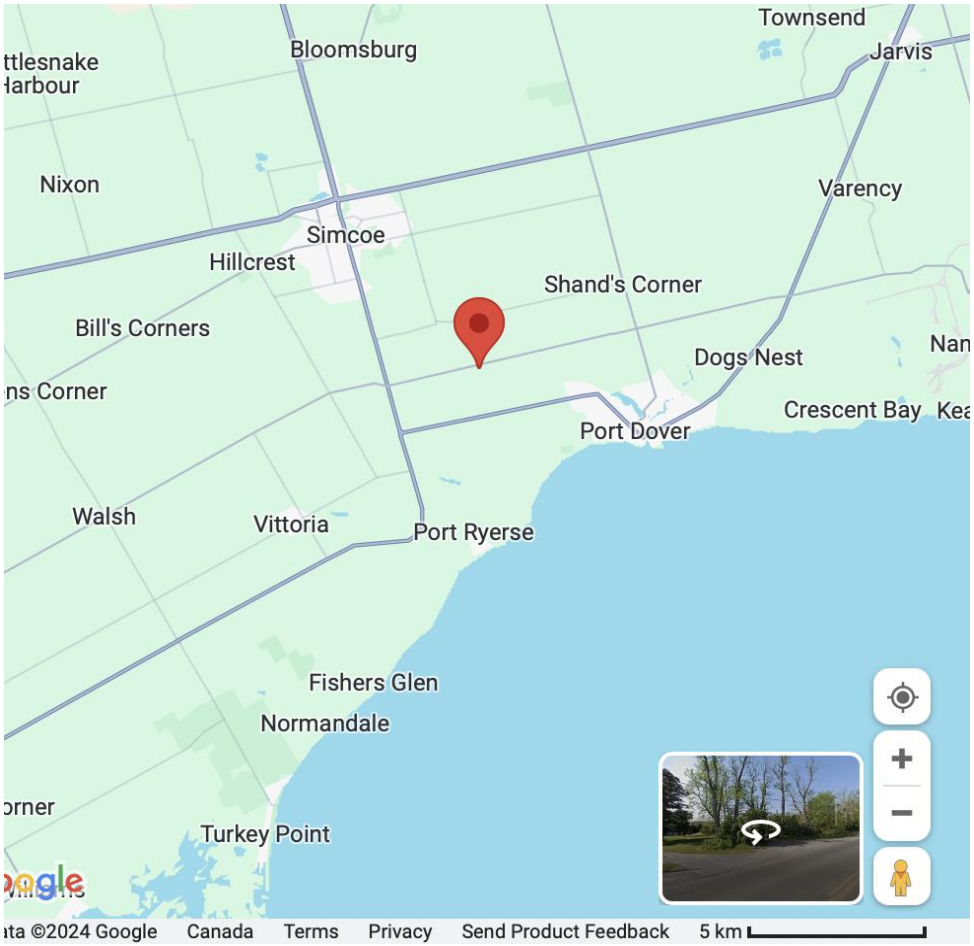

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Figure 1: General Site Location

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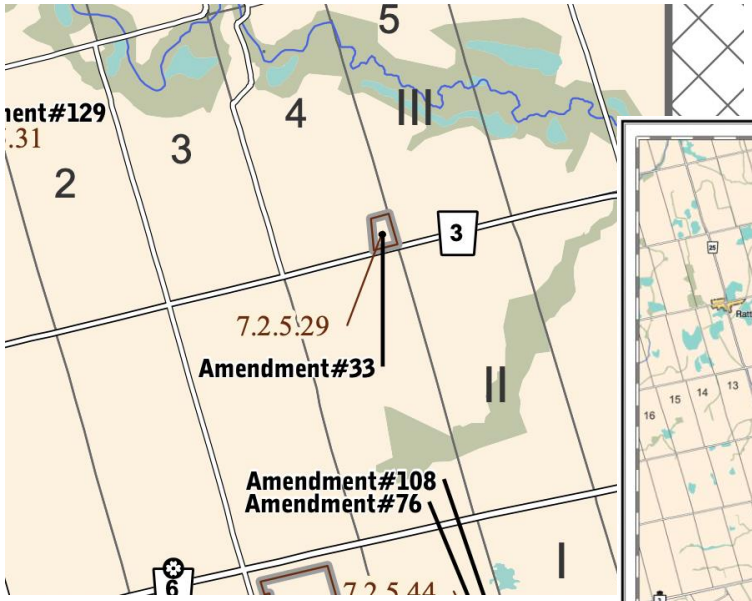
Figure 2: Specific Site Location
(Red = Legal Parcel, Yellow = Study Area, Purple = Subject Lands, White = Boundary for Proposal)



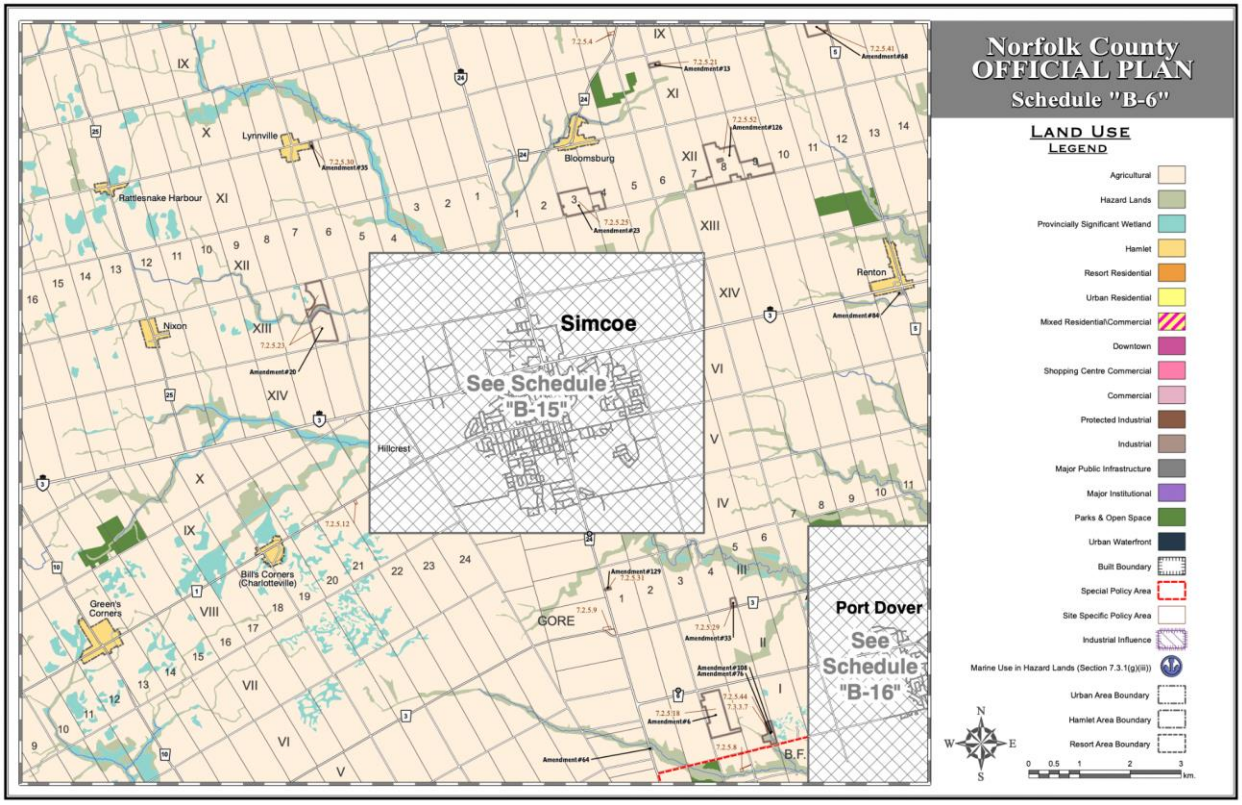


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Figure 3: Norfolk County Official Plan Schedule "B-4" Land Use

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Figure 4: Norfolk County Official Plan Schedule "C-3" Natural Heritage

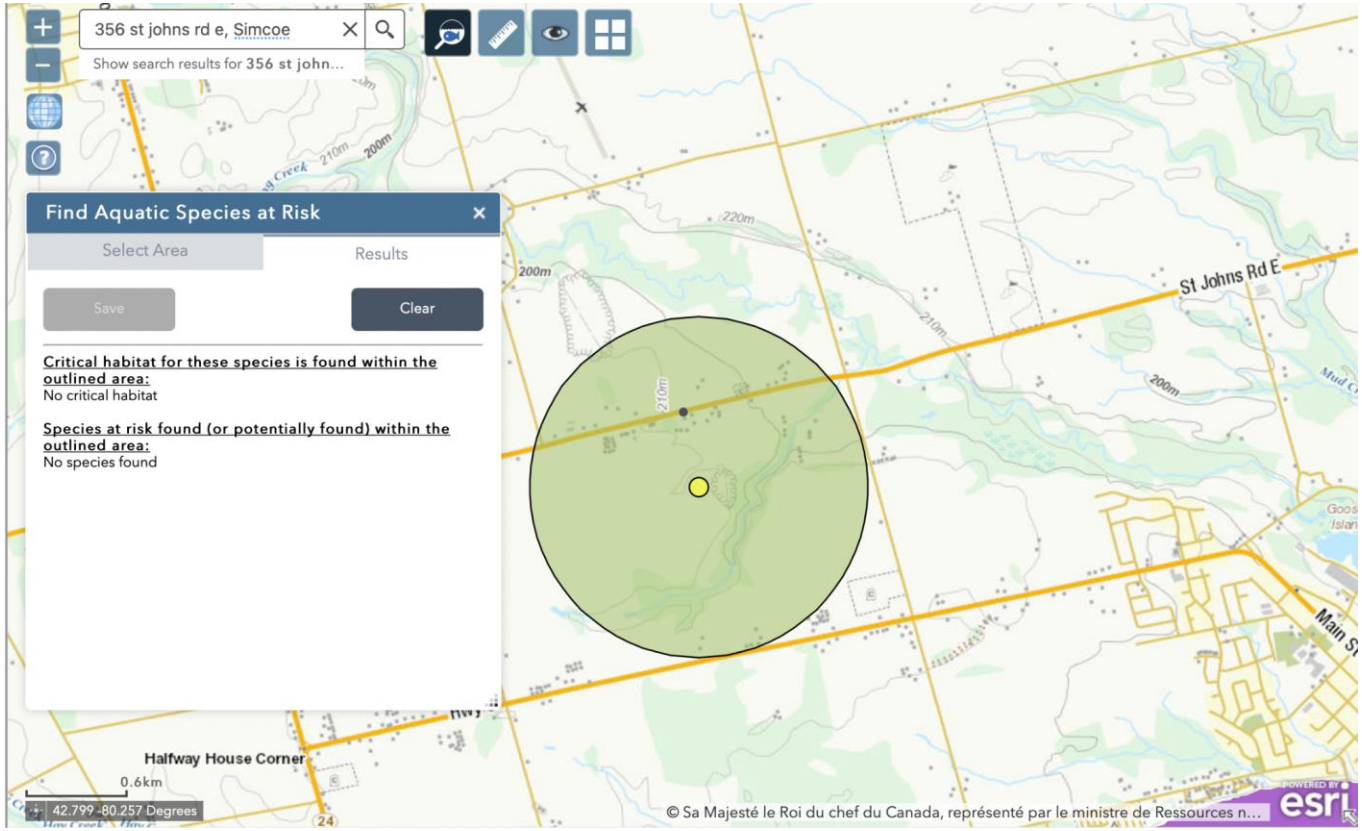

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Figure 5: DFO SAR Mapping

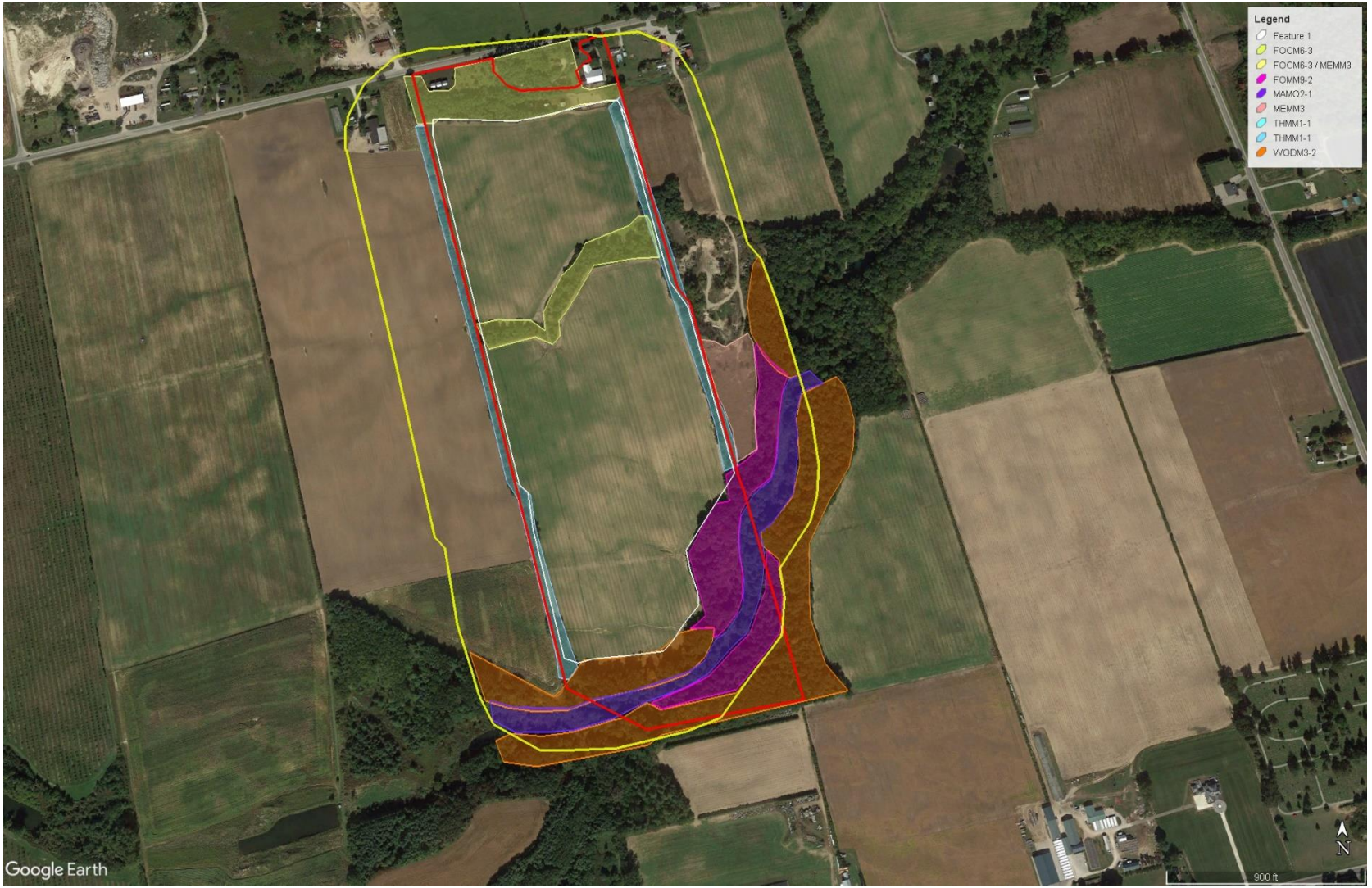

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Figure 6: ELC Communities

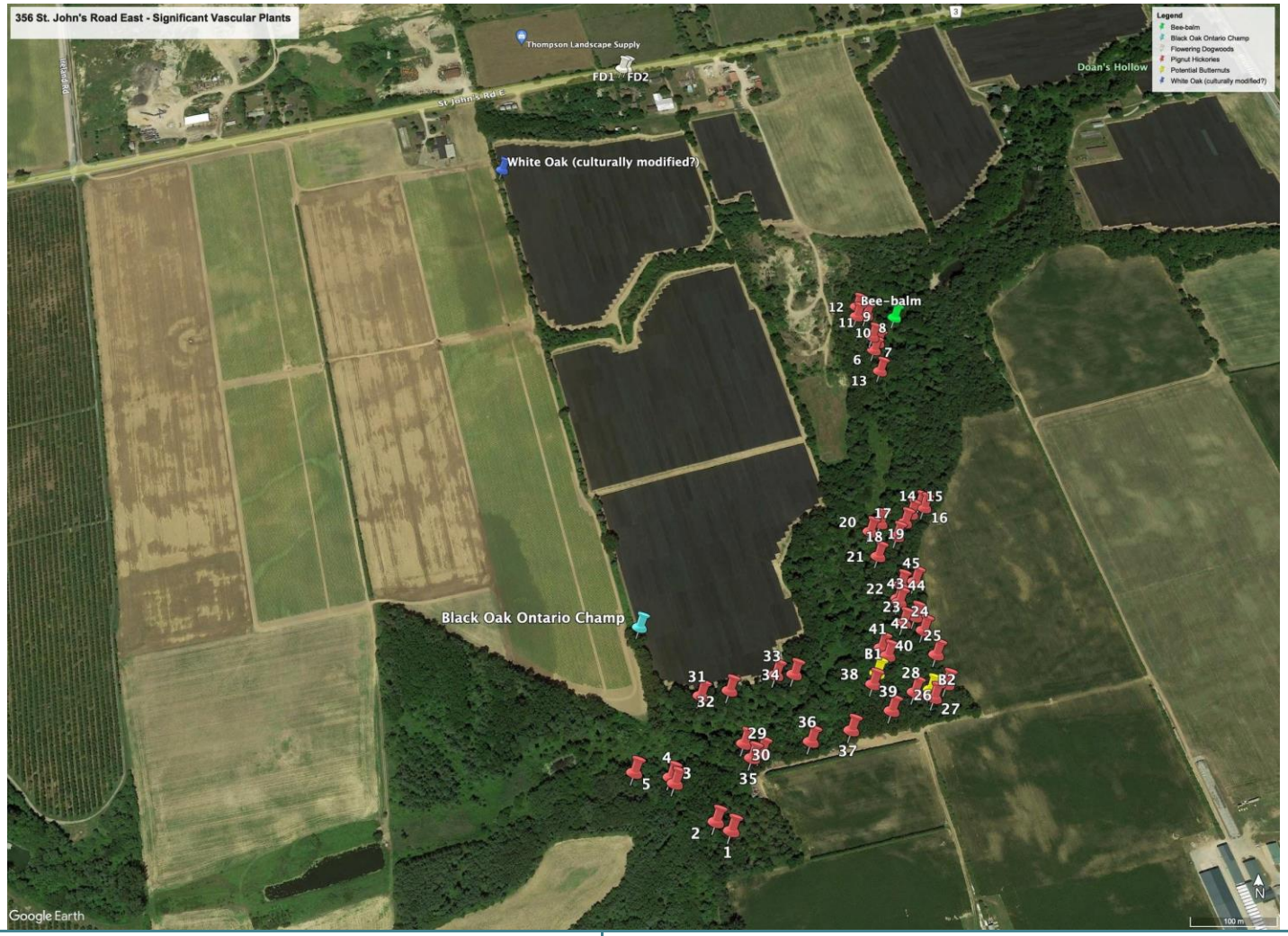

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Figure 7: SAR Floral Species

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7 November, 2023.

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RE: Botanical Inventory of the Subject Property at 364 St. John's Road East near Port Dover, Ontario.

Dear Paige and Shae,

This letter summarizes my botanical findings for the subject property at 364 St. John's Road East northwest of Port Dover, Ontario in Norfolk County. I made seven visits to the site (April 6th, April 14th, May 17th, June 5th, July 8th, August 16th and September 21st, 2023).

This letter accompanies an Excel file entitled 364 St. John's Road East (Port Dover)-Paul G. O'Hara-October2023. Three hundred and thirty-one (331) vascular plants were recorded on the subject property and in the 120m buffer area. Two hundred and twenty-five (225) plants were native and one hundred and six (106) were non-native.

The subject property is a large rectangular property in the Lynn Creek watershed west of Port Dover, Ontario. The property is on rolling, well drained sands, lying on the southeast extension of the Norfolk Sand Plain (Soils of the Regional Municipality of Haldimand-Norfolk). Most of the property is in agriculture and, judging by the old kilns near St. John's Road East, was an old tobacco farm. Two wooded bands of planted conifers, oaks and tolerant hardwoods are found in the northern half of the property. Bounding the property are dynamic hedgerows populated by native woody trees and shrubs. At the back of the property is a largely undisturbed wooded valley and tributary of Lynn Creek.

The 120m buffer zone on the north side of the property is a landscape supply yard and has no flora of any consequence. The 120m buffer zone on the west side of the property is in agriculture. Access to the 120m buffer zone on the east side of the property was limited as the area was fenced and posted with 'No Tresspassing' signs at regular intervals. Furthermore, I had a brief chat with the property owner and he was not interested in anyone going on his property. Therefore, the botanical inventory of the buffer zone on the east side of the property is incomplete.

ELC Communities

Ten Ecological Land Classification (ELC) polygons were identified on the subject property and are detailed below:

1. Dry Black Oak Woodland Type (WODM3-2)
High quality, dry Black Oak woodlands are found in the upland forest areas along the tributary of Lynn Creek at the back of the subject property. Black Oak woodlands are a Provincially Rare Habitat Type (Bakowsky 1997). See Provincially Rare Habitat Types below.

Besides Black Oak (Quercus velutina), dominant trees include White Oak (Quercus alba), Red Oak (Quercus rubra), White Pine (Pinus strobus), Pignut Hickory (Carya glabra), Shagbark Hickory (Carya ovata), as well as tolerant hardwoods like Sugar Maple (Acer saccharum), Red Maple (Acer rubrum), Basswood (Tilia americana) and Black Cherry (Prunus serotina). Native sub-canopy and shrub layer species include Ironwood (Ostrya virginiana), Showy Serviceberry (Amelanchier arborea), Chokecherry (Prunus virginiana), American Hazel (Corylus americana), Witch-hazel (Hamamelis virginiana), Alternate-leaved Dogwood (Cornus alternifolia), Maple-leaved Viburnum (Acer acerifolium), American Currant (Ribes americanum) and Prickly Gooseberry (Ribes cynosbati). A wide variety of native ferns, grasses, sedges and forbs are found in the ground layer, some of them quite conservative (See Excel File and Regionally Rare Species in Table 2 below).

Original crown survey records for the subject property and surrounding area indicate oak-pine woodlands and savannas and, to the west, open tallgrass prairies dominated the rolling, well-drained sands on the west side of Port Dover in pre-European settlement times (Findlay 1973). The dominance of Black Oak (and the many tallgrass prairie and savanna indicator species) on the subject property, indicate that these habitats were shaped by fire. Black Oak is a fire adapted tree who sends out suckers when above ground stems are killed (Waldron 2003, Nowacki and Abrams 2008).

Some of the Black Oaks, White Oaks, Shagbark Hickories and Pignut Hickories in these polygons exhibit older growth characteristics like large size, balding and plated bark, right-angled branching and sinuous stems, indicating that the trees are over 150 years old (Kershner and Leverett 2004, Pederson 2010).

2. Fresh-Moist White Pine-Hardwood Mixed Forest (FOMM9-2)
The woodlands closer to the Lynn Creek floodplain are more mesic than the drier Black Oak woodlands up slope. In this polygon, the Black Oaks and Pignut Hickories drop out and species tolerant of moist soils appear like Black Maple (Acer nigrum) and Yellow Birch (Betula alleghaniensis), as well as wetland herbaceous species like Skunk Cabbage (Symplocarpus foetidus) and Ostrich Fern (Matteuccia struthiopteris). See Excel file for a full list of plants in this polygon.

3. Jewelweed Forb Organic Meadow Marsh Type (MAMO2-1)
The Lynn River floodplain on the subject property is a largely undisturbed, dynamic, high-quality wetland with very few non-native species. The largely organic soils along the floodplain support meadow marshes dominated by Jewelweed (Impatiens capensis), Skunk Cabbage (Symplocarpus foetidus), Marsh Marigold (Caltha palustris), Fowl Bluegrass (Poa palustris), Tall Mannagrass (Glyceria grandis), Rice-cut Grass (Leersia oryzoides) and wetland ferns like Marsh Fern (Thelypteris palustris), Interrupted Fern (Claytosmunda claytoniana) and Cinnamon Fern (Osmundastrum cinnamomeum).

Moreover, this polygon supports small pockets of thicket swamp dominated dogwoods (Cornus sericea, C. obliqua and C. racemosa), Canada Elderberry (Sambucus canadensis), Spicebush (Lindera benzoin) and White Meadowsweet (Spiraea alba), as well as scattered floodplain trees like Black Walnut (Juglans nigra), Basswood (Tilia americana), Black Maple (Acer nigrum), Peachleaf Willow (Salix amygdaloides), Manitoba Maple (Acer negundo) and Red Elm (Ulmus rubra). This polygon supports many conservative herbaceous species. See Table 2 below for Regionally Rare Species in this polygon.

4. Dry-Fresh White Pine Naturalized Coniferous Plantation Type (FOCM6-1)
The 1954 aerial photo indicates that this area was open and unwooded at that time save for some scattered trees. It is clear that the White Pine (Pinus strobus) and European Larch (Larix decidua) that dominate the canopy in this polygon were planted some time shortly after 1954. This polygon still supports some Pignut Hickories (Carya glabra), a Provincially Rare Species.

5. Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type (FOCM6-3)/Dry-Fresh Mixed Meadow Ecosite (MEMM3)

This polygon includes the habitats at the north end of the subject property bordering St. John's Road East. The 1954 aerial photo indicates that this area was largely cleared except for a line of trees bordering the agriculture field to the south and some trees around the homestead on the east side of the polygon.

Today, this polygon supports dry cultural meadows and thickets bordering St. John's Road East and a naturalized coniferous plantation dominated by Scots Pine (Pinus sylvestris) bordering the agricultural field to the south. This polygon, although disturbed, supports keystone species like oaks (original black and red oaks), Common Milkweed (Asclepias syriaca), asters (Symphyotrichum spp.) and goldenrods (Solidago spp.) (Tallamy 2007).

As well, two mature flowering dogwoods (Cornus florida), an Endangered Species, were documented around the homestead on the northeast side of this polygon (See Species At Risk below for more details).

6. Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type (FOCM6-3)

Another band of a naturalized Scots Pine plantation is found in the centre of the subject property. This woodland occurs on a dry sandy hill and, although disturbed, it does harbour features indicative of the subject property's original prairie and oak woodland roots. Numerous original Black Oaks and Red Oaks dot the polygon, as well as stands of American Hazel (Corylus americana). Furthermore, there are a couple patches of original ground flora in the centre of the polygon (UTM: 560713 4738818 and 560717 478838). Prairie and savanna affinity species in these areas include Howell's Pussytoes (Antennaria howellii), Muhlenberg's Sedge (Carex muhlenbergii), Long-headed Anemone (Anemone cylindrica), Sand Dropseed (Sporobolus cryptandrus) and Round-headed Bushclover (Lespedeza capitata).

7. Native Mixed Regeneration Thicket Type (THMM1-1) (East Hedgerow)
8. Native Mixed Regeneration Thicket Type (THMM1-1) (West Hedgerow)

The hedgerows on the subject property, although dominated by non-native herbaceous flora, are loaded with high value native trees and shrubs. In keeping with the prairie and savanna heritage of the site, original Black oaks (Quercus velutina) are the most common trees in the hedgerows. Other native trees include White Oak (Quercus alba), Red Oak (Quercus rubra), Black Cherry (Prunus serotina), Black Walnut (Juglans nigra), Cottonwood (Populus deltoides), White Elm (Ulmus americana), Hackberry (Celtis occidentalis), Red Cedar (Juniperus virginiana) and Pagoda Dogwood (Cornus alternifolia). Native shrubs and vines in the hedgerows include American Hazel (Corylus americana), Gray Dogwood (Cornus racemosa), Carolina Rose (Rosa carolina), Cottony Willow (Salis eriocephala), Chokecherry (Prunus virginiana), Staghorn Sumac (Rhus typina), Bittersweet (Celastrus scandens), Poison Ivy (Toxicodendron radicans) and brambles (Rubus occidentalis, R. canadensis. R. alleghaniensis).

One exceptionally large, open grown Black Oak (Quercus velutina) is located in the west hedgerow at the back of the property (UTM: 560720 4738328). This tree was measured at 163cm dbh and had a crown spread over 30m wide. Checking the Ontario Honour Roll of Trees, this tree is the largest Black Oak recorded in the Province of Ontario (http://www.oldgrowth.ca/honour-roll-of-ontario-trees/). The previous record holder, the Kingsville Black Oak, was taken down over 10 years ago (personal observation).

As well, there is a very old White Oak (Quercus alba) in the western hedgerow in the northern half of the subject property (UTM: 560505 4739032) that does not have a normal crown. The main trunk of the tree is completely bent over in a long arc that points northeast and it is possible that the tree may have been culturally modified to point along an old trail or to another landscape feature. Sternberg (2004) described a similar looking white oak on Page 28 of his book Native Trees for North American Landscapes. I first noticed this tree during my visit to the subject property in April 2023. During my visit on September 21st, 2023, I noticed that pre-emptive clearing had been done for an access road into the site and it was clear that the equipment operator had taken the bucket of an excavator (or some other equipment) and broke off the top of this tree. Regardless of whether this is a culturally modified tree, this old white oak is a heritage tree that, in my opinion, is over 200 years old based on the balding and plated bark, right-angled and twisting branches and knobby growth forms on the tree. See Appendix 2 for before and after photos of this tree.

9. Dry-Fresh Mixed Meadow Ecosite (MEMM3)
This dry sandy meadow is located in the buffer zone in the east central area of the subject property. As mentioned, access to the 120m buffer zone on the east side of the subject property was limited, so the plant list for this polygon may be incomplete. This polygon, although disturbed and dominated by non-native grasses and forbs, is habitat to many prairie and savanna indicator species. They include Butterfly Milkweed (Asclepias tuberosa), Round-headed Bushclover (Lespedeza capitata), Pearly Everlasting (Anaphalis margaritacea), Narrow-leaved Tick-trefoil (Desmodium paniculatum), Few-flowered Panicgrass (Dichanthelium oligosanthes), Sand Dropseed (Sporobolus cryptandrus) and Northern Dewberry (Rubus flagellaris).

10. Naturalized Coniferous Hedgerow Ecosite (FOCM5)
In the buffer zone at the back of the property is an open sandy area that is a storage area for farm equipment screened by a White Cedar (Thuja occidentalis) hedge. Prairie and savanna indicator species in this area include Black Oak (Quercus velutina), Pignut Hickory (Carya glabra) (in the woods on the edge of the polygon), American Hazel (Corylus americana), Muhlenberg's Sedge (Carex muhlenbergii) and Sand Dropseed (Sporobolus cryptandrus).

Species At Risk

Two Species At Risk were found on the subject property. See Appendix 1 below for their location.

Flowering Dogwood
Two mature Flowering Dogwoods (Cornus florida) were documented in Polygon #5 by the house on St. John's Road East. Both trees are in good health. Judging by the lack of natural habitat around the house and the many planted trees (including Common Lilac, Redbuds, Black Locust and Rose-of-Sharon), the Flowering Dogwoods were planted. Flowering Dogwood is a Provincially Rare Species (S2?) and is listed as Endangered in the Province of Ontario. Details on the two trees are as follows:

1. Cornus florida, 13cm dbh and ~5m ht.; UTM: 560689 4739239.
2. Cornus florida, multi-stemmed tree ~7-13cm dbh; UTM: 560682 4739238.

Butternut
Two potential Butternuts (Juglans cf. cinerea) were documented in Polygon #1 on the subject property. One of the trees was dead and the other was in extremely poor health. The trees were not assessed for hybridity. Butternut is listed as Endangered in the Province of Ontario.

1. Juglans cf. cinerea, dead tree; ~50cm dbh; tree completely snapped at 8m ht.; UTM: 561051 4738250
2. Juglans cf. cinerea, tree ~80cm dbh, ~25+m ht.; ~95% dieback in the crown; UTM: 561017 4738271

Provincially Rare Species

Besides the Flowering Dogwood and Butternut, two other Provincially Rare Species were noted on the subject property:

Bee-balm
A stand of Bee-balm (Monarda didyma) was found in Polygon #3 just outside of the 120m buffer zone on the east side of the subject property (UTM: 561082 4738787). Bee-balm is listed as S3 in the Province of Ontario (Oldham 2017). The roughly 20m by 20m stand was growing in the partly shaded, organic soil floodplain under Black Walnut, Basswood and Red Maple along with species like American Groundnut (Apios americana) and Common Bedstraw (Galium aparine). I located the stand on July 8th, 2023 when it

was in full flower. When I returned to that area of the floodplain on September 21st, 2023, the stand had been completely dug up and removed.

Pignut Hickory

Ninety-four (94) Pignut Hickories (Carya glabra), from small saplings to large mature trees, were documented in the high-quality woodlands at the back of the subject property (See Table 1 below). Pignut Hickory is a tree associated with oak woodlands and savannas (Waldron 2003, personal observation). Almost all the Pignut Hickories were found in the Dry Black Oak Woodland Type (Polygon #1). Pignut Hickory is listed as S3 in the Province of Ontario. See Table 1 below.

Table 1 – Locations and Attributes of Pignut Hickories on the Subject Property

#	Species	Northing	Easting	Notes
1	Pignut Hickory	560831	4738082	Tree ~10cm dbh/8m ht.
2	Pignut Hickory	560813	4738092	Two trees ~16cm dbh/14m ht.
3	Pignut Hickory	560765	4738136	Large tree on edge of floodplain ~90cm dbh/22+m ht.
4	Pignut Hickory	560716	4738148	Six trees 15-30cm dbh/10-15m ht.
5	Pignut Hickory	560716	4738148	Six trees 10-18cm dbh/8-15m ht.
6	Pignut Hickory	561048	4738731	Tree 12.5cm dbh/16m ht.
7	Pignut Hickory	561054	4738743	Tree 47.5cm dbh/25+m ht.
8	Pignut Hickory	561047	4738753	Double trunked tree 40.5 and 42.7cm dbh/25+m ht.
9	Pignut Hickory	561027	4738786	Tree 17.5cm dbh/15m ht.
10	Pignut Hickory	561041	4738788	Tree 32.1cm dbh/20+m ht.
11	Pignut Hickory	561042	4738792	Tree 8.4cm dbh/5m ht.; tree damaged and bent over
12	Pignut Hickory	561028	4738802	Tree 40.5cm dbh/20+m ht.
13	Pignut Hickory	561054	4738698	Tree 26.3cm dbh/20+m ht.
14	Pignut Hickory	561077	4738482	Tree 36.4cm dbh/20+m ht.
15	Pignut Hickory	561089	4738494	Two trees 15.6cmdbh/~18m ht. + one pole size tree
16	Pignut Hickory	561095	4738491	Four trees 10-40cm dbh/10-20+m ht.
17	Pignut Hickory	561068	4738470	Tree ~12cm dbh/8m ht. + one pole size tree
18	Pignut Hickory	561056	4738451	Four pole size trees 5-10cm dbh
19	Pignut Hickory	561036	4738469	Tree ~30cm dbh/20+m ht.
20	Pignut Hickory	561022	4738458	Tree ~25cm dbh/20+m ht.
21	Pignut Hickory	561030	4738424	Tree ~50cm dbh/25+m ht. plus two pole size trees
22	Pignut Hickory	561051	4738367	Tree ~50cm dbh/25+m ht. plus three other trees 10-45cm dbh
23	Pignut Hickory	561070	4738343	Four trees 15-35cm dbh/10-20m+ ht.
24	Pignut Hickory	561079	4738325	Tree ~12cm dbh/12m ht.
25	Pignut Hickory	561092	4738294	Two trees ~18cm dbh/18m ht. and 15cm dbh/8m ht.
26	Pignut Hickory	561101	4738257	Tree ~18cm dbh/18m ht. plus two pole size trees
27	Pignut Hickory	561084	4738240	Tree ~40cm dbh/20+m ht. plus two pole size trees
28	Pignut Hickory	561061	4738247	Tree ~40cm dbh/20+m ht. plus three pole size trees
29	Pignut Hickory	560869	4738172	Three trees 15-30cm dbh
30	Pignut Hickory	560849	4738183	Two trees 15-25cm dbh
31	Pignut Hickory	560797	4738241	Three pole sized trees
32	Pignut Hickory	560833	4738248	Two trees ~25cm dbh/18m ht. and ~15cm dbh/16m ht.
33	Pignut Hickory	560891	4738268	Two trees 50.5cm dbh/25+m ht. and 26.8cm dbh/20+m ht.
34	Pignut Hickory	560914	4738269	Tree 16.5cm dbh/18m ht.
35	Pignut Hickory	560858	4738166	Six trees 10-60cm dbh
36	Pignut Hickory	560930	4738186	Two trees 25cm dbh/18m ht. and 18cm dbh/16m ht.
37	Pignut Hickory	560980	4738200	Two pole size trees
38	Pignut Hickory	561011	4738257	Three pole size trees 8-15cm dbh/8-15m ht.
39	Pignut Hickory	561031	4738224	Two saplings 2cm dbh/4m ht.
40	Pignut Hickory	561032	4738293	Tree ~50cm dbh/25+m ht.
41	Pignut Hickory	561025	4738303	Tree ~35cm dbh/20+m ht.
42	Pignut Hickory	561055	4738335	Six small trees 5-20cm dbh
43	Pignut Hickory	561052	4738362	Two pole size trees.
44	Pignut Hickory	561056	4738385	Five small trees 6-20cm dbh
45	Pignut Hickory	561074	4738389	Tree ~27cm dbh/20m ht.

Provincially Rare Habitat Types

The Dry Black Oak Woodland Type (WODM3-2) found in Polygon #1 is a Provincially Rare Habitat Type. Bakowsky (1997) lists the Dry Black Oak Deciduous Forest Type as S3 or Rare to Uncommon in the Province of Ontario. Black Oak dominant woodlands with a large concentration of the Provincially Rare Species, Pignut Hickory (Carya glabra), are rarely encountered in Southern Ontario (personal observation).

As mentioned, original crown survey records for the subject property and surrounding area indicate oak-pine woodlands and savannas and, to the west, open tallgrass prairies dominated the rolling, well-drained sands on the west side of Port Dover (Findlay 1973). The dominance of Black Oak (and the many tallgrass prairie and savanna indicator species) on the subject property, indicate that these habitats were shaped by fire. Black Oak is a fire adapted tree who sends out suckers when above ground stems are killed (Waldron 2003).

Regionally Rare Species

Thirty-five (33) regionally rare or uncommon species, in the Carolinian Zone and/or Haldimand-Norfolk County (Oldham 2017), were recorded on or adjacent to the subject property and are listed in Table 2 below. Many of these species are becoming increasingly rare in the wild and, in a generation or two, will become Provincially Rare Species (personal observation).

Table 2 – Regionally Rare and Uncommon Species on or Adjacent to Subject Property

Species	Polygon #	Ontario S-Rank	Haldimand Norfolk	Carolinian Zone
Black Maple (Acer nigrum)	2, 3	S4	Uncommon	Common
Pearly Everlasting (Anaphalis margaritacea)	9	S5	Uncommon	Rare
Long-headed Anemone (Anemone cylindrica)	6	S4	Uncommon	Uncommon
Howell's Pussytoes (Antennaria howellii)	6	S5	Common	Uncommon
Butterfly Milkweed (Asclepias tuberosa)	9	S4	Common	Uncommon
Ebony Spleenwort (Asplenium platyneuron)	1, 4	S4	Uncommon	Rare
Finely-nerved Sedge (Carex leptonervia)	4	S5	Uncommon	Uncommon
Muhlenberg's Sedge (Carex muhlenbergii)	6, 10	S4S5	Common	Rare
Pignut Hickory (Carya glabra)	1, 4	S3	Common	Uncommon
Hackberry (Celtis occidentalis)	2, 7	S4	Uncommon	Common
American Golden-saxifrage (Chrysosplenium americanum)	3	S4	Common	Uncommon
Flowering Dogwood (Cornus florida)	5	S2?	Common	Uncommon
Frosted Hawthorn (Crataegus pruinosa var. pruinosa)	1	S4S5	Common	Uncommon
Narrow-leaved Tick-trefoil (Desmodium paniculatum)	9	S4	Uncommon	Uncommon
Crested Wood Fern (Dryopteris cristata)	3	S5	Rare	Uncommon
Tall Mannagrass (Glyceria grandis)	3	S5	Uncommon	Uncommon
Cow Parsnip (Heracleum maximum)	3	S5	Uncommon	Uncommon
Large Tick-trefoil (Hylodesmum glutinosum)	1, 2	S4	Common	Uncommon
Butternut (Juglans cinerea)	1	S2?	Common	Uncommon
Tall Blue Lettuce (Lactuca biennis)	3	S5	Uncommon	Uncommon
Canada Lettuce (Lactuca canadensis)	5, 7	S5	Common	Uncommon
Many-flowered Woodrush (Luzula multiflora)	1	S5	Uncommon	Common
Poor-man's Peppergrass (Lepidium virginicum)	6, 7, 9	S5	Uncommon	Uncommon
Round-headed Bushclover (Lespedeza capitata)	6, 9, 10	S4	Common	Uncommon
Hairy Honeysuckle (Lonicera hirsuta)	3	S5	NEW TO COUNTY	Rare
Drooping Bluegrass (Poa cf. salutensis ssp. salutensis)	1	S4	Tentative Ssp. is NEW TO COUNTY	Rare
Carolina Rose (Rosa carolina)	8	S4	Uncommon	Common
Canada Blackberry (Rubus canadensis)	8	S5	NEW TO COUNTY	Rare
Sand Dropseed (Sporobolus cryptandrus)	5, 6, 9, 10	S5	Common	Uncommon
Hispid Hedge-nettle (Stachys cf. hispida)	3	S4	Uncommon	Rare
Orange-fruited Horse-gentian (Triosteum aurantiacum)	1	S4S5	Uncommon	Uncommon
Red Elm (Ulmus rubra)	1, 3, 4	S5	Uncommon	Common
American Speedwell (Veronica americana)	3	S5	Uncommon	Uncommon

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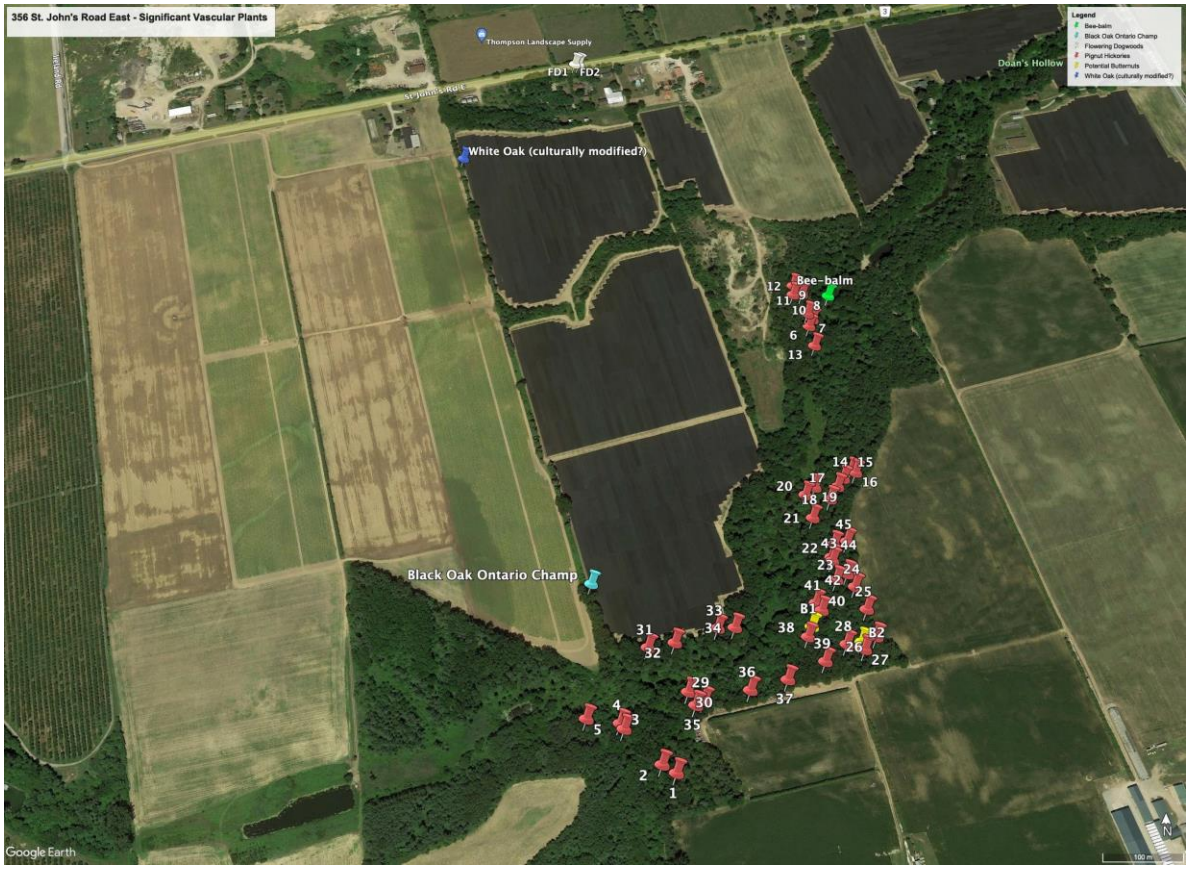
1954 Aerial Photos:
http://maps.library.utoronto.ca/data/on/AP_1954/index.html

Butternut Fact Sheet from the Forest Gene Conservation Association:
https://fgca.net/wp-content/uploads/2012/07/butternutTree_IfYouHave.pdf

Appendix 1 - Significant Vascular Plants and Other Botanical Features



Appendix 2 - Old White Oak and Potential Culturally Modified Tree in Hedgerow

Tree on April 6th, 2023.

Tree on September 21, 2023 with top broken off.

SCIENTIFIC_NAME	ENGLISH_COMMON_NA	SYNONYMS	S_RANK	SARO_COSE	SARA_STATUS	1. WODM3-2	2. FOMM9-2	3. MAMO2-1	4. FOCM6-1	5. FOCM6-3/MEMM3	6. FOCM6-3	7. THMM1-1 (EAST)	8. THMM1-1 (WEST)	9. MEMM3	10. FOCM5	ORDER	FAMILY	GENUS	S_RANK_REASONS	COEFF_CONSERVATISM	COEFF_WETNESS
Acer negundo	Manitoba Maple		S5			x	x	x	x	x	x	x	x			Sapindales	Aceraceae	Acer	Widespread in southern	0	0
Acer nigrum	Black Maple	Acer saccharum ssp. nigru	S4?				x	x								Sapindales	Aceraceae	Acer	Uncommon; often on flox	7	3
Acer platanoides	Norway Maple		SNA							x						Sapindales	Aceraceae	Acer	Locally common and inva		5
Acer rubrum	Red Maple		S5			x	x	x								Sapindales	Aceraceae	Acer	A widespread and commo	4	0
Acer saccharum	Sugar Maple	Acer saccharum ssp. sacc	S5			x										Sapindales	Aceraceae	Acer	A widespread and commo	4	3
Achillea millefolium	Common Yarrow	Achillea millefolium ssp. r	SNA								x					Asterales	Asteraceae	Achillea	Distribution and status of		3
Actaea pachypoda	White Baneberry	Actaea alba	S5			x			x	x						Ranunculales	Ranunculaceae	Actaea	Rich woods and thickets	6	5
Agrostis gigantea	Redtop		SNA								x					Cyperales	Poaceae	Agrostis	Widespread and commor		-3
Agrostis stolonifera	Creeping Bentgrass	Agrostis alba var. palustris	SNA					x	x							Cyperales	Poaceae	Agrostis	Common throughout sou		-3
Alliaria petiolata	Garlic Mustard	Alliaria officinalis	SNA			x	x	x	x	x	x	x				Capparales	Brassicaceae	Alliaria	An exotic invasive plant o		0
Alyssum alyssoides	Small Alyssum		SNA									x				Capparales	Brassicaceae	Alyssum	A widespread weed in so		5
Amaranthus retroflexus	Redroot Amaranth		SNA							x		x	x			Caryophyllales	Amaranthaceae	Amaranthus	A common weed of agric		3
Ambrosia artemisiifolia	Common Ragweed		S5							x		x	x	x	x	Asterales	Asteraceae	Ambrosia	A common weed of agric	0	3
Amelanchier arborea	Downy Serviceberry		S5			x	x									Rosales	Rosaceae	Amelanchier	Widespread and locally c	5	3
Amphicarpaea bracteata	American Hog-peanut	Amphicarpaea bracteata	S5					x	x					x		Fabales	Fabaceae	Amphicarpaea	Widespread in southern t	4	0
Anaphalis margaritacea	Pearly Everlasting		S5											x		Asterales	Asteraceae	Anaphalis	Widespread and locally c	3	3
Anemone cylindrica	Long-headed Anemone		S4								x					Ranunculales	Ranunculaceae	Anemone	Widespread but local in s	7	5
Anemone quinquefolia	Wood Anemone	Anemone nemorosa var.	S5			x	x									Ranunculales	Ranunculaceae	Anemone	A widespread woodland v	7	0
Angelica atropurpurea	Purple-stemmed Angelica	Angelica laurentiana	S5					x								Apiales	Apiaceae	Angelica	Widespread but very loca	6	-5
Antennaria howellii	Howell's Pussytoes	Antennaria neodioica	S5								x					Asterales	Asteraceae	Antennaria	This species occurs nearly	2	5
Anthemis cotula	Stinking Chamomile		SNA								x		x			Asterales	Asteraceae	Anthemis	A widespread introduced		3
Apios americana	American Groundnut		S5				x	x								Fabales	Fabaceae	Apios	Widespread and locally c	6	-3
Aquilegia canadensis	Red Columbine		S5			x										Ranunculales	Ranunculaceae	Aquilegia	Widespread and locally c	5	3
Arctium lappa	Great Burdock		SNA									x				Asterales	Asteraceae	Arctium	Locally common and wide		3
Arctium minus	Common Burdock	Arctium nemorosum	SNA							x	x					Asterales	Asteraceae	Arctium	Widespread and locally c		3
Arenaria serpyllifolia	Thyme-leaved Sandwort		SNA									x	x	x		Caryophyllales	Caryophyllaceae	Arenaria	A widespread Eurasian w		0
Arisaema triphyllum	Jack-in-the-pulpit	Arisaema atrorubens	S5				x		x	x						Arales	Araceae	Arisaema	Widespread and distinctl	5	-3
Asclepias syriaca	Common Milkweed		S5							x		x		x	x	Gentianales	Apocynaceae	Asclepias	Widespread and locally c	0	5
Asclepias tuberosa	Butterfly Milkweed		S4											x		Gentianales	Apocynaceae	Asclepias	Widespread but local in s	8	5
Asparagus officinalis	Garden Asparagus		SNA									x				Liliales	Liliaceae	Asparagus	Commonly cultivated and		3
Asplenium platyneuron	Ebony Spleenwort		S4			x			x							Filicales	Aspleniaceae	Asplenium	Uncommon across south	6	3
Athyrium filix-femina	Common Lady Fern		S5			x	x	x	x	x						Filicales	Dryopteridaceae	Athyrium	Very common, distributed	4	0
Barbarea vulgaris	Bitter Wintercress		SNA					x						x		Capparales	Brassicaceae	Barbarea	A widespread and comm		0
Berberis thunbergii	Japanese Barberry		SNA			x	x									Ranunculales	Berberidaceae	Berberis	Widespread exotic shrub		3
Berberis vulgaris	Common Barberry		SNA								x					Ranunculales	Berberidaceae	Berberis	Fairly common weed in d		3
Berteroa incana	Hoary Alyssum		SNA									x	x	x		Capparales	Brassicaceae	Berteroa	Introduced weed in fields		5
Betula alleghaniensis	Yellow Birch	Betula lutea	S5				x	x								Fagales	Betulaceae	Betula	A widespread forest tree	6	0
Bidens frondosa	Devil's Beggarticks	Bidens frondosus	S5					x								Asterales	Asteraceae	Bidens	Widespread in southern	3	-3
Bidens vulgata	Tall Beggarticks	Bidens vulgatus	S5											x		Asterales	Asteraceae	Bidens	Widespread in southern	5	0
Boehmeria cylindrica	Small-spike False Nettle		S5					x								Urticales	Urticaceae	Boehmeria	A widespread and locally	4	-5
Bromus inermis	Smooth Brome	Bromopsis inermis, Brom	SNA							x	x	x	x	x		Cyperales	Poaceae	Bromus	Widespread in disturbed,		5
Bromus japonicus	Japanese Brome		SNA											x		Cyperales	Poaceae	Bromus	Widespread and locally c		3
Bromus tectorum	Downy Brome		SNA							x	x	x	x	x		Cyperales	Poaceae	Bromus	According to Dore and M		5
Buglossoides arvensis	Corn Gromwell	Buglossoides arvense, Lit	SNA										x			Lamiales	Boraginaceae	Buglossoides	Widespread in southern		5
Caltha palustris	Yellow Marsh Marigold		S5					x								Ranunculales	Ranunculaceae	Caltha	A distinctive, widespread	5	-5
Cannabis sativa	Hemp		SNA										x			Urticales	Cannabaceae	Cannabis	Although commonly and		0
Cardamine concatenata	Cut-leaved Toothwort	Cardamine laciniata, Den	S5			x										Capparales	Brassicaceae	Cardamine	Rich damp or wet woods	6	3
Cardamine pensylvanica	Pennsylvania Bittercress		S5							x			x			Capparales	Brassicaceae	Cardamine	Widespread province-wic	6	-3
Carex bebbii	Bebb's Sedge		S5					x								Cyperales	Cyperaceae	Carex	A common and widespre	3	-5
Carex blanda	Woodland Sedge	Carex laxiflora var. blandi	S5			x	x		x	x	x					Cyperales	Cyperaceae	Carex	One of the most commor	3	0
Carex bromoides	Brome-like Sedge		S5				x	x								Cyperales	Cyperaceae	Carex	Locally common in south	7	-3
Carex deweyana	Dewey's Sedge		S5			x										Cyperales	Cyperaceae	Carex	A widespread and commo	6	3
Carex digitalis	Slender Woodland Sedge		S4S5			x										Cyperales	Cyperaceae	Carex	Locally common in the Ca	7	5
Carex gracillima	Graceful Sedge		S5			x	x	z								Cyperales	Cyperaceae	Carex	A common and widespre	4	3
Carex hirtifolia	Pubescent Sedge		S4S5			x		x								Cyperales	Cyperaceae	Carex	A sedge of rich deciduous	5	5
Carex hystericina	Porcupine Sedge	Carex hystricina	S5					x								Cyperales	Cyperaceae	Carex	A widespread and commo	5	-5
Carex intumescens	Bladder Sedge	Carex intumescens var. fe	S5				x									Cyperales	Cyperaceae	Carex	A widespread and locally	6	-3
Carex lacustris	Lake Sedge		S5					x								Cyperales	Cyperaceae	Carex	A common wetland sedge	5	-5
Carex leptonervia	Finely-nerved Sedge		S5						x							Cyperales	Cyperaceae	Carex	Widespread and locally c	5	0
Carex muehlenbergii	Muhlenberg's Sedge		S4S5								x				x	Cyperales	Cyperaceae	Carex	Widespread but local in s	7	5
Carex pedunculata	Long-stalked Sedge		S5			x										Cyperales	Cyperaceae	Carex	A widespread and commo	5	3
Carex pensylvanica	Pennsylvania Sedge		S5			x	x					x				Cyperales	Cyperaceae	Carex	Widespread and locally c	5	5
Carex radiata	Eastern Star Sedge	Carex rosea	S5						x							Cyperales	Cyperaceae	Carex	A widespread and locally	4	0
Carex retrorsa	Retrorse Sedge		S5					x								Cyperales	Cyperaceae	Carex	Widespread and locally c	5	-5
Carex rosea	Rosy Sedge	Carex convoluta	S5			x										Cyperales	Cyperaceae	Carex	Widespread and locally c	2	5
Carex sparganioides	Burreed Sedge	Carex sparganioides var.	S4S5							x						Cyperales	Cyperaceae	Carex	Widespread in southern t	5	3
Carex stipata	Awl-fruited Sedge		S5					x								Cyperales	Cyperaceae	Carex	A common and widespre	3	-5
Carex stricta	Tussock Sedge		S5					x								Cyperales	Cyperaceae	Carex	A widespread and locally	4	-5
Carpinus caroliniana	Blue-beech		S5			x	x	x								Fagales	Betulaceae	Carpinus	A widespread and locally	6	0
Carya cordiformis	Bitternut Hickory		S5			x										Juglandales	Juglandaceae	Carya	A widespread forest tree	6	0
Carya glabra	Pignut Hickory	Carya ovalis	S3			x			x							Juglandales	Juglandaceae	Carya	Rare and local in dry decí	9	3
Carya ovata	Shagbark Hickory		S5			x								x		Juglandales	Juglandaceae	Carya	A widespread forest tree	6	3
Celastrus scandens	Climbing Bittersweet		S5						x	x		x	x	x		Celastrales	Celastraceae	Celastrus	Locally common in south	3	3
Celtis occidentalis	Common Hackberry		S4				x					x				Urticales	Ulmaceae	Celtis	Widespread in southern t	8	0
Centaurea stoebe	Spotted Knapweed		SNA							x						Asterales	Asteraceae	Centaurea	A widespread, locally abu		5
Cerastium fontanum	Common Mouse-ear Chic	Cerastium vulgatum	SNA				x				x	x	x			Caryophyllales	Caryophyllaceae	Cerastium	Widespread and locally c		3
Cercis canadensis	Eastern Redbud		SX							x						Fabales	Fabaceae	Cercis	The only presumed nativ	8	3
Chelidonium majus	Greater Celandine		SNA						x	x	x	x				Papaverales	Papaveraceae	Chelidonium	Widespread and often loc		5
Chelone glabra	White Turtlehead		S5					x								Scrophulariales	Scrophulariaceae	Chelone	Widespread but often loc	7	-5
Chenopodium album	Common Lamb's-quarter	Chenopodium album var.	SNA								x	x	x			Caryophyllales	Chenopodiaceae	Chenopodium	A widespread and variabl		3
Chrysosplenium americar	American Golden-saxifra		S4					x								Rosales	Saxifragaceae	Chrysosplenium	Uncommon and local in c	8	-5
Circaea canadensis	Broad-leaved Enchanter's	Circaea canadensis, Circa	S5				x		x	x	x				x	Myrtales	Onagraceae	Circaea	Widespread and locally c	2	3
Claytonia virginica	Eastern Spring Beauty		S5			x	x									Caryophyllales	Portulacaceae	Claytonia	Widespread spring epher	5	3
Claytosmunda claytonian	Interrupted Fern	Claytosmunda claytonian	S5				x	x								Filicales	Osmundaceae	Osmunda	Widespread and commor	7	0
Convallaria majalis	European Lily-of-the-valle		SNA			x				x						Liliales	Liliaceae	Convallaria	A widely cultivated ornan		5
Cornus alternifolia	Alternate-leaved Dogwoc	Swida alternifolia	S5			x	x		x	x	x	x				Cornales	Cornaceae	Cornus	Common and widespread	6	3
Cornus florida (planted)	Eastern Flowering Dogwc	Benthamidia florida	S2?	END	END END					x						Cornales	Cornaceae	Cornus	Formerly a widespread sp	7	3
Cornus obliqua	Silky Dogwood	Cornus amomum ssp. obl	S5					x								Cornales	Cornaceae	Cornus	In low damp ground alon	2	-3
Cornus racemosa	Grey Dogwood	Cornus foemina ssp. race	S5			x		x		x			x			Cornales	Cornaceae	Cornus	In thickets, moist soil alor	2	0
Cornus sericea	Red-osier Dogwood	Cornus stolonifera	S5					x								Cornales	Cornaceae	Cornus	Widespread and locally c	2	-3
Corylus americana	American Hazelnut		S5			x		x			x	x	x	x	x	Fagales	Betulaceae	Corylus	Widespread but local shr	5	3
Crataegus pruinosa	Frosted Hawthorn		S5			x										Rosales	Rosaceae	Crataegus	Occurs in in southern Ont	4	5
Crepis tectorum	Narrow-leaved Hawksbea		SNA							x		x				Asterales	Asteraceae	Crepis	Widespread and increasir		5
Cryptotaenia canadensis	Canada Honewort		S5				x		x							Apiales	Apiaceae	Cryptotaenia	Rich woods and thickets	5	0
Cyperus esculentus	Perennial Yellow Flatsedg		S5										x			Cyperales	Cyperaceae	Cyperus	Widespread in southern t	1	-3
Cystopteris tenuis	Mackay's Brittle Fern	Cystopteris fragilis var. m	S4			x										Filicales	Dryopteridaceae	Cystopteris	Relatively widespread an	6	5
Dactylis glomerata	Orchard Grass		SNA							x		x	x	x		Cyperales	Poaceae	Dactylis	A European introduction		3
Datura stramonium	Jimsonweed		SNA											x		Solanales	Solanaceae	Datura	Widespread in southern		5
Daucus carota	Wild Carrot		SNA							x				x	x	Apiales	Apiaceae	Daucus	Widespread and locally a		5
Desmodium paniculatum	Narrow-leaved Tick-trefo		S4											x		Fabales	Fabaceae	Desmodium	Widespread but local in s	6	3

| | | |

Oryzopsis asperifolia	Rough-leaved Mountain I		S5	x										Cyperales	Poaceae	Oryzopsis	A widespread and locally 6	5
Osmorhiza longistylis	Smooth Sweet Cicely		S5	x	x		x	x						Apiales	Apiaceae	Osmorhiza	Moist woods and clearing 6	3
Osmundastrum cinnamo	Cinnamon Fern	Osmunda cinnamomea, C	S5			x								Filicales	Osmundaceae	Osmunda	Widespread and locally c 7	-3
Ostrya virginiana	Eastern Hop-hornbeam		S5	x										Fagales	Betulaceae	Ostrya	A widespread and locally 4	3
Oxalis dillenii	Slender Yellow Wood-sor		SNA									x	x	Geraniales	Oxalidaceae	Oxalis	Widespread in southern a	3
Panicum miliaceum	Proso Millet		SNA							x				Cyperales	Poaceae	Panicum	An uncommon and local v	5
Parthenocissus quinquefc	Virginia Creeper		S4?				x							Rhamnales	Vitaceae	Parthenocissus	Widespread but local in w 6	3
Parthenocissus vitacea	Thicket Creeper	Parthenocissus inserta	S5			x			x					Rhamnales	Vitaceae	Parthenocissus	Widespread and commor 4	3
Persicaria maculosa	Spotted Lady's-thumb	Persicaria maculata, Poly	SNA					x	x					Polygonales	Polygonaceae	Persicaria	A widespread weed, natu	-3
Persicaria virginiana	Virginia Smartweed	Persicaria virginiana, Poly	S4			x								Polygonales	Polygonaceae	Polygonum	A woodland species restr 6	0
Phalaris arundinacea	Reed Canarygrass	Phalaroides arundinacea	S5			x								Cyperales	Poaceae	Phalaris	Both native and introduc 0	-3
Phlox divaricata	Wild Blue Phlox		S4	x										Solanales	Polemoniaceae	Phlox	An uncommon and local : 7	3
Phragmites australis ssp.	American Reed	Phragmites americanus	SU			x								Cyperales	Poaceae	Phragmites	Widespread and locally c 5	-3
Phryma leptostachya	Lopseed		S4S5	x	x									Lamiales	Verbenaceae	Phryma	Widespread but generalh 6	3
Phytolacca americana	Common Pokeweed		S4				x	x			x		x	Caryophyllales	Phytolaccaceae	Phytolacca	Locally common, usually 3	3
Pilosella piloselloides	Tall Hawkweed	Hieracium florentinum, H	SNA					x	x	x		x		Asterales	Asteraceae	Hieracium	A widespread and abund:	5
Pinus strobus	Eastern White Pine		S5	x	x	x	x	x						Pinales	Pinaceae	Pinus	Ontario's provincial tree : 4	3
Pinus sylvestris	Scots Pine		SNA					x	x		x			Pinales	Pinaceae	Pinus	A widespread invasive ex	3
Plantago lanceolata	English Plantain		SNA					x				x		Plantaginales	Plantaginaceae	Plantago	A widespread introductio	3
Plantago major	Common Plantain		SNA										x	Plantaginales	Plantaginaceae	Plantago	Widespread and locally c	3
Poa alsodes	Grove Bluegrass		S4	x		x								Cyperales	Poaceae	Poa	Widespread in southern : 7	0
Poa annua	Annual Bluegrass		SNA					x	x			x		Cyperales	Poaceae	Poa	Widespread introduced v	3
Poa compressa	Canada Bluegrass		SNA					x	x	x	x	x	x	Cyperales	Poaceae	Poa	Locally abundant and wid	3
Poa palustris	Fowl Bluegrass		S5		x	x	x	x						Cyperales	Poaceae	Poa	A very widespread and cc 5	-3
Poa pratensis	Kentucky Bluegrass		S5					x	x	x		x		Cyperales	Poaceae	Poa	A widespread, variable, a 0	3
Poa cf. saltuensis	Open Woodland Bluegra		S4	x										Cyperales	Poaceae	Poa	A widespread but local gr 5	5
Podophyllum peltatum	May-apple		S5		x	x								Ranunculales	Berberidaceae	Podophyllum	Locally common and disti 5	3
Polygonatum pubescens	Hairy Solomon's Seal		S5	x	x									Liliales	Liliaceae	Polygonatum	A widespread and locally 5	5
Polygonum aviculare ssp.	Prostrate Knotweed		SNA					x					x	Polygonales	Polygonaceae	Polygonum	A widespread and locally	3
Polystichum acrostichoid	Christmas Fern		S5	x										Filicales	Dryopteridaceae	Polystichum	Widespread and locally c 5	3
Populus deltoides	Eastern Cottonwood		S5							x				Salicales	Salicaceae	Populus	Widespread in southern : 4	0
Populus grandidentata	Large-toothed Aspen		S5	x										Salicales	Salicaceae	Populus	A locally common tree of 5	5
Populus tremuloides	Trembling Aspen		S5				x							Salicales	Salicaceae	Populus	<p>Widespread and local 2	0
Portulaca oleracea	Common Purslane		SNA					x						Caryophyllales	Portulacaceae	Portulaca	Eurasian; a common wee	3
Potentilla argentea	Silvery Cinquefoil		SNA					x						Rosales	Rosaceae	Potentilla	A widely introduced Eura	3
Potentilla norvegica	Rough Cinquefoil	Potentilla norvegica ssp.	S5									x		Rosales	Rosaceae	Potentilla	A variable species which i 0	0
Potentilla recta	Sulphur Cinquefoil		SNA						x	x		x	x	Rosales	Rosaceae	Potentilla	Widespread and locally c	5
Prunus cerasus	Sour Cherry		SNA						x					Rosales	Rosaceae	Prunus	Asiatic; rarely persisting c	5
Prunus serotina	Black Cherry		S5	x	x		x	x	x	x	x			Rosales	Rosaceae	Prunus	Widespread forest tree ir 3	3
Prunus virginiana	Chokecherry		S5	x		x		x	x	x				Rosales	Rosaceae	Prunus	Widespread and locally c 2	3
Pteridium aquilinum	Bracken Fern	Pteridium latiusculum	S5		x					x	x	x		Filicales	Dennstaedtiaceae	Pteridium	Widespread throughout r 2	3
Quercus alba	White Oak		S5	x						x	x			Fagales	Fagaceae	Quercus	A widespread forest tree 6	3
Quercus rubra	Northern Red Oak		S5	x	x			x	x		x			Fagales	Fagaceae	Quercus	Widespread in southern : 6	3
Quercus velutina	Black Oak		S4	x	x		x	x	x	x	x	x	x	Fagales	Fagaceae	Quercus	A species of dry, sandy fo 8	5
Ranunculus abortivus	Kidney-leaved Buttercup		S5	x	x									Ranunculales	Ranunculaceae	Ranunculus	Locally common chiefly ir 2	0
Ranunculus caricetorum	Northern Swamp Butterc	Ranunculus caricetorum,	S5			x								Ranunculales	Ranunculaceae	Ranunculus	Widespread throughout r 5	-5
Reynoutria japonica	Japanese Knotweed	Fallopia japonica, Polygor	SNA	x				x					x	Polygonales	Polygonaceae	Reynoutria	A large, aggressive, and s	3
Rhamnus cathartica	European Buckthorn	Rhamnus cathartica	SNA	x	x		x	x	x	x	x			Rhamnales	Rhamnaceae	Rhamnus	A widespread and locally	0
Rhodotypos scandens	Black Jetbead		SNA	x										Rosales	Rosaceae	Rhodotypos	A rare escape from cultiv	
Rhus typhina	Staghorn Sumac	Rhus hirta	S5	x				x	x	x	x		x	Sapindales	Anacardiaceae	Rhus	Widespread and locally a 1	3
Ribes americanum	American Black Currant		S5	x	x		x							Rosales	Grossulariaceae	Ribes	Common and widespread 4	-3
Ribes cynosbati	Eastern Prickly Gooseber		S5	x	x	x								Rosales	Grossulariaceae	Ribes	Widespread and locally c 4	3
Robinia pseudoacacia	Black Locust	Robinia pseudo-acacia	SNA					x						Fabales	Fabaceae	Robinia	A widely planted species,	3
Rosa carolina	Carolina Rose		S4								x			Rosales	Rosaceae	Rosa	Generally in dry sandy for 6	3
Rosa multiflora	Multiflora Rose		SNA	x			x			x	x	x		Rosales	Rosaceae	Rosa	An Asiatic species increas	3
Rubus allegheniensis	Allegheny Blackberry	Rubus alumnus, Rubus ro	S5		x							x		Rosales	Rosaceae	Rubus	Widespread and locally c 2	3
Rubus canadensis	Canada Blackberry	Rubus acridens	S5								x			Rosales	Rosaceae	Rubus	Widespread in southern : 2	5
Rubus flagellaris	Northern Dewberry	Rubus arundelanus, Rubu	S4									x		Rosales	Rosaceae	Rubus	Widespread in southern : 4	3
Rubus occidentalis	Black Raspberry		S5			x		x	x	x	x	x	x	Rosales	Rosaceae	Rubus	Widespread in southern : 2	5
Rumex acetosella	Sheep Sorrel		SNA						x		x	x		Polygonales	Polygonaceae	Rumex	Widespread and locally c	3
Rumex crispus	Curled Dock		SNA					x	x		x	x		Polygonales	Polygonaceae	Rumex	Locally common and wide	0
Rumex obtusifolius	Bitter Dock		SNA			x								Polygonales	Polygonaceae	Rumex	A native of Europe, founc	-3
Salix amygdaloides	Peach-leaved Willow		S5			x								Salicales	Salicaceae	Salix	A widespread and locally 6	-3
Salix eriocephala	Cottony Willow	Salix cordata var. abrasa	S5								x			Salicales	Salicaceae	Salix	Widespread willow of flo 4	-3
Salix euxina	Crack Willow	Salix fragilis	SNA			x								Salicales	Salicaceae	Salix	Listed for Ontario in FNA	0
Sambucus canadensis	Common Elderberry	Sambucus canadensis, Sa	S5			x								Dipsacales	Caprifoliaceae	Sambucus	Widespread and locally c 5	-3
Saponaria officinalis	Bouncing-bet		SNA					x	x	x	x			Caryophyllales	Caryophyllaceae	Saponaria	A widespread and comm	3
Sassafras albidum	Sassafras		S4	x										Laurales	Lauraceae	Sassafras	A distinctive tree restricte 6	3
Scilla siberica	Siberian Squill	Othocallis siberica, Scilla	SNA	x										Liliales	Liliaceae	Scilla	An uncommon but somet	5
Scirpus atrovirens	Dark-green Bulrush		S5			x								Cyperales	Cyperaceae	Scirpus	Widespread and locally c 3	-5
Setaria faberi	Giant Foxtail		SNA					x	x	x	x		x	Cyperales	Poaceae	Setaria	An introduced Asian gras	3
Silene latifolia	White Campion	Lychnis alba, Silene alba,	SNA					x		x		x		Caryophyllales	Caryophyllaceae	Silene	Widespread Eurasian intr	5
Silene vulgaris	Bladder Campion	Silene cucubalus	SNA						x	x		x		Caryophyllales	Caryophyllaceae	Silene	A widespread and locally	5
Sisymbrium altissimum	Tall Tumble Mustard		SNA						x		x			Capparales	Brassicaceae	Sisymbrium	A widespread Eurasian w	3
Smilax tamnoides	Bristly Greenbriar	Smilax hispida, Smilax tar	S5	x	x									Liliales	Smilacaceae	Smilax	Widespread and locally c 6	0
Solanum dulcamara	Bittersweet Nightshade		SNA			x								Solanales	Solanaceae	Solanum	Widespread and locally a	0
Solanum emulans	Eastern Black Nightshade	Solanum emulans, Solanu	S5					x						Solanales	Solanaceae	Solanum	The most common memt 1	3
Solidago altissima	Tall Goldenrod		S5	x			x		x		x	x	x	Asterales	Asteraceae	Solidago	Ssp./var. altissima is wide 1	3
Solidago caesia	Blue-stemmed Goldenro		S5	x										Asterales	Asteraceae	Solidago	A common woodland gol 5	3
Solidago canadensis	Canada Goldenrod		S5				x	x				x	x	Asterales	Asteraceae	Solidago	Var. canadensis is widesp 1	3
Solidago flexicaulis	Zigzag Goldenrod		S5	x										Asterales	Asteraceae	Solidago	Widespread southern On 6	3
Solidago nemoralis	Grey-stemmed Goldenro		S5						x	x		x		Asterales	Asteraceae	Solidago	Ssp. nemoralis is widespr 2	5
Solidago patula	Spreading Goldenrod	Solidago patula ssp. patu	S4			x								Asterales	Asteraceae	Solidago	Widespread and locally c 8	-5
Solidago rugosa	Rough-stemmed Goldenr		S5			x								Asterales	Asteraceae	Solidago	Locally common in fields, 4	0
Spiraea alba	White Meadowsweet		S5			x								Rosales	Rosaceae	Spiraea	Widespread and locally c 3	-3
Sporobolus cryptandrus	Sand Dropseed		S4					x	x			x	x	Cyperales	Poaceae	Sporobolus	Native on dry sandy beac 2	3
Sporobolus vaginiflorus	Sheathed Dropseed		S5					x						Cyperales	Poaceae	Sporobolus	Widespread native but w 1	5
Stachys cf. hispida	Hispid Hedge-nettle	Stachys hispida, Stachys t	S4			x								Lamiales	Lamiaceae	Stachys	A widespread wetland pli 7	-3
Stellaria longifolia	Long-leaved Starwort		S5			x						x		Caryophyllales	Caryophyllaceae	Stellaria	A widespread and locally 2	-3
Symphoricarpos albus	Thin-leaved Snowberry		S5	x										Dipsacales	Caprifoliaceae	Symphoricarpos	Var albus is common in s 7	3
Symphyotrichum ericoide	White Heath Aster	Aster ericoides, Virgulus	S5						x			x		Asterales	Asteraceae	Symphyotrichum	Var. ericoides is a widesp 4	3
Symphyotrichum lanceol	Panicled Aster	Aster lanceolatus, Aster s	S5			x			x					Asterales	Asteraceae	Symphyotrichum	A widespread, variable, a 3	-3
Symphyotrichum pilosum	Old Field Aster	Aster pilosus	S5									x		Asterales	Asteraceae	Symphyotrichum	Widespread in southern (	3
Symphyotrichum puniceu	Purple-stemmed Aster	Aster puniceus	S5			x								Asterales	Asteraceae	Symphyotrichum	Widespread and locally c 6	-5
Symphyotrichum urophyl	Arrow-leaved Aster	Aster sagittifolius, Aster u	S4				x	x	x					Asterales	Asteraceae	Symphyotrichum	Widespread and locally c 6	5
Symplocarpus foetidus	Eastern Skunk Cabbage		S5	x	x	x								Arales	Araceae	Symplocarpus	Locally common, distinct 7	-5
Syringa vulgaris	Common Lilac		SNA					x						Scrophulariales	Oleaceae	Syringa	Commonly planted Euras	5
Taraxacum officinale	Common Dandelion		SNA					x		x		x		Asterales	Asteraceae	Taraxacum	A widespread and locally	3
Thalictrum dioicum	Early Meadow-rue		S5	x										Ranunculales	Ranunculaceae	Thalictrum	Widespread in southern : 6	3
Thalictrum pubescens	Tall Meadow-rue	Thalictrum polygamum	S5			x								Ranunculales	Ranunculaceae	Thalictrum	Widespread and locally c 5	-3

Faunal Observations from the St Johns Road Site, 2023

James Holdsworth / Consulting Biologist

Field Review / Chronology of Field Investigations / Fauna
April 14 – herptile emergence, early season breeding birds, incidental wildlife, bat habitat screening

May 29 - breeding bird surveys, SWH/SAR screening, incidental wildlife

June 22- breeding bird surveys, SWH/SAR screening, incidental wildlife

Site Visit Weather Conditions

Visit Date	Visit Time	Temp. Range [C]	Cloud Cover [%]	Wind Speed [Beaufort scale]
April 14	10 am – 2 pm	22 - 28	10 - 5	B2
May 29	7 am – 11.00	14 - 24	0	B1 – B2
June 22	7.15 am – 11.30	18 - 20	60 - 80	B1 – B2

Species Lists for the St Johns Road Site
Birds - Methodology
Breeding bird surveys were undertaken on 2 separate dates by a breeding bird expert under appropriate weather conditions. Survey locations are described below. They are partitioned into 2 Wildlife Survey Quadrants, based on broad habitat characteristics and continuity.

These areas were thoroughly covered by walking random transects and recording presence, abundance and level of breeding evidence (using *Ontario Breeding Bird Atlas* [OBBA] protocols).

OBBA Breeding Evidence Codes

POSSIBLE
H-species observed in breeding season in suitable nesting habitat
S-singing male present or breeding calls heard in breeding season in suitable habitat

PROBABLE
P-pair observed in their breeding season in suitable habitat
T-permanent territory presumed through registration of territorial song or presence of adult bird in breeding habitat on at least 2 days, one week or more apart at the same place.
D-courtship or display between a male and female, or two males including courtship feeding and copulation.
V-visiting probable nest site.
A-agitated behavior or anxiety calls of adults
B-brood patch on adult female or cloacal protuberance on adult male
N-nest building or excavation of nest hole

CONFIRMED
DD-distraction display or injury feigning
NU-used nest or eggshell found [occupied/laid during atlas period]
FY-recently fledged young or downy young.
AE-adults leaving or entering nest site in circumstances indicating occupied nest
FS-adult carrying faecal sac
CF-adult carrying food for young
NE-nest containing eggs
NY-nest with young seen or heard

In the species columns, each species is assigned a breeding level, based on the highest level of breeding evidence observed, by quadrant. A species observed, showing no breeding evidence or where no suitable habitat is present, is marked 'X'.

The number recorded represents the highest one-day total for that species.

The table also lists the COSSARO [provincial] and COSEWIC [national] rank [if any], as well as the Natural Heritage Information Centre [NHIC, MNR] S rank. COSSARO is the Committee on the Status of Species at Risk in Ontario [MNR] and COSEWIC is the Committee on the Status of Endangered Wildlife in Canada.

For the purpose of wildlife surveys, the study area is composed of 2 habitat quadrants, defined below –
Q1. All open, field, hedgerow and anthropogenic- includes subject land crop field and central hedgerow
Q2. All Woodland and ravine up to 120 m adjacent defined subject lands

Bird Species

SPECIES	**Q1**	**Q2**	**Breeding Level**	**COSSARO/ COSEWIC**	**Comment**
Great Blue Heron		1	H		
Canada Goose	2		H		
Wild Turkey	5		H		Over site
Turkey Vulture	5		H		Over site
Red-tailed Hawk		1	H		Over site
Killdeer		1	H		
Mourning Dove		2	H		
Rock Pigeon	5		H		Barn
Pileated Woodpecker		1	D		
Downy Woodpecker		1	H		
Red-bellied Woodpecker		2	T		
Northern Flicker	2	2	H,T		
Yellow-bellied Sapsucker		1	A		
Least Flycatcher		1	H		
Eastern Kingbird	3		T		
Eastern Wood Pewee	1	2	T,T	**SC,SC**	**See SAR Discussion**
Great Crested Flycatcher		2	S		
Red-eyed Vireo		3	A		
Blue Jay		3	H		
American Crow	6		FY		
Purple Martin		2	X		Over site
Northern Rough-winged Swallow	2		H		
Barn Swallow	**4**	**3**	**AE, X**	**SC,SC**	**See SAR Discussion**
Tree Swallow		4	X		Over site
Bank Swallow		**2**	**H**	**THR,THR**	**See SAR Discussion**
Black-capped Chickadee		2	T		
Horned Lark	1		H		
House Wren	2	2	A,A		
Wood Thrush		**1**	**S**	**SC,SC**	**See SAR Discussion**
Veery		1	S		
American Robin	8	4	FY,FY		
Eastern Bluebird	1		H		
Gray Catbird		3	A		
Brown Thrasher	2		P		
European Starling	15	10	FY,FY		
Cedar Waxwing	1		H		
Yellow Warbler	1		S		
Species	**Q1**	**Q2**	**Breeding level**	**COSSARO/COSEWIC**	**Comments**
Common Yellowthroat		2	A		
Chestnut-sided Warbler		1	S		
American Redstart		1	S		
Pine Warbler		1	S		
Scarlet Tanager		1	S		
Chipping Sparrow	1	2	S, T		
Field Sparrow		3	A		
Vesper Sparrow	1		S		

Song Sparrow	2	4	CF, FY		
Eastern Towhee	2		A		
Northern Cardinal		3	A		
Rose-breasted Grosbeak		2	S		
Indigo Bunting	2	1	T,A		
Baltimore Oriole		3	FY		
Red-winged Blackbird	6	4	A,A		
Common Grackle	8	6	FY,FY		
Brown-headed Cowbird	2		H		
American Goldfinch	2		H		
House Sparrow	2		AE		

Species of Conservation Concern

Species status [for all fauna] was evaluated using the following sources:

- The COSEWIC list for national status designations (current list at time of report preparation);
- The Species At Risk Act for federally listed species (current at time of report preparation);
- The COSSARO list for provincial status designations (current list at time of report preparation);
- The NHIC / Biodiversity Explorer website for provincial rarity ranks (i.e. S-Ranks);

Of the 56 summer resident bird species [54 with some breeding evidence], the following species of conservation concern [e.g. species that are "designated" by COSEWIC and/or listed under the Species at Risk Act [SARA]; species "designated" by COSSARO, including Endangered and Threatened species listed and regulated under Ontario's ESA; and provincially rare species [NHIC S-rank of S1 to S3] were observed during field surveys

- 4 species are listed **Species at Risk (SAR) in Canada** (by COSEWIC):
  - Barn Swallow – *Special concern*
  - Bank Swallow – *Threatened*
  - Eastern Wood Pewee – *Special Concern*
  - Wood Thrush – *Special Concern*

- 4 species are listed **Species at Risk (SAR) in Ontario** (by COSSARO):
  - Barn Swallow – *Threatened*
  - Bank Swallow – *Threatened*
  - Eastern Wood Pewee – *Special Concern*
  - Wood Thrush – *Special Concern*

SAR Bird Discussion

*note – I have (mostly) refrained from identifying SAR locations via GPS locations, as territories of most are fairly broad and it is more practical to consider entire features as territories, as opposed to defined points.

Barn Swallow – Four Barn swallow were observed entering and exiting an open shed at the north end of the property. Although there was evidence of old nests, likely from last season, there was no evidence of recent nest building. It is likely, however, that this barn is used for nesting at some point during the summer, as it is ideal habitat. Barn swallows were also observed aerial foraging over the subject lands, south of the anthropogenic structures. This area does not contain suitable nesting habitat for the species.

Bank Swallow – Two Bank swallow were recorded aerial foraging over Q1. Neither (visible) quadrant offer suitable breeding habitat, in the form of steeply sloped sandbanks or riparian situations with adequate slope and structure. This record is considered to be forging visitants only. Offsite, to the east, is a small sand/gravel extraction operation. This was private land, and not surveyed, although there may be suitable breeding habitat for the species in this area.

Eastern Wood Pewee – A single male of this species was recorded as territorial in the small, wooded area adjacent to Saint Johns Road, on private property (42.802620 N 80.258190 W). This is a good example of the flexibility of the species and site selection, as the location is highly compromised, of poor quality overall, and would be considered not suitable breeding habitat for the species in most circumstances.

This species was also recorded as a territorial breeding resident in the south ravine woodland. The entirety of this woodland area should be considered suitable breeding habitat for this species.

Wood Thrush – a single male Wood thrush was heard singing in the south ravine woodland. This entire wooded area is suitable for the species and should be considered likely breeding habitat.

Potential SAR Bird Species Based on Suitability of Habitat

Red-headed Woodpecker [END/END] – Suitable habitat is present for the species along wooded edges and hedgerows, and (to a limited extent) within the woodland / ravine. Although not detected during the course of field surveys, this species could occur as a breeding resident at any time.

The ravine / woodland habitat at the south end of the subject land boundary has some potential breeding habitat for several locally and provincially rare species including - **Cerulean Warbler** and **Acadian Flycatcher.**

Targeted SAR surveys were undertaken (including call playback) in this woodland to detect those species, but no observations were made. Habitat is suitable for both, so either of these species could occur as breeding residents at any time in the future.

Bat Surveys

Primary surveys for maternal sites for SAR bat species was undertaken during the April 14 survey, before full leaf-out. These surveys were only conducted as informative and were not intended to be comprehensive. Incidental searches for suitable cavities / sites continued for all subsequent visits.

Surveys indicated extensive potential maternal bat breeding habitat locations in Q2 (largely within the south woodland / ravine), mostly in the form of large, living trees with suitable size and shaped cavities. The wooded features within Q2 should be considered suitable habitat for maternal bats.

Q1 had an extensive, potential maternal bat habitat, in the form of numerous anthropogenic structures. These structures vary from disused barns and sheds to active houses and equipment sheds.

Going forward, more comprehensive bat surveys - if required - must be undertaken by a specialist, and would have to include the necessary acoustic monitoring equipment.

Additionally, any tree felling / removal should only occur outside both the date guidelines provided by the MBCA (for breeding birds) as well as outside the date range as specified (by local or regional review agencies) for occurrence of bat breeding / rearing in Southern Ontario.

Mammals – Methodology

Mammals were surveyed as part of 'general' wildlife surveys. These surveys involved general coverage recording all species observations and sign (e.g. tracks / trails, scat, burrows, dens, browse, vocalizations).

Mammals

SPECIES	Q1	Q2	COSSARO/ COSEWIC	Comments
Raccoon		1		
Woodchuck	1			
Eastern Coyote	1			
White-tailed Deer	1	2		
Gray Squirrel	1	2		
Red Squirrel	1			
Eastern Chipmunk		2		
Meadow Vole	1			

There is suitable habitat present within Q1 and Q2 to support one SAR mammal species, American Badger, and the study area is within the historical range of this species.

No observations of Badger were made during our surveys and there were no indications that Badger may be present, i.e., no burrows, tracks, scat or fur were found. It should be noted however, that the home range of American Badger can be extensive and the species can be very difficult to locate without targeted surveys, these being beyond the scope of our investigations.

Reptiles, Amphibians - Methodology

Searches for herptiles were conducted throughout the study site, primarily as incidental observations. All observations below are those made outside of the MMP survey protocol.

Herptiles

SPECIES	Q1	Q2	COSSARO / COSEWIC	Comments
Eastern Gartersnake		1		
Gray Tree Frog		2		
Green Frog		1		
American Toad		2		

Species of Conservation Concern

No herpetofaunal species of conservation concern were observed within the subject lands or extended study area during field investigations. Two species are possible in the woodland pond to the SW of the site, beyond our 120 m limit and not surveyed, but noted here, nonetheless.

- **Midland Painted Turtle** is designated “Special Concern” federally (COSEWIC).
- **Common Snapping Turtle** is designated “Special Concern” both federally (COSEWIC) and provincially (MNR/COSSARO) with an S-rank of S3

This pond is completely buffered by forest cover and any subject land development activities are very unlikely to have any effect on in-situ fauna.

No evidence of snake hibernacula was found in Q1 / Q2, although there is an area of construction waste at the extreme SW corner of the subject lands, consisting of extensive broken concrete deposited at the base of the ravine slope. There is some possibility that snakes could find this habitat suitable for hibernacula, although no snakes were ever observed in this area.

Potential SAR Herptile Species Based on Suitability of Habitat

Eastern Hog-nosed Snake is designated “Threatened” both federally (COSEWIC) and provincially (MNRF/COSSARO) with an S-rank of S3. This species is also listed on Schedule 1 of SARA and is afforded general habitat protection under the Act.

The edge and open sandy habitats of the site are suitable for this species, and the study area is within this species known range in Southern Ontario, in lit. and pers. obs. Although not found, this species could occur on-site and should be considered possible.

Eastern Fox Snake, Gray Rat Snake and **Northern Ribbon Snake** (all provincially designated SAR species) are all possible within the south woodland / ravine, with lower likelihood along other adjacent wooded features and - in the case of Gray Rat Snake - within some of the anthropogenic structures at the north end.

More comprehensive and targeted surveys would be required to detect these species as their habitats necessitate specialized efforts. All anthropogenic structures were checked for snakes, although their use of subterranean passages etc, below building foundations, makes detection exceedingly difficult. As such, all three species should be considered as potentially present, and safeguards should be in place (i.e.exclusion fencing) to prevent any SAR herptile species from entering an area of potential development in the future.

Lepidoptera and Odonata – Methodology

Lepidoptera (butterflies and skippers) and Odonata field surveys were completed on all field visits.

Butterflies

SPECIES	Q1	Q2	COSSARO/ COSEWIC/ S rank	Comments
Cabbage White	2			
Azure sp.	1			
Crescent sp.	2			
Red Admiral	1			
Eastern Comma		1		
Red-spotted Purple		1		
Black Swallowtail	1			
Eastern Tiger Swallowtail		1		
Monarch	**1**		**SC/END**	**See SAR discussion**
European Skipper	3			
Common Ringlet	2	3		
Little Wood Satyr		4		

Odonata

SPECIES	Q1	Q2	COSSARO/ COSEWIC/ S rank	Comments
Common Green Darner	2			
Eastern Pondhawk		1		
Widow Skimmer	1			
Common Whitetail	8	2		
Ebony Jewelwing		2		
Bluet sp.		2		
Eastern Forktail		3		

Species of Conservation Concern

One Lepidoptera / Odonata species, considered species of concern, was observed during field surveys

- One species is designated as a **Species at Risk (SAR) in Canada** (by COSEWIC):
    - Monarch – *Endangered*
- One species is designated as a **Species at Risk (SAR) in Ontario** (by COSSARO):
    - Monarch – *Special Concern*

One monarch butterfly was observed in Q1. This quadrant has limited suitable lifecycle process habitat, in the form of open nectaring areas along edges and some available food plant, with milkweed present.

Going forward, the proponent should be encouraged to maintain or enhance current edge habitat, and to refrain from weed control spraying that would otherwise diminish existing Monarch butterfly breeding habitat.

*The central hedgerow, that is slated for removal, was not found to have breeding SAR / rare faunal species, specialized habitats for potential SAR species, amphibian or turtle life cycle habitat, nor snake hibernacula. A minimal number of milkweed plants were present here and could be used by Monarch butterfly for breeding, although other site edges offered more viable habitat. Compensation can be achieved as suggested above.

Potential Significant Wildlife Habitat

Amphibian Breeding Habitat, Woodland – Q2, needs to be confirmed by MMP survey results.

Bat Maternity Colonies – Candidate, Q1 and Q2.

Special Concern and Rare Wildlife Species – Confirmed with presence of Barn Swallow, Bank Swallow, Eastern Wood Pewee, Wood Thrush and Monarch.

Cited Literature / References

Ontario Breeding Bird Atlas. 2001. Guide for Participants. Bird Studies Canada.

Ontario Ministry of Natural Resources. MNR website. Species at Risk in Ontario (SARO) List. Ontario Ministry of Natural Resources.

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Sciences Section.

Ontario Ministry of Natural Resources. 2009a. *Draft* Significant Wildlife Habitat Ecoregion Criteria Schedules. Addendum to Significant Wildlife Habitat Technical Guide.

Amphibian Data

Amphibian calling activity was assessed By Vroom + Associates using the Marsh Monitoring Program (MMP) amphibian calling survey protocol (Bird Studies Canada 2003). Surveys were conducted under appropriate conditions (i.e. dusk/evening survey with suitable air temperatures and wind strength). To ensure detection of all species present, surveys were completed three times during the spring and early summer, at least 10 days apart. Suitability of timing for amphibian calling was confirmed by referencing other local sites with known amphibian populations and/or liaison with other researchers. Following guidelines of the MMP, night time air temperatures were greater than 5°C for the first survey, 10°C for the second survey, and 17°C for the third survey. Each calling station was surveyed for 3 minutes between one half hour after sunset and midnight.

Using the MMP, amphibian calling activity was rated using three levels: Level 1 (individual calls can be counted with no overlap), Level 2 (some calls can be counted or estimated, some overlap) or Level 3 (calls continuous and overlapping, individuals not distinguishable).

Based on air photo interpretation and field reconnaissance, three locations were selected as a calling stations along the southern woodland/wetland feature. Three calling amphibian surveys were completed at these two stations on May 5, May 25, and June 9 2023.

MMP Calling Station GPS Locations
AC1 – 560967/4738377
AC1 – 560899/4738241
AC1 – 560748/4738228

Table of Results / Amphibian Calling Surveys

Date	Time (Start-end)	Air Temp (C)	Humidity (%)	Cloud Cover (%)	Beaufort Wind Speed	Precipitation	Moon Phase
May 5/23	9:50 PM	9°C	68%	10%	1.2	0 mm	Full Moon
May 25/23	9:00 PM	13°C	49%	10%	1.5	0 mm	Waxing Crescent
June 9/23	9:00 PM	17°C	60%	10%	2	0 mm	Waning Gibbous

Species	Location 1	Location 2	Location 3
American Toad	-/-/-	-/-/-	-/-/-
Chorus Frog	-/-/-	1/-/-	-/-/1
Green Frog	-/-/-	-/-/-	-/-/-
Gray Treefrog	-/-/2	-/-/2	-/-/1
Northern Leopard Frog	-/-/-	-/-/-	-/-/-
Spring Peeper	-/-/-	-/-/-	3/-/-
Pickerel Frog	-/1/-	-/-/-	-/-/-
Species Richness	2	2	3

The amphibian calling surveys determined there is no significant wildlife habitat for breeding amphibians.

Appendix A

Aggregate resources of Ontario standards: A compilation of the four standards adopted by Ontario Regulation 244/97 under the Aggregate Resources Act (2020)

Section 2.2 on Natural Environment Reports states that:

> "The report must identify any of the following natural heritage features and areas that exist on the site and within 120 metres of the site:
> a) significant wetlands
> b) other coastal wetlands in Ecoregions 5E, 6E and 7E,
> c) fish habitat,
> d) significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River)
> e) habitat of endangered species and threatened species,
> f) significant wildlife habitat,
> g) significant areas of natural and scientific interest,
> h) Within the area of one or more provincial plan(s), any key natural heritage features not included in (a) through (g)
>
> Where any of the above features or areas have been identified, the report must identify and evaluate any negative impacts on the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative or remedial measures. The report must also identify if the site or any of the features, included in (a) through (g), are located within a natural heritage system that has been identified by a municipality in ecoregions 6E and 7E or by the province as part of a provincial plan.
>
> For the purposes of this section, "provincial plan" means any one of the following plans:
> • Oak Ridges Moraine Conservation Plan
> • Greenbelt Plan
> • A Place to Grow: Growth Plan for the Greater Golden Horseshoe
> • Niagara Escarpment Plan
> • Lake Simcoe Protection Plan"

PPS 2024 Considerations

The *Provincial Planning Statement (PPS)* 2024, states that:
"1. Natural features and areas shall be protected for the long term.

2. The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

3. Natural heritage systems shall be identified in Ecoregions 6E & 7E1, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

4. Development and site alteration shall not be permitted in:
a) significant wetlands in Ecoregions 5E, 6E and 7E1; and
b) significant coastal wetlands.

5. Development and site alteration shall not be permitted in:
a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E1;
b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)1;
c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)1;
d) significant wildlife habitat;
e) significant areas of natural and scientific interest; and
f) coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 4.1.4.b), unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

6. Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

7. Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements. 1 Ecoregions 5E, 6E and 7E are shown on Figure 1. 21 Provincial Planning Statement, 2024

8. Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 4.1.4, 4.1.5, and 4.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

9. Nothing in policy 4.1 is intended to limit the ability of agricultural uses to continue."

The PPS 2024 also states the following regarding development within "Hazard Lands":
"... *development and site alteration* may be permitted in those portions *of hazardous lands and hazardous sites* where the effects and risk to public safety and minor, could be mitigated in accordance with provincial standards, and where all of the following are demonstrated and achieved:
a. *development* and *site alteration* is carried out in accordance with *floodproofing standard, protection works standards,* and *access standards;*
b. vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies;
c. new hazards are not created and existing hazards are not aggravated; and
d. no adverse environmental impacts will result.

Appendix B

Municipal Considerations

Section 3.1 - BACKGROUND

In partnership with the Long Point Region Conservation Authority (LPRCA), the Grand River Conservation Authority (GRCA) and the Province, the County strives to protect the natural environment. It is a priority of this Plan to protect, enhance and restore significant natural features and functions, and to reduce the risk to public safety and property from natural hazards, such as flooding and unstable slopes.

Section 3.2 - GOALS

The following shall be the policy of the County:

a) The County shall work cooperatively with the Ministry of Natural Resources and Forestry and Conservation Authorities in dealing with land management issues within the watersheds, including those that extend beyond the County boundary.

b) The County shall encourage the preparation of both watershed and subwatershed management plans to facilitate water resource and land use planning on an ecosystem basis. Council recognizes that development and land use change within the County will also require consideration of other matters such as economic, social and growth management factors that may not be addressed in a watershed or subwatershed plan.

c) The County shall support the Conservation Authorities in the preparation and implementation of the subwatershed studies.

d) The County shall support initiatives of the Conservation Authorities and other agencies in identifying strategies to protect groundwater resources.

e) The County shall support appropriate flood control management programs of the Conservation Authorities.

f) The County shall encourage the protection and restoration of Natural Heritage Features to improve water quality and quantity.

g) The County shall encourage the protection of species at risk, either aquatic or terrestrial, and species recovery strategies. The County shall support the implementation of the relevant findings of recovery strategies. Implementation of species recovery strategies may include amendments to this Plan.

h) The County shall require the use of stormwater management facilities downstream of new developments, where appropriate, to mitigate development impacts on stormwater quantity and quality. The County shall promote naturalized and unfenced stormwater management facilities, constructed with gentle slopes. Applications for development may be required to be supported by a stormwater management study.

i) Applications for development requiring dewatering or using significant amounts of groundwater or surface water from streams, ponds or Lake Erie may be subject to a holding provision in the Zoning By-law in accordance with Section 9.4.2 (Holding Provision), subject to

the County receiving confirmation that a Permit to Take Water has been granted by the Ministry of the Environment and Climate Change. For the purposes of this policy, significant means water requirements that exceed what would be usually expected to sustain normal farming practices such as those found within the County. Examples of such significant water users may include, but are not limited to, the following: golf course uses and commercial water bottling operations. Approvals may also be required from relevant agencies.

j) Applications for development based on a private water source may be required to submit a detailed hydrogeological study to determine the suitability of the land for groundwater extraction. The hydrogeological study shall be prepared to the satisfaction of the County and the Conservation Authority, in consultation with the Province.

k) The County shall encourage the reduction of water consumption levels through the promotion of the efficient use of water, in cooperation with the private sector and the community, and may specify appropriate water conservation measures within existing and new development.

l) The County encourages sound management practices for agriculture which promote proper storage, use, and application of fertilizers, herbicides and pesticides, and where possible, the reduction of their use.

m) The County shall monitor all active and inactive waste management sites in cooperation with the Ministry of the Environment and Climate Change.

n) The County supports initiatives of agencies to develop standards, regulations and procedures to prevent spillage of toxic materials. It shall support agencies and firms in the development of appropriate methods and capability to deal with spills with due speed and diligence. Additional safety measures for the storage, transportation and use of toxic materials will be encouraged.

Section 3.5 NATURAL HERITAGE

Section 3.5.3 Natural Heritage Systems Strategy

"...This system reinforces the protection, restoration and enhancement of identified Natural Heritage Features and promotes the overall diversity and interconnectivity of Natural Heritage Features and areas. Policies related to the Natural Heritage System Strategy shall be incorporated into this Plan by amendment."

Section 3.5.2 Natural Heritage Features

The Provincial Policy Statement encourages the protection and enhancement of Natural Heritage Features. Schedule "C" identifies some of the significant Natural Heritage Features, being land that represents the legacy of the natural landscape of the area and as a result has important environmental, economic and social value. Natural Heritage Features are not designated by the Plan and are not illustrated on Schedule "B".

The following shall be the policy of the County:

a) Natural Heritage Features identified on Schedule "C" and/or Table 2 to this Plan shall be subject to the policies of the underlying land use designation, as shown on Schedule "B", and the policies of this Section of the Plan.

b) Development or site alteration proposed in, or adjacent to, a Natural Heritage Feature(s), whether illustrated on Schedule "C" or only described in Table 2, shall be subject to the completion of an Environmental Impact Study, in accordance with Section 9.7.1 (Environmental Impact Study) of this Plan. Development or site alteration in, or adjacent to, such features shall not be permitted unless it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions that cannot be adequately mitigated. The extent of adjacent land shall be defined as indicated in Table 2.

c) The County recognizes the importance of endangered and threatened species, and the protection afforded to such species under the Endangered Species Act. It also recognizes the importance of habitat for other Species at Risk, and areas of more specialized wildlife habitat functions. The following shall be the policy of the County:

i) The habitat of endangered species and threatened species are not identified on either Schedules "B" or "C" of this Plan. The identification of habitat for endangered species or threatened species shall be determined in consultation with the Ministry of Natural Resources and Forestry. The County shall develop a protocol to assess when a project is likely to impact endangered or threatened species or their habitat. Where the development is likely to impact endangered or threatened species or their habitat, the proponent will be required to consult with the Ministry of Natural Resources and Forestry and demonstrate that they have met the requirements of the Endangered Species Act.

ii) Adjacent lands to the habitat of endangered species and threatened species shall be delineated in accordance with Table 2 of this Plan.

iii) Development shall not be permitted in areas of habitat of endangered species and/or threatened species, except in accordance with applicable Provincial and Federal requirements. Further, development shall not be permitted on adjacent lands to identified habitat of endangered species and/or threatened species unless the ecological function of the adjacent lands has been evaluated through an Environmental Impact Study, prepared by the proponent, that demonstrates, to the satisfaction of the County, the Ministry of Natural Resources and Forestry and any other agency having jurisdiction, that there will be no negative impacts on the wildlife habitats.

iv) All development applications are to be screened to determine whether they could negatively impact endangered or threatened species or their habitat. Where there is likelihood that a development proposal will impact species at risk or their habitat, the applicant will be required to consult with the Ministry of Natural Resources and Forestry to ensure the requirements of the Endangered Species Act are met. For larger scale development, specific analysis of how any development activities are compatible with the protection of Species at Risk will be required by the County as part of its review process.

v) As outlined in the 'Technical Bulletin: Ministry of Natural Resources and Forestry, Aylmer District Guidance on Identifying Activities/Areas Not Likely to

Contravene the Endangered Species Act, 2007 in the County of Norfolk' document the proponent may be required to consult with the Province to determine if the development is likely to impact species at risk and/or their habitat, and demonstrate that they have had appropriate regard to the requirements of the Endangered Species Act.

Natural Heritage Feature	**Boundary Definition**	**Extent of Adjacent Land**	**Conditions under which development and site alteration may be permitted**
Significant Woodlands.	Based on evaluation criteria established and conducted by Norfolk County, as illustrated on Schedule "C".	Dripline plus 10 metres EIS demonstrates there will be no negative impacts on the natural features of the woodlands and the ecological functions that sustain them.	EIS demonstrates there will be no negative impacts on the natural features of the woodlands and the ecological functions that sustain them.
Significant Valleylands (not included on Schedule "C" to this plan).	Conservation Authority regulatory lines, flood plain mapping or unstable slope mapping where available or the edge of any other associated natural heritage feature, whichever is greater.	Stable top of-bank, determined in consultation with LPRCA or GRCA.	EIS demonstrates there will be no negative impacts on the natural features of the Valleyland and the ecological functions that sustain them. Habitat of endangered species and threatened species As defined by Provincial or Federal authorities.
Habitat of endangered species and threatened species.	As defined by Provincial or Federal authorities.	100 metres.	EIS demonstrates that there will be no negative impacts on the habitat values upon which the species depend directly and indirectly, and any related ecological and hydrological functions.
Significant Wildlife Habitat.	As defined by MNRF, and/or by the County in the future Natural	50 metres.	EIS demonstrates there will be no negative impacts on wildlife or their habitat.

	Heritage System Strategy, further to Section 6.4.3 (Natural Heritage System Strategy).		
Life Science ANSI.	As determined based on the consideration of Ministry of Natural Resources and Forestry's criteria.	120 metres.	EIS demonstrates there will be no negative impacts on the natural features and the ecological or hydrologic functions that sustain them.
Earth Science ANSI.	As determined based on the consideration of Ministry of Natural Resources and Forestry's criteria.	50 metres.	EIS demonstrates there will be no negative impacts on the natural features and the ecological or hydrologic functions that sustain them.
Locally significant wetlands.	Wetland evaluation carried out according to procedures established by Ministry of Natural resources and Forestry.	120 metres .	EIS demonstrates there will be no negative impacts on the natural features and the ecological or hydrologic functions that sustain them.
Locally significant coastal wetlands.	Wetland evaluation carried out according to procedures established by Ministry of Natural Resources and Forestry.	120 metres.	EIS demonstrates there will be no negative impacts on the natural features and the ecological or hydrologic functions that sustain them.
Unevaluated wetlands within the Grand River Conservation Authority's area of jurisdiction, as identified on Schedule "D1" (not included on	Evaluated in accordance with the GRCA's wetland policy.	120 metres.	EIS demonstrates there will be no negative impacts on the natural features and the ecological or hydrologic functions that sustain them.

Schedule "C" to this Plan).			
Watercourses (without mapping or regulations from LPRCA or GRCA).	The top of bank of the watercourse or drain as defined in consultation with the County and LPRCA or GRCA.	Land within 15 metres of the top of bank, or a feature defined by Section 4.3 of this Plan.	EIS demonstrates no negative impacts upon any present natural feature and their sustaining ecological functions.
Fish habitat (not included on Schedule "C" to this Plan).	A setback of 30 metres from the highwater edge of an aquatic habitat or as defined through the EIS.	30 metres from the highwater mark.	EIS indicates there will be no harmful alteration, disruption or destruction of habitat upon which the fishery depends directly and indirectly; or where authorization has been obtained under the Fisheries Act, and that habitat will be fully replaced to provide full compensation for the effects of the development.
Natural Areas, as identified in the Natural Areas Inventory, and including Carolinian Canada sites.	As defined by the County Natural Areas Inventory.	50 metres.	EIS demonstrated there will be no negative impacts on the natural feature and their sustaining ecological functions.

4.6.1 Mineral Aggregates

Petroleum resources and Mineral aggregates play an important economic role in Norfolk County. Existing and potential mineral aggregate resource activities shall be protected, and the extractive industry should be permitted to operate as free from land use conflict as possible, while ensuring minimal environmental impact and social disruption. It is also important that exhausted pits and quarries and mineral resource land be rehabilitated for appropriate uses that are compatible with the surrounding area.

Bedrock Resource Areas, and Sand and Gravel Resource Areas, as identified by the Ministry of Natural Resources and Forestry, are illustrated on Schedule "J" to this Plan. Unless otherwise specifically referenced in the policies of this Plan, both shall generally be referred to as "Aggregate Resource Areas" in the policies of this Plan. The following shall be the policy of the County:

a) Exploration and extraction of mineral resources shall be undertaken in accordance with Federal and Provincial legislation, as well as municipal regulation.

b) Aggregate Resource Areas shall be protected for future use. More precise boundaries of the Aggregate Resource Areas may be established through consultation with the Ministry of Natural Resources and Forestry. Subject to consultation with the Ministry, minor modifications to the boundaries of the Aggregate Resource Areas shall not require an amendment to this Plan.

c) Development and changes in land use which would prevent future access, use or extraction shall not be permitted in and adjacent to identified Aggregate Resource Areas on Schedule "J, unless it can be demonstrated that:

i) aggregate resources use would not be feasible; or
ii) the proposed development and change in land use serves a greater long term interest of the general public; and
iii) issues of public health, public safety and environmental impact are addressed.

d) Legally existing pits and quarries licensed under the Aggregate Resources Act shall be zoned appropriately in the Zoning By-law. These operations shall be permitted to continue and shall be protected from new incompatible adjacent land uses and activities. Aggregate conservation and recycling uses may be permitted as accessory uses within aggregate operations.

e) Development proposals near licensed aggregate extraction areas shall be evaluated for potential incompatibilities, which shall be addressed accordingly in consultation with the Province. Pertinent information regarding surface and groundwater, dust, vibration, noise, traffic routes in connection with the licensed aggregate extraction area, and buffering will be considered to ascertain the effect these existing factors will have on the proposed new development. Residential and institutional development within 300 metres of Sand and Gravel Resource Areas and licensed pits, and 500 metres of Bedrock Resource Areas and licensed quarries, illustrated on Schedule "J" shall generally not be permitted. Proposed residential or institutional development within these areas shall be supported by studies that demonstrate that any land use conflicts will be fully mitigated.

f) The County shall not permit new pits and quarries in Provincially Significant Wetlands, as identified in Section 3.5 (Natural Heritage Systems) and shown on Schedule "B"" of this Plan. Prior to the development of new pits and quarries on lands adjacent to Provincially Significant Wetlands, as identified on Schedule "C", or on lands that are on or adjacent to the habitat of endangered species and threatened species, an Environmental Impact Study shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study) demonstrating to the satisfaction of the County and any other required approval agency that the proposed pit or quarry will have no negative impact on the natural features or their ecological functions.

g) The County shall generally not permit new pits and quarries in Natural Heritage Features, as identified on Schedule "J" to this Plan and listed on Table 2 of Section 3.5.2. Prior to the development of new pits and quarries within or adjacent to a Natural Heritage Feature, an Environmental Impact Study shall be prepared in accordance with the policies of Section 9.7.1 (Environmental Impact Study). When and where the quality

of available aggregate or the market changes significantly, new pits and quarries may be considered within Significant Woodlands close to an Urban Area.

h) In the undeveloped portions of designated Urban Areas, Hamlet Areas, or Resort Areas, where aggregate resources have been identified, extraction shall be encouraged to ensure the economic opportunity is not lost, provided the disruption to nearby sensitive and incompatible uses can be mitigated. The aggregate resources should be removed before allowing urban development, unless otherwise provided for by the policies of this Plan.

i) New pits and quarries or expansion of legally existing pits or quarries in Aggregate Resource Areas identified on Schedule "J" shall be permitted without an amendment to this Plan. New pits and quarries or the expansion of legally existing pits or quarries shall require an amendment to the Zoning By-law.

j) With the exception of wayside pits and quarries, an amendment to this Plan and the Zoning By-law shall be required in areas other than those identified as Aggregate Resource Areas on Schedule "J".

k) Applications for Official Plan and/or Zoning By-law amendments, as referenced in Subsections i) and j) shall be reviewed on the basis of the following:

i) the feasibility of aggregate extraction proposed;
ii) compatibility with the surrounding land uses;
iii) impact of the proposed haulage routes;
iv) potential impact on groundwater quality and quantity, Provincially Significant Features, Natural Heritage Features, and the broad natural environment;
v) rehabilitation plans;
vi) potential impacts to cultural heritage resources;
vii) matters raised by the Province or the appropriate Conservation Authority; and
viii) whether approval will be granted under the Aggregate Resources Act.

l) Where extraction is proposed below the water table, the following criteria shall be satisfied:

i) a hydrogeological study shall be conducted for aggregate operations that intend to use groundwater resources to wash their aggregate and will use greater than 50,000 litres per day during this washing process;
ii) a substantial quantity of mineral aggregate is located below the water table warranting extraction below the water table;
iii) other alternatives have been considered by the applicant and have been found unsuitable. Other alternatives include resources on land committed to future urban uses, and resources in the Rural Area where rehabilitation to agricultural uses is possible; and
iv) in those areas remaining above the water table following extraction, agricultural rehabilitation shall be maximized.

m) Wayside pits and quarries shall be permitted without requiring an amendment to this Plan or the Zoning By-law, but shall not be permitted adjacent to or within Provincially

Significant Features, Natural Heritage Features, Urban Areas, Hamlet Areas, or Resort Areas. Utilization of aggregate from sites licensed under the Aggregate Resources Act and inactive pits and quarries for wayside pits and quarries shall be encouraged.

n) Portable asphalt plants for public authority projects shall be permitted without an amendment to this Plan or the Zoning By-law, but shall not be permitted adjacent to or within Natural Heritage Features, Provincially Significant Features, Urban Areas, Hamlet Areas, or Resort Areas.

o) Rehabilitation of mineral aggregate extraction sites shall be required in accordance with the requirements of the Aggregate Resources Act. Progressive rehabilitation shall be encouraged. Where there is a concentration of mineral aggregate resource operations, comprehensive aggregate resource extraction plans will be encouraged. Progressive and final rehabilitation shall be required to accommodate subsequent land uses, to promote land use compatibility, and to recognize the interim nature of extraction. Final rehabilitation shall take surrounding land use and the Land Use Designation of the lot and surrounding lots into consideration.

p) A rehabilitation program shall ensure that the pit or quarry can be utilized for agricultural purposes. Land in the Agricultural Area shall be rehabilitated to ensure that substantially the same areas and average soil quality for agriculture are restored. In the Agricultural Area, complete agricultural rehabilitation is not required if:

i) extraction is permitted below the water table;
ii) other alternatives have been considered and found unsuitable; and
iii) agricultural rehabilitation in remaining areas is maximized. Where agricultural rehabilitation is not required, other appropriate after uses, such as recreational uses may be considered in accordance with the policies of this Plan. Sites may also be rehabilitated to good wildlife habitat using native species for vegetation.

q) The County shall actively pursue programs, in cooperation with the Province and owners to rehabilitate abandoned pits and quarries.

r) Rehabilitation of mineral extraction areas after operations have ceased is required in accordance with the provision of the Aggregate Resources Act.

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NOISE IMPACT STUDY – **Project: 25135.00**

Kelly Pit

Norfolk County, ON

Prepared for:

Allan's Excavating
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July 23, 2025

Revision History

Version	Description	Author	Reviewed	Date
- -	Initial Report	FM	KC	July 23, 2025

Important Notice and Disclaimer

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Appendix E
Qualifications of the Author

1 Introduction

Allan's Excavating Inc. is applying for an Aggregates Resources Act (ARA) licence for the proposed Kelly Pity, to be located at Part Lot 5, Concession 2 Woodhouse, County of Norfolk, Ontario. The proposed extension extraction area comprises approximately 25 HA.

Aercoustics Engineering Limited (Aercoustics) has been retained to prepare a Noise Impact Study (NIS) for the proposed aggregate pit to support the licence application. The purpose of this study is to provide noise control recommendations for the aggregate pit operations to satisfy the Ministry of the Environment, Conservation, and Parks (MECP) noise guidelines.

Sound level limits for the aggregate pit noise on the nearby noise-sensitive receptors were first established based on the noise guidelines of the MECP as outlined in the MECP guideline NPC-300 "Stationary and Transportation Sources – Approval and Planning" (August 2013). Where the predicted sound levels were found to exceed the applicable MECP sound level limits, noise control measures were recommended to satisfy these limits.

Figure 1 provides a key plan showing the proposed location of the aggregate pit. Figure 2 shows the site plan of the proposed aggregate pit, including the critical noise sensitive receptors. Noise control recommendations are provided in Appendix A and are illustrated in Figures 3 through 6.

2 Site Description

The proposed aggregate pit is located at Part Lot 5, Concession 2 Woodhouse, County of Norfolk, Ontario. The site is bound by St. John's Road East to the north and Norfolk County Highway 6 to the south. Land uses directly to the north, east, and west of the pit have been zoned as agricultural, while directly to the south and west has been zoned hazardous land. Land directly to the east has also been zoned extractive industrial and is the location of the existing Thompson Gravel Pit (Licence ID 3766).

St. John's Road East and Norfolk County Highway 6 are active roadways and a major source of noise for some of the receptors in the area.

Figure 1 provides a key plan showing the location of the proposed Kelly Pit and the surrounding area.

The existing single-family dwellings in the vicinity of the proposed pit are identified as Receptors R01 through R46. The location of each receptor is identified in Figure 2.

3 Noise Criteria

3.1 Acoustical Classification

Points of reception R01 to R46 have an ambient acoustical environment consistent with the Class 2 classification as defined by the MECP Publication NPC-300. In a class 2 area, the background sound levels during daytime are defined by noise associated with human activity, while natural sounds are typically dominant during the evening and nighttime periods. St. John's Road East and Norfolk County Highway 6 was observed to be a significant source of ambient noise for receptors along the roadways during Aercoustics' site visit on April 17, 2025.

Sensitive receptor locations are illustrated in Figure 2.

3.2 MECP Sound Level Limits

The applicable limits for noise from a stationary source at a sensitive point of reception in a Class 2 area are outlined in Table 1. These limits are defined in the MECP Publication NPC-300.

Table 1: NPC-300 Exclusion Level Limits for Class 2 Stationary Sources – One Hour L_{EQ} (dBA)

Time of Day	Outdoor Points of Reception	Plane of Window of Noise Sensitive Spaces
Day (07:00 to 19:00)	50 dBA	50 dBA
Evening (19:00 to 23:00)	50 dBA	45 dBA
Night (23:00 to 07:00)	45 dBA	--

* or the background level, whichever is higher

Some dwellings along St. John's Road East may experience background sound levels which exceed the MECP exclusion limits due to road traffic. For simplicity and conservatism, the exclusion limits have been applied.

4 Aggregate Pit Operations

The site plans outline the phasing of extraction, and the sequence and direction of operations in each phase. In general terms, the types of work consist of site preparation, extraction, and site rehabilitation.

4.1 Hours of Operation

The proposed hours of operation are from 07:00 to 19:00, Monday to Friday, and 07:00-12:00 on Saturdays. At no time shall extraction, processing or shipping take place on a statutory holiday. Equipment maintenance may take place outside of these normal operating hours.

4.2 Site Preparation/Rehabilitation

Site preparation includes the construction of the berms and visual screens specified on the site plan. Topsoil and overburden will be removed, and berms constructed as required. This work will be done primarily with bulldozers, scrapers, trucks, loaders and excavators. Rehabilitation phases will involve similar equipment in establishing the final grading for the site.

The site preparation and rehabilitation work described above is not part of the daily operation of the pit and are of short duration. These construction activities are not considered in the noise control analysis. The equipment used for these activities must satisfy the noise emission requirements of the MECP document NPC-115 “Construction Equipment”. By defining a maximum permissible noise emission for construction equipment, rather than directly limiting the noise impact at a sensitive point of reception, the MECP recognizes that construction is a temporary and largely unavoidable source of noise.

During site preparation equipment working at or near the surface will receive minimal acoustical shielding. A similar scenario may occur during rehabilitation. In order to minimize the noise impact associated with these activities, it is recommended that the sound emissions of all construction equipment involved in site preparation and rehabilitation activities shall comply with the sound level limits specified in MECP publication NPC-115 “Construction Equipment”. Site preparation and rehabilitation operations shall be restricted to 07:00-19:00.

4.3 Extraction, Processing, and Transport

A maximum annual tonnage of 325,000 tonnes per year is proposed for Kelly Pit.

Aggregate material will be extracted using maximum two extraction loaders at the working face. Extraction will take place in up to two lifts up to eight meters in height. Material will be directly transported from the working face to the nearby screening plant. Processed materials will be stored in stockpiles in the vicinity of the processing area or in the form of temporary storage berms as noted on the operation plan. One shipping loader will be used to load highway trucks with finished aggregate product for transport to market.

Receipt, recycling, and shipping of concrete material is also expected to occur simultaneously with aggregate operations and has been accounted for in the modelling. These recycling operations will take place at least 350 m from the northern licence boundary.

The predictable worst-case operating scenario consists of the noted equipment above operating at the first bench elevation, approximately 5-7 m below existing grade, except where otherwise specified in the noise controls.

See Appendix A for a full list of the applicable noise controls.

4.4 Equipment

The equipment operating in the extension will be limited to the following list, except as indicated in the noise controls within Appendix A:

- Two small extraction loaders, OR one medium extraction loader;
- One screening plant;
- One recycling plant;
- Two shipping loaders;
- 15 Highway Truck Trips/hr (30 Passes/hr)

5 Noise Prediction and Controls

5.1 Noise Prediction Methodology

The proposed aggregate pit operations, as described above, have been modelled using DataKustik's noise prediction software CadnaA. This modelling is based on established noise prediction methods outlined in the ISO 9613-2 standard entitled "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method and calculation".

The noise predictions are based on the predictable worst-case noise impact for each of the aggregate pit operation areas at each noise-sensitive receptor. This represents a design case where the pit is operating at full capacity with all of the equipment operating simultaneously and at locations where the noise impact is highest for each receptor. It is expected that a majority of the pit operations would occur in other areas of the site, resulting in lower associated noise impacts.

Noise levels were predicted using existing topography under conditions of downwind propagation, generally with hard ground modelled in the pit area and soft ground conditions elsewhere. Appendix D contains sample stationary noise source calculations.

Where noise predictions have indicated the potential of exceedance of the applicable sound level limits, noise control measures have been established to satisfy these limits.

5.2 Aggregate Pit Noise Sources

The reference sound levels used for the aggregate pit equipment are outlined in Table 2. The assumed sound levels for the pit equipment were based on Aercoustics' measurements of similar equipment at other aggregate operations and measurements taken at the existing pit.

Table 2: Reference Sound Pressure Levels of Aggregate Pit Equipment

Equipment	Reference Sound Pressure Level at 30 m (dBA)
Screening Plant	74

Equipment	Reference Sound Pressure Level at 30 m (dBA)
Medium Extraction Loader	69
Small Extraction Loader	66
Recycling Plant	78
Shipping Loader[1]	67
Highway Truck – 25 km/h	63

1 – Shipping loaders were assumed to operate at a 50% duty cycle.

5.3 Recommended Noise Controls

The recommended noise controls presented in this section and in Appendix A have been determined, through noise impact predictions, to be effective in limiting the noise impact from the aggregate pit activities to levels which comply with the MECP sound level limits. It should be noted that there may be other effective noise controls that could replace or revise those put forth in this report. Prior to the implementation of any changes to the noise controls, appropriate studies should be undertaken to demonstrate that the MECP Sound level limits will be satisfied.

An acoustic barrier is required to be solid, with no gaps or openings, and shall satisfy a minimum area density of 20 kg/m^2. Such a barrier may take the form of a pit face, stockpile, acoustic fence, ISO container(s), some combination of these, or any other construction satisfying the requirements of an acoustic barrier.

Refer to Figures 3 to 6 for requirements for requirements within the extension boundary. These requirements include an illustration of the timing and implementation of noise controls such as local processing plant acoustical barriers as well as perimeter barriers. Refer to Appendix A for a comprehensive summary of the recommended noise controls for the proposed extension.

5.4 Predicted Sound Levels with Controls

The predicted noise levels are based on the scenarios that are expected to produce maximum noise impact. The majority of the time, the work would be occurring in other areas of the site resulting in lower noise impacts. The predicted worst-case noise impacts from extraction and on-site shipping operations at the representative residences are listed in Table 3 and compared to the allowable levels based on MECP guidelines.

Table 3 - Predicted Worst-Case Pit Noise Levels - One Hour L_{EQ}

Receptor IDs	Predicted Noise Impact (dBA)	Sound Level Limit (dBA)
R01	46	50
R02	44	50
R03	46	50
R04	47	50

Receptor IDs	Predicted Noise Impact (dBA)	Sound Level Limit (dBA)
R05	49	50
R06	46	50
R07	47	50
R08	49	50
R09	50	50
R10	48	50
R11	44	50
R12	43	50
R13	42	50
R14	39	50
R15	38	50
R16	35	50
R17	37	50
R18	36	50
R19	36	50
R20	35	50
R21	36	50
R22	36	50
R23	36	50
R24	36	50
R25	37	50
R26	39	50
R27	40	50
R28	46	50
R29	44	50
R30	41	50
R31	41	50
R32	40	50
R33	41	50
R34	41	50
R35	41	50
R36	39	50

Receptor IDs	Predicted Noise Impact (dBA)	Sound Level Limit (dBA)
R37	38	50
R38	38	50
R39	38	50
R40	37	50
R41	38	50
R42	38	50
R43	40	50
R44	39	50
R45	45	50
R46	47	50

At each of the representative residences, the predicted worst-case noise impacts are in compliance with the recommended Ministry of Environment and Climate Change sound level limits.

6 Truck Traffic Noise on Haul Route

The noise impact of truck traffic on public roadways is not addressed by the MECP in their noise guidelines. However, the MECP requires consideration of the noise impact in choosing the off-property haul route.

This study includes a preliminary analysis of the potential off property haul routes. The aggregate material from the proposed Kelly Pit will be shipped to market using St. Johns Road East, with approximately 50% of outbound trucks moving west towards Port Ryerse Road and the remaining 50% of outbound trucks traveling east towards Blueline Road.

It was assumed that the average truck traffic generated by the proposed Kelly Pit in the peak summer months is 8 one-way trips per hour (roughly 4 trucks). A conservative scenario was also assessed with up to 30 one-way trips per hour (15 trucks), representing a peak hour of shipping operations.

The background road traffic calculations for this haul route assessment were based on road traffic information provided in the form of a hourly road volumes by Norfolk County.

Based on the haul route assessment, receptors along the proposed haul route are expected to experience a predicted worst-case increase of 1 dB based on typical shipping operations, and up to 2 dB based on an hour having 30 additional heavy truck movements.

See Appendix C for road traffic data and sample calculations.

The Ministry of Transportation (MTO) considers an increase in road traffic sound levels of 1-2 dBA as 'barely noticeable'. With this, the proposed haul route is not expected to cause an objectionable increase in road traffic noise and is considered the preferred haul route in the context of noise impact..

7 Conclusion

Aercoustics has conducted a noise impact study for the proposed expansion of Kelly Pit. The purpose of this noise impact study was to provide noise control recommendations for the pit operations to satisfy the MECP noise guidelines. Figure 2 provides a site plan outlining the aggregate pit areas and the locations of nearby receptors.

Sound level limits were developed based on the MECP noise guidelines. Calculations were then carried out to determine the worst-case noise impact for each phase of the aggregate pit operation, at each noise-sensitive receptor. Where noise predictions indicated the potential of exceedance of the MECP sound level limits, noise control recommendations were provided.

Appendix E provides a summary of the qualifications of the authors.

With the incorporation of the recommended noise control measures, the aggregate extraction operations in the proposed Kelly Pit extension will comply with the MNR and MECP guidelines for noise from stationary sources.

aercoustics

Project ID: 25135.00

Scale: UTM As Indicated
Drawn by: FM
Reviewed by: KC
Date: Jun 06, 2025
Revision: 1

Project Name

Kelly Pit - Noise Impact Study

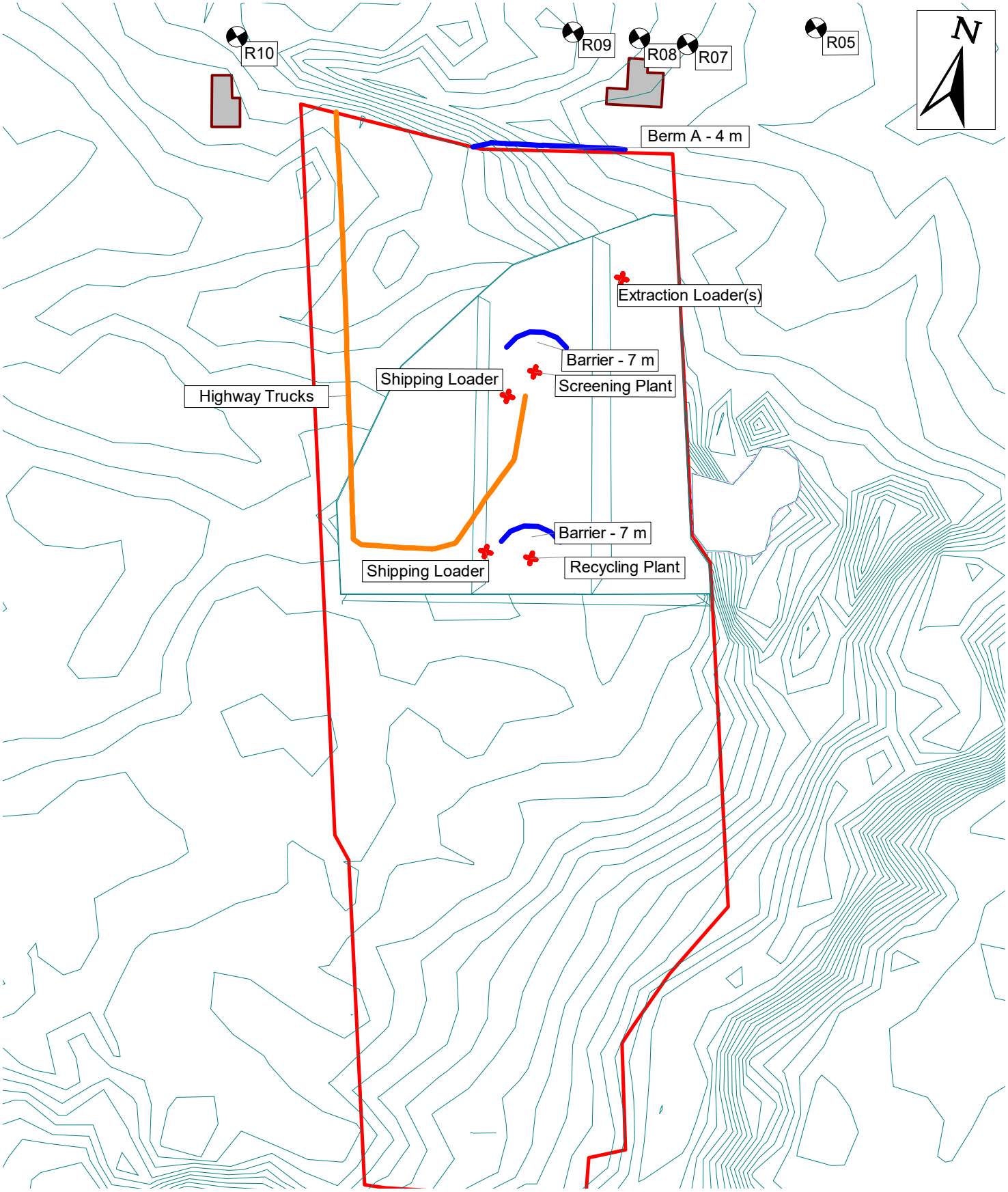
Figure Title

Key Plan

Figure 1

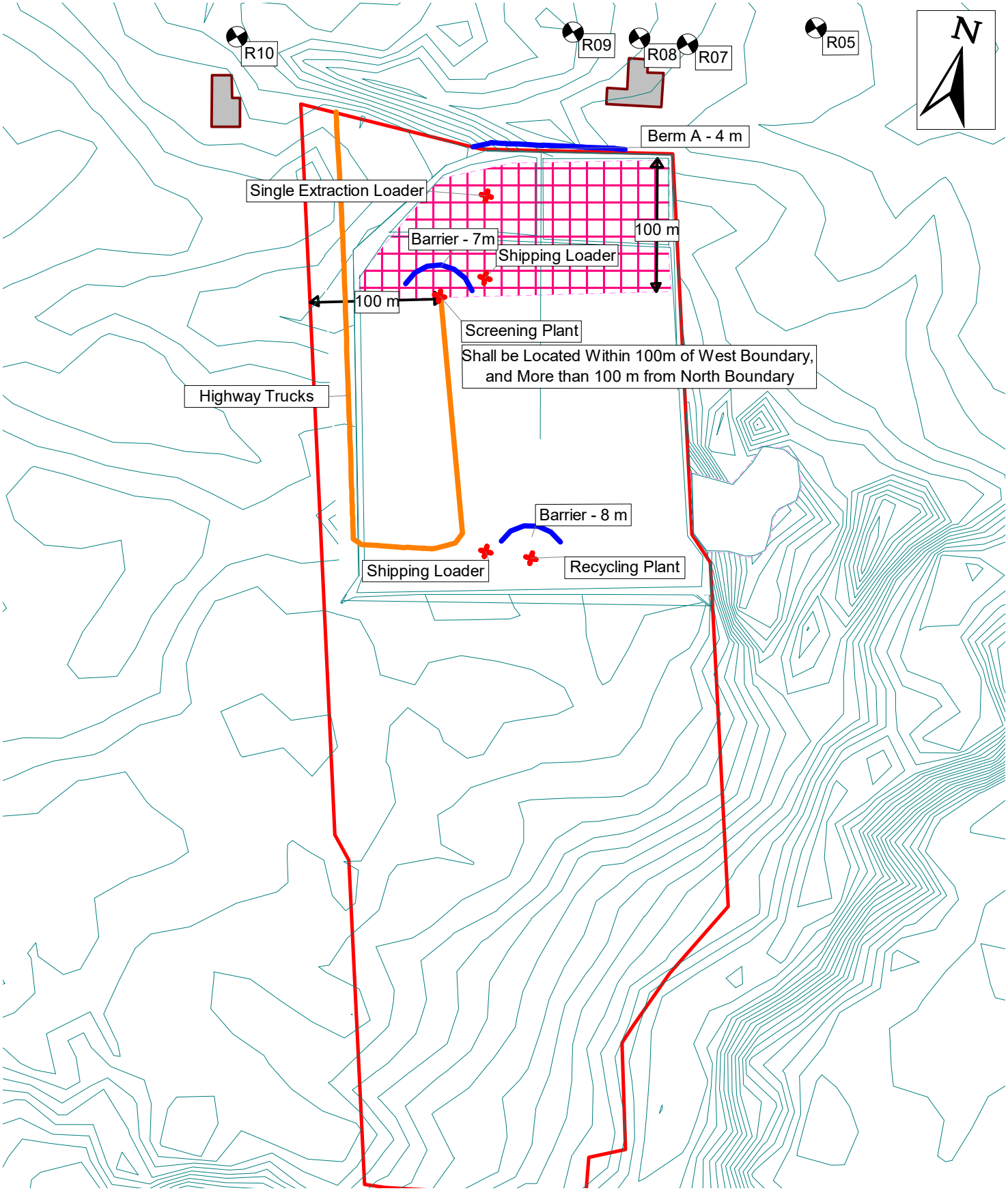
aercoustics	Project ID: 25135.00 Scale: UTM As Indicated Drawn by: FM Reviewed by: KC Date: Jun 06, 2025 Revision: 1	**Project Name** Kelly Pit - Noise Impact Study **Figure Title** Site Plan showing Location of Noise-Sensitive Receptors

Figure 2



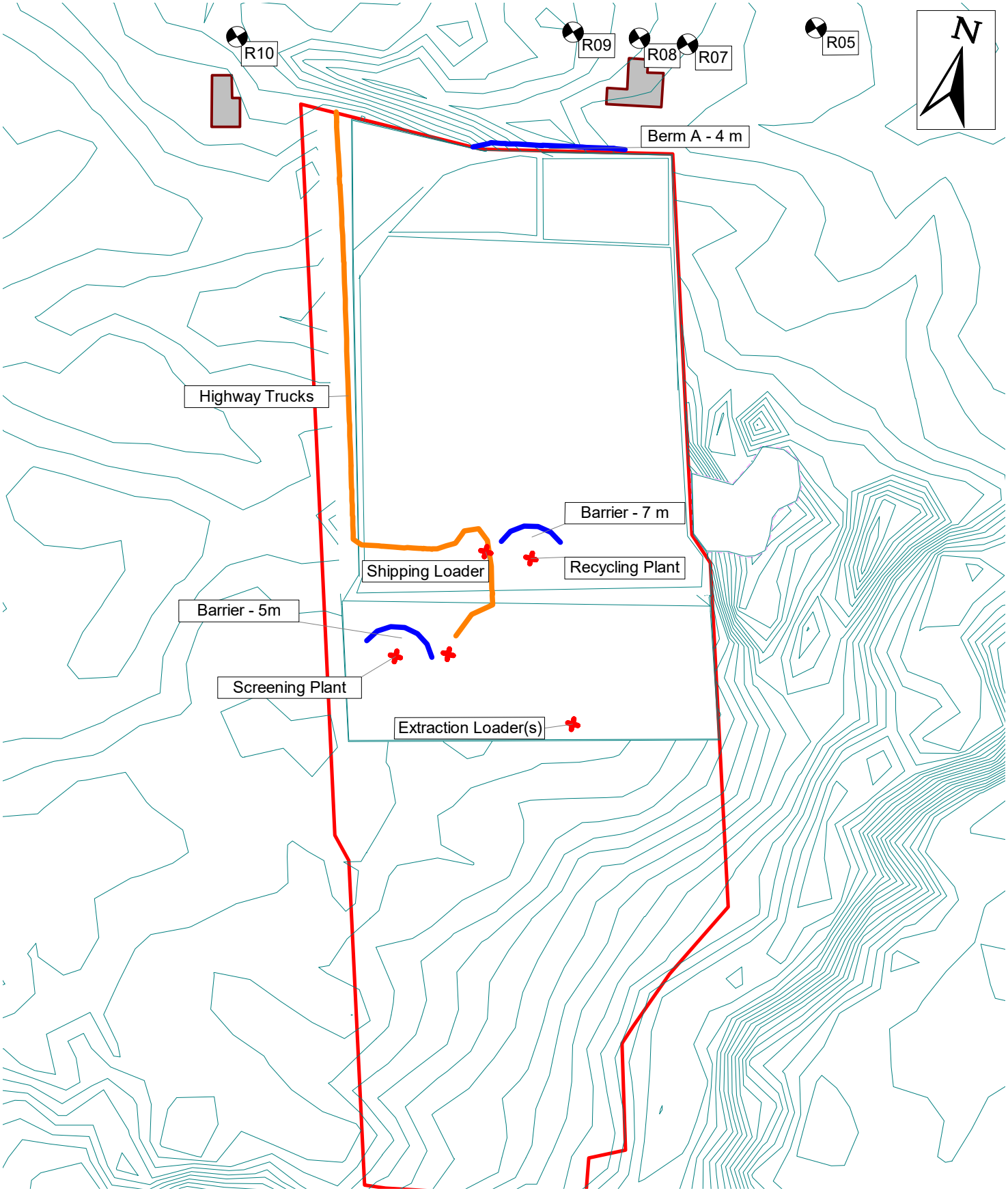
aercoustics	Project ID: 25135.00 Scale: NTS Drawn by: FM Reviewed by: KC Date: Jun 06, 2025 Revision: 1	**Project Name** Kelly Pit - Noise Impact Study **Figure Title** Conceptual Implementation of Noise Controls - Area 1 (1/2)

Figure 3

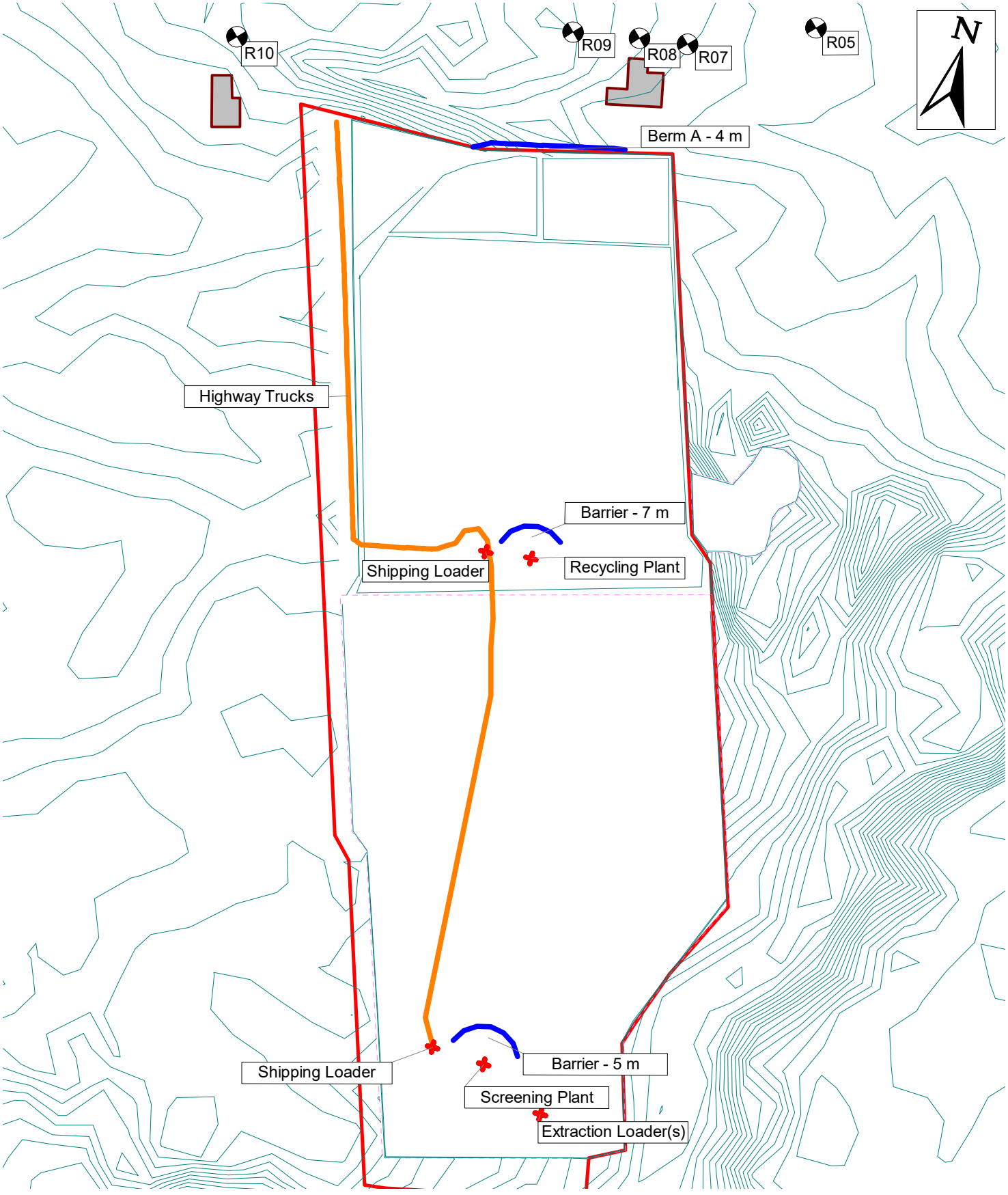


aercoustics	Project ID: 25135.00 Scale: NTS Drawn by: FM Reviewed by: KC Date: Jun 06, 2025 Revision: 1	**Project Name** Kelly Pit - Noise Impact Study **Figure Title** Conceptual Implementation of Noise Controls - Area 1 (2/2)

Figure 4



aercoustics	Project ID: 25135.00 Scale: NTS Drawn by: FM Reviewed by: KC Date: Jun 06, 2025 Revision: 1	**Project Name** Kelly Pit - Noise Impact Study **Figure Title** Conceptual Implementation of Noise Controls - Area 2 (1/2)	**Figure 5**



aercoustics	Project ID: 25135.00 Scale: NTS Drawn by: FM Reviewed by: KC Date: Jun 06, 2025 Revision: 1	**Project Name** Kelly Pit - Noise Impact Study **Figure Title** Conceptual Implementation of Noise Controls - Area 2 (2/2)	**Figure 6**

Appendix A
Recommended Noise Control Measures

1. The proposed hours of operation are from 07:00 to 19:00, Monday to Friday, and 07:00-12:00 on Saturdays. At no time shall extraction, processing or shipping take place on a statutory holiday.

2. Within extraction and processing phases, except where further restrictions apply as outlined below, the extraction and processing equipment operating in the extension shall be limited to:

   a) Two small extraction loaders, OR one medium extraction loader;
   b) One screening plant;
   c) One recycling plant;
   d) Two shipping loaders;
   e) 15 Highway Truck Trips/hr (30 Passes/hr)

3. The aggregate pit equipment shall satisfy the noise emission levels listed in Table A-1:

Table A-1: Reference Sound Pressure Levels of Aggregate Pit Equipment

Equipment	Reference Sound Level (dBA) (One Hour L_{EQ} @ 30 meters)
Screening Plant	74
Medium Extraction Loader	69
Small Extraction Loader	66
Recycling Plant	78
Shipping Loader[1]	67
Highway Truck – 25 km/h	63

1 – The shipping loaders were assumed to be operating at a 50% duty cycle.

4. The sound emissions of all construction equipment involved in site preparation and rehabilitation activities shall comply with the sound level limits specified in the MECP publication NPC-115 “Construction Equipment”.

5. New equipment technology or different configurations may allow proposed changes to any portion of the extraction and processing operations including additional equipment to operate on the site, equipment to be substituted, and/or different berm heights, while still meeting the applicable sound level limits. Changes may be permitted to the site operations and noise controls provided that the changes till meet the sound level limits, as confirmed through documentation prepared by a Professional Engineer specializing in noise control. Prior to any modification, the licensee shall confirm with MNR whether a site plan amendment is required to permit those proposed changes.

6. An acoustic barrier is required to be solid, with no gaps or openings, and shall satisfy a minimum area density of 20 kg/m^2. It could take the form of a pit face, stockpile, earth berm, acoustic fence, ISO containers, a combination of these, or any construction satisfying the requirements of an acoustic barrier.

7. Prior to extraction in Area 1, a berm shall be established along the northern licence boundary having a minimum continuous height of 4 m above the existing grade and a length of approximately 150 m as shown on the Operation Plan (Berm A). This berm shall remain in place for the duration of extraction and processing within the pit.

8. The Recycling Plant shall be established at the pit floor elevation of approximately 204 MASL as soon as practicable and remain at this elevation or lower. The Recycling Plant shall not operate within 350 m from the northern licence boundary and shall be established within 30 m of an acoustic barrier having a minimum continuous height of 7 m relative to the base of the Recycling Plant, between the plant and Receptors R05 through R10.

9. During screening operations, a noise barrier having a minimum continuous height of 7 m relative to the base of the Screening Plant shall be established within 30 m of the Plant, between the Plant and Receptors R05 through R10.

10. When extraction occurs within 100 m of the northern licence boundary, the following additional controls shall be required:

    a. Extraction shall be limited to a single Small Extraction Loader, operating within 40 m of the working face.

    b. The Screening Plant shall be established on the pit floor, at an elevation of 204 MASL or below, and shall operate within 100 m of the west licence boundary, and more than 100 m from the north licence boundary.

    c. The barrier on the Recycling Plant shall be increased from 7 m to 8 m.

Appendix B
Noise Prediction Methodology

The relevant noise sources were identified and a one-hour LEQ was defined for each. Noise levels for the work cycles were taken as continuous throughout the design hour.

Worst-case scenarios were defined on the basis of maximum noise impact at each of the representative points of reception. Propagation paths were defined in terms of topography, distances and elevations. Noise levels were predicted using the methodology of the International Standard ISO 9613-2 Acoustics - Attenuation of Sound During Propagation Outdoors.

Standard point-source distance attenuation was applied to all pit noise sources. Barrier attenuation was calculated using standard diffraction theory. Single barrier attenuation was limited to 20 dB while double barrier attenuation was limited to 25 dB. Attenuation from air absorption and ground effect was included in the predictions. Foliage attenuation was applied where applicable. Noise levels were predicted under conditions of downwind propagation. It is under these conditions that the noise impact will typically be at a maximum.

Predictions of extraction and processing noise impact at the sensitive points of reception are included to illustrate the methodology.

Appendix C
Road Traffic Data & Sample Calculations

MH Corbin Traffic Analyzer Study
Computer Generated Summary Report
City: Norfolk County
Street: St. John's Rd E - WB
Location: 120322

A study of vehicle traffic was conducted with the device having serial number 135176. The study was done in the WB lane at St. John's Rd E - WB in Norfolk County, ON in 0.3 km E of Cockshutt Rd county. The study began on 2024-06-26 at 12:00 AM and concluded on 2024-06-27 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 2,405 vehicles passed through the location with a peak volume of 72 on 2024-06-26 at [03:15 PM-03:30 PM] and a minimum volume of 0 on 2024-06-26 at [01:15 AM-01:30 AM]. The AADT count for this study was 2,405.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 80 - 90 KM/H range or lower. The average speed for all classifed vehicles was 81 KM/H with 56.98% vehicles exceeding the posted speed of 80 KM/H. 56.98% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 80KM/H and the 85th percentile was 90.93 KM/H.

< to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 99	100 to 109	110 to 119	120 to 129	130 to 139	140 to >
0	0	0	5	28	20	182	795	974	323	44	10	3	3	7

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin.
Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 2119 which represents 89 percent of the total classified vehicles. The number of Small Trucks in the study was 73 which represents 3 percent of the total classified vehicles. The number of Trucks/Buses in the study was 70 which represents 3 percent of the total classified vehicles. The number of Tractor Trailers in the study was 132 which represents 6 percent of the total classified vehicles.

< to 4.9	5.0 to 8.4	8.5 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 22.4	22.5 to >							
1206	913	73	70	19	75	33	5							

CHART 2

HEADWAY

During the peak traffic period, on 2024-06-26 at [03:15 PM-03:30 PM] the average headway between vehicles was 12.329 seconds. During the slowest traffic period, on 2024-06-26 at [01:15 AM-01:30 AM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 21.00 and 39.00 degrees C.

MH Corbin Traffic Analyzer Study
Computer Generated Summary Report
City: Norfolk County
Street: St. John's Rd E - EB
Location: 120322

A study of vehicle traffic was conducted with the device having serial number 132657. The study was done in the EB lane at St. John's Rd E - EB in Norfolk County, ON in 0.3 km E of Cockshutt Rd county. The study began on 2024-06-26 at 12:00 AM and concluded on 2024-06-27 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 2,329 vehicles passed through the location with a peak volume of 86 on 2024-06-26 at [06:30 AM-06:45 AM] and a minimum volume of 0 on 2024-06-26 at [11:30 PM-11:45 PM]. The AADT count for this study was 2,329.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 90 - 100 KM/H range or lower. The average speed for all classifed vehicles was 89 KM/H with 81.70% vehicles exceeding the posted speed of 80 KM/H. 81.70% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 90KM/H and the 85th percentile was 99.46 KM/H.

< to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 99	100 to 109	110 to 119	120 to 129	130 to 139	140 to >
0	0	1	0	6	28	78	312	766	827	207	63	23	7	4

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin.
Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 1991 which represents 86 percent of the total classified vehicles. The number of Small Trucks in the study was 91 which represents 4 percent of the total classified vehicles. The number of Trucks/Buses in the study was 118 which represents 5 percent of the total classified vehicles. The number of Tractor Trailers in the study was 122 which represents 5 percent of the total classified vehicles.

< to 4.9	5.0 to 8.4	8.5 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 22.4	22.5 to >							
711	1280	91	118	16	32	49	25							

CHART 2

HEADWAY

During the peak traffic period, on 2024-06-26 at [06:30 AM-06:45 AM] the average headway between vehicles was 10.345 seconds. During the slowest traffic period, on 2024-06-26 at [11:30 PM-11:45 PM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 21.00 and 39.00 degrees C.

EASTBOUND — Classification

Time	Total	0.0 to 4.9	5.0 to 8.4	8.5 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 22.4	22.5 >	Total
7am-8am	219	74	116	5	11	2	2	7	1	218
8am-9am	127	38	62	5	12	4	1	3	1	126
9am-10am	150	38	67	13	16	3	3	5	5	150
10am-11am	121	27	65	8	10	0	2	5	4	121
11am-12pm	138	32	69	17	13	0	4	2	1	138
12pm-1pm	134	38	70	6	10	1	2	4	2	133
1pm-2pm	132	35	58	10	13	1	6	6	3	132
2pm-3pm	120	40	59	5	11	1	1	3	0	120
3pm-4pm	139	46	77	8	4	1	1	1	0	138
4pm-5pm	164	53	94	3	8	1	1	4	0	164
5pm-6pm	137	54	76	2	1	0	1	1	2	137
6pm-7pm	72	23	44	1	0	0	1	2	0	71
	1653	498	857	83	109	14	25	43	19	1648

WESTBOUND — Classification

Time	Total	0.0 to 4.9	5.0 to 8.4	8.5 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 22.4	22.5 >	Total
7am-8am	105	56	32	2	6	1	4	3	0	104
8am-9am	149	71	59	7	0	1	6	3	1	148
9am-10am	128	66	42	7	4	2	3	4	0	128
10am-11am	135	55	55	9	5	2	4	3	0	133
11am-12pm	153	60	46	18	11	3	12	3	0	153
12pm-1pm	150	56	57	5	8	4	11	6	1	148
1pm-2pm	129	50	60	7	3	0	5	3	1	129
2pm-3pm	159	88	53	4	4	1	4	2	2	158
3pm-4pm	251	130	94	8	11	1	6	1	0	251
4pm-5pm	245	136	94	2	7	0	2	0	0	241
5pm-6pm	217	115	93	2	3	1	1	2	0	217
6pm-7pm	157	98	54	0	1	0	4	0	0	157
	1978	981	739	71	63	16	62	30	5	1967

		Passenger Vehicles		Medium Trucks		Heavy Trucks							
Time	Total Count	0.0 to 4.9	5.0 to 8.4	8.5 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 22.4	22.5 >	Total Classified	Car	Med	Heavy
7am-8am	324	130	148	7	17	3	6	10	1	322	278	27	17
8am-9am	276	109	121	12	12	5	7	6	2	274	230	29	15
9am-10am	278	104	109	20	20	5	6	9	5	278	213	45	20
10am-11am	256	82	120	17	15	2	6	8	4	254	202	34	18
11am-12pm	291	92	115	35	24	3	16	5	1	291	207	62	22
12pm-1pm	284	94	127	11	18	5	13	10	3	281	221	34	26
1pm-2pm	261	85	118	17	16	1	11	9	4	261	203	34	24
2pm-3pm	279	128	112	9	15	2	5	5	2	278	240	26	12
3pm-4pm	390	176	171	16	15	2	7	2	0	389	347	33	9
4pm-5pm	409	189	188	5	15	1	3	4	0	405	377	21	7
5pm-6pm	354	169	169	4	4	1	2	3	2	354	338	9	7
										Minimum (10-11am)	202	34	18

```
STAMSON 5.0        NORMAL REPORT        Date: 06-06-2025 16:49:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: BG.te                Time Period: 1 hours
Description: Background Road Traffic


Road data, segment # 1:
------------------------
Car traffic volume  :   202 veh/TimePeriod
Medium truck volume :    34 veh/TimePeriod
Heavy truck volume  :    18 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1:
----------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  30.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.63 m

ROAD (0.00 + 60.21 + 0.00) = 60.21 dBA
Angle1 Angle2   Alpha  RefLeq   P.Adj   D.Adj   F.Adj   W.Adj   H.Adj   B.Adj
SubLeq
-------------------------------------------------------------------------
----
   -90      90    0.57   66.22    0.00   -4.71   -1.30    0.00    0.00    0.00
60.21
-------------------------------------------------------------------------
----

Segment Leq : 60.21 dBA

Total Leq All Segments: 60.21 dBA

TOTAL Leq FROM ALL SOURCES:       60.21
```

```
STAMSON 5.0        NORMAL REPORT        Date: 06-06-2025 17:32:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 15truck.te           Time Period: 1 hours
Description: Road Impact with 4 Additional Truck Movements


Road data, segment # 1:
------------------------
Car traffic volume  :   202 veh/TimePeriod
Medium truck volume :    34 veh/TimePeriod
Heavy truck volume  :    22 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1:
----------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  30.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.71 m

ROAD (0.00 + 60.73 + 0.00) = 60.73 dBA
Angle1 Angle2   Alpha  RefLeq   P.Adj   D.Adj   F.Adj   W.Adj   H.Adj   B.Adj
SubLeq
-------------------------------------------------------------------------
----
   -90      90    0.56   66.73    0.00   -4.71   -1.29    0.00    0.00    0.00
60.73
-------------------------------------------------------------------------
----

Segment Leq : 60.73 dBA

Total Leq All Segments: 60.73 dBA

TOTAL Leq FROM ALL SOURCES:       60.73
```

```
STAMSON 5.0        NORMAL REPORT        Date: 06-06-2025 17:31:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 15truck.te           Time Period: 1 hours
Description: Road Impact with 30 Additional Truck Movements


Road data, segment # 1:
------------------------
Car traffic volume  :   202 veh/TimePeriod
Medium truck volume :    34 veh/TimePeriod
Heavy truck volume  :    33 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1:
----------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  30.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.87 m

ROAD (0.00 + 61.93 + 0.00) = 61.93 dBA
Angle1 Angle2   Alpha  RefLeq   P.Adj   D.Adj   F.Adj   W.Adj   H.Adj   B.Adj
SubLeq
-------------------------------------------------------------------------
----
   -90      90    0.56   67.90    0.00   -4.69   -1.28    0.00    0.00    0.00
61.93
-------------------------------------------------------------------------
----

Segment Leq : 61.93 dBA

Total Leq All Segments: 61.93 dBA

TOTAL Leq FROM ALL SOURCES:       61.93
```

Appendix D
Sample Calculations

Receiver: R05
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	48

Receiver Name	Receiver ID	X	Y	Z
R05	R05	560862 m	4739269 m	206 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560645.3	4738881.0	206.4	0	77	22.9	A	63.9	0.0	-2.2	0.0	2.0	0.0	0.0	0.0	0.0	0.0	36
D09_TRUCKS	Highway Trucks x 30	560605.0	4738761.1	207.2	0	77	11.7	A	66.1	0.0	-2.4	0.0	2.5	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560576.7	4738810.1	215.7	0	77	10.9	A	65.6	0.0	-2.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560675.5	4738784.7	206.4	0	77	9.9	A	65.3	0.0	-2.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560662.4	4738773.5	206.4	0	77	10.1	A	65.5	0.0	-2.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560620.3	4738763.8	206.4	0	77	9.7	A	66.0	0.0	-2.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560580.3	4738797.5	215.5	0	77	9.2	A	65.8	0.0	-2.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560629.0	4738765.3	206.4	0	77	9.2	A	65.9	0.0	-2.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560669.7	4738777.9	206.4	0	77	8.3	A	65.4	0.0	-2.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560587.8	4738771.2	215.0	0	77	7.9	A	66.1	0.0	-2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560642.5	4738768.0	206.4	0	77	7.5	A	65.8	0.0	-2.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560583.3	4738787.1	215.3	0	77	7.6	A	65.9	0.0	-2.5	0.0	2.4	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560594.8	4738761.1	212.4	0	77	7.1	A	66.2	0.0	-2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560637.7	4738767.0	206.4	0	77	6.3	A	65.8	0.0	-2.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560573.9	4738819.9	215.9	0	77	5.8	A	65.5	0.0	-2.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560592.1	4738762.1	214.9	0	77	6.2	A	66.2	0.0	-2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560582.0	4738791.7	215.4	0	77	5.8	A	65.9	0.0	-2.5	0.0	2.4	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560586.4	4738776.1	215.1	0	77	5.8	A	66.0	0.0	-2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560585.4	4738779.5	215.2	0	77	5.1	A	66.0	0.0	-2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560650.2	4738769.4	206.4	0	77	4.8	A	65.7	0.0	-2.3	0.0	2.4	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560589.7	4738764.4	214.9	0	77	5.1	A	66.2	0.0	-2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560578.8	4738802.9	215.6	0	77	4.5	A	65.7	0.0	-2.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560653.0	4738770.0	206.4	0	77	4.3	A	65.7	0.0	-2.3	0.0	2.4	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560512.6	4739032.7	216.3	0	77	11.1	A	63.5	0.0	-0.3	4.6	1.9	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560509.6	4739042.6	216.3	0	77	8.8	A	63.4	0.0	0.1	4.5	1.9	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560503.7	4739062.2	216.0	0	77	12.7	A	63.3	0.0	0.5	4.3	1.9	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560557.5	4738877.6	216.0	0	77	13.6	A	64.9	0.0	-2.3	0.0	2.2	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560551.9	4738897.6	215.5	0	77	3.2	A	64.7	0.0	-2.2	0.0	2.2	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560549.5	4738906.0	215.3	0	77	11.9	A	64.6	0.0	-2.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560540.1	4738939.2	214.4	0	77	12.0	A	64.3	0.0	-2.1	0.0	2.1	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560530.5	4738972.9	214.4	0	77	10.2	A	64.0	0.0	-1.9	0.0	2.0	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560528.7	4738979.4	214.4	0	77	4.5	A	63.9	0.0	-1.9	1.8	2.0	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560533.7	4738961.5	214.4	0	77	11.2	A	64.1	0.0	-2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560522.4	4739000.4	215.1	0	77	10.9	A	63.7	0.0	-1.8	3.9	2.0	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560496.2	4739087.0	215.4	0	77	10.4	A	63.2	0.0	0.5	4.3	1.9	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560568.4	4738839.5	216.2	0	77	11.2	A	65.3	0.0	-2.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560498.9	4739078.0	215.6	0	77	8.9	A	63.3	0.0	0.5	4.3	1.9	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560519.4	4739010.1	215.6	0	77	9.1	A	63.7	0.0	-1.5	4.7	2.0	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560571.8	4738827.5	216.0	0	77	10.8	A	65.5	0.0	-2.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560543.6	4738926.9	214.7	0	77	8.8	A	64.4	0.0	-2.1	0.0	2.1	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560515.5	4739023.1	216.1	0	77	8.5	A	63.6	0.0	-0.8	4.6	1.9	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560546.2	4738917.6	215.0	0	77	9.4	A	64.5	0.0	-2.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560525.2	4738991.0	214.7	0	77	8.6	A	63.8	0.0	-1.8	3.2	2.0	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560562.0	4738862.0	216.3	0	77	9.7	A	65.1	0.0	-2.3	0.0	2.2	0.0	0.0	0.0	0.0	0.0	21

Receiver: R05
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	48

Receiver Name	Receiver ID	X	Y	Z
R05	R05	560862 m	4739269 m	206 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560553.3	4738892.7	215.6	0	77	9.1	A	64.7	0.0	-2.2	0.0	2.2	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560565.4	4738849.9	216.4	0	77	9.4	A	65.2	0.0	-2.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560537.3	4738948.9	214.4	0	77	6.5	A	64.2	0.0	-2.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560527.7	4738982.6	214.5	0	77	5.9	A	63.9	0.0	-1.9	2.1	2.0	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560536.4	4738952.1	214.4	0	77	3.6	A	64.1	0.0	-2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560563.8	4738855.8	216.4	0	77	5.6	A	65.1	0.0	-2.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560492.2	4739100.5	215.0	0	77	9.2	A	63.2	0.0	0.5	2.7	1.9	0.0	0.0	0.0	0.0	0.0	17
RCP_RECYCLE	Recycling Plant	560737.6	4738782.9	207.0	0	116	0.0	A	65.0	0.0	-1.8	8.6	1.6	0.0	0.0	0.0	0.0	0.0	43
D09_SCREEN	Screening Plant	560608.3	4738983.7	207.0	0	112	0.0	A	62.6	0.0	-1.3	7.2	1.8	0.0	0.0	0.0	0.0	0.0	41
D09_FELE	Shipping Loader	560644.3	4739000.0	206.5	0	104	0.0	A	61.8	0.0	-1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	40
RCP_FELS	Shipping Loader	560699.7	4738779.1	206.5	0	104	0.0	A	65.2	0.0	-1.7	0.0	1.7	0.0	0.0	0.0	0.0	0.0	36
D09_FELE	Single Extraction Loader	560629.1	4739066.8	208.5	0	104	0.0	A	60.8	0.0	-0.8	2.7	1.2	0.0	0.0	0.0	0.0	0.0	41

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R06
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	44

Receiver Name	Receiver ID	X	Y	Z
R06	R06	560778 m	4739432 m	204.8 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560616.6	4738963.4	206.4	0	77	13.0	A	64.9	0.0	-1.5	7.0	2.2	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560625.8	4738937.0	206.4	0	77	15.6	A	65.3	0.0	-1.6	4.7	2.3	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560654.5	4738854.6	206.4	0	77	21.4	A	66.4	0.0	-1.8	4.6	2.6	0.0	0.0	0.0	0.0	0.0	26
D09_TRUCKS	Highway Trucks x 30	560576.7	4738810.1	215.7	0	77	10.9	A	67.3	0.0	-1.9	0.0	2.8	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560580.3	4738797.5	215.5	0	77	9.2	A	67.5	0.0	-2.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560587.8	4738771.2	215.0	0	77	7.9	A	67.7	0.0	-2.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560583.3	4738787.1	215.3	0	77	7.6	A	67.6	0.0	-2.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560511.5	4739036.4	216.3	0	77	13.1	A	64.6	0.0	0.5	0.0	2.1	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560503.7	4739062.2	216.0	0	77	12.7	A	64.3	0.0	0.5	0.0	2.1	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560557.5	4738877.6	216.0	0	77	13.6	A	66.5	0.0	-1.8	0.0	2.6	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560496.2	4739087.0	215.4	0	77	10.4	A	64.0	0.0	0.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560549.8	4738905.0	215.4	0	77	12.4	A	66.2	0.0	-1.7	0.0	2.5	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560540.1	4738939.2	214.4	0	77	12.0	A	65.8	0.0	-1.5	4.7	2.4	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560530.1	4738974.3	214.4	0	77	11.3	A	65.3	0.0	-1.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560522.4	4739000.4	215.1	0	77	10.9	A	65.0	0.0	-1.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560534.9	4738957.4	214.4	0	77	6.7	A	65.5	0.0	-1.5	1.7	2.3	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560532.8	4738964.9	214.4	0	77	7.9	A	65.4	0.0	-1.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560498.9	4739078.0	215.6	0	77	8.9	A	64.1	0.0	0.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560519.4	4739010.1	215.6	0	77	9.1	A	64.9	0.0	0.5	0.0	2.2	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560568.5	4738839.0	216.2	0	77	10.8	A	67.0	0.0	-1.9	0.0	2.7	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560507.4	4739050.0	216.2	0	77	8.5	A	64.4	0.0	0.5	0.0	2.1	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560515.5	4739023.1	216.1	0	77	8.5	A	64.7	0.0	0.5	0.0	2.2	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560571.8	4738827.5	216.0	0	77	10.8	A	67.1	0.0	-1.9	0.0	2.7	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560525.2	4738991.0	214.7	0	77	8.6	A	65.1	0.0	-1.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560545.8	4738919.1	215.0	0	77	7.5	A	66.0	0.0	-1.6	0.0	2.5	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560562.0	4738862.0	216.3	0	77	9.7	A	66.7	0.0	-1.8	0.0	2.6	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560553.3	4738892.7	215.6	0	77	9.1	A	66.3	0.0	-1.7	0.0	2.5	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560565.4	4738849.9	216.4	0	77	9.4	A	66.8	0.0	-1.8	0.0	2.7	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560500.6	4739072.7	215.8	0	77	5.3	A	64.1	0.0	0.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560527.7	4738982.6	214.5	0	77	5.9	A	65.2	0.0	-1.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560492.2	4739100.5	215.0	0	77	9.2	A	63.8	0.0	0.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	19
RCP_RECYCLE	Recycling Plant	560737.6	4738782.9	207.0	0	116	0.0	A	67.3	0.0	-1.8	7.7	2.0	0.0	0.0	0.0	0.0	0.0	41
D09_SCREEN	Screening Plant	560608.3	4738983.7	207.0	0	112	0.0	A	64.6	0.0	-0.8	9.5	2.1	0.0	0.0	0.0	0.0	0.0	36
D09_FELE	Shipping Loader	560644.3	4739000.0	206.5	0	104	0.0	A	64.1	0.0	-0.8	4.3	1.6	0.0	0.0	0.0	0.0	0.0	32
RCP_FELS	Shipping Loader	560699.7	4738779.1	206.5	0	104	0.0	A	67.4	0.0	-1.5	2.8	2.1	0.0	0.0	0.0	0.0	0.0	31
D09_FELE	Single Extraction Loader	560629.1	4739066.8	208.5	0	104	0.0	A	62.9	0.0	-0.2	4.6	1.4	0.0	0.0	0.0	0.0	0.0	36

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R07
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	45

Receiver Name	Receiver ID	X	Y	Z
R07	R07	560761 m	4739230 m	204.6 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560634.3	4738912.7	206.4	0	77	20.4	A	61.7	0.0	-0.8	12.3	1.6	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560664.8	4738825.1	206.4	0	77	18.8	A	63.4	0.0	-1.0	8.0	1.9	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560675.5	4738784.7	206.4	0	77	9.9	A	64.1	0.0	-1.1	5.4	2.0	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560511.5	4739036.4	216.3	0	77	13.1	A	61.0	0.0	1.3	6.6	1.5	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560503.7	4739062.2	216.0	0	77	12.7	A	60.8	0.0	1.6	5.5	1.5	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560557.5	4738877.6	216.0	0	77	13.6	A	63.2	0.0	-0.9	7.7	1.9	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560496.5	4739086.3	215.4	0	77	9.8	A	60.6	0.0	1.6	2.6	1.4	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560540.8	4738936.6	214.4	0	77	10.2	A	62.3	0.0	-0.7	7.5	1.7	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560549.8	4738905.0	215.4	0	77	12.4	A	62.8	0.0	-0.8	7.6	1.8	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560530.1	4738974.3	214.4	0	77	11.3	A	61.7	0.0	-0.5	7.2	1.6	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560533.7	4738961.5	214.4	0	77	11.2	A	61.9	0.0	-0.6	7.2	1.6	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560498.9	4739078.0	215.6	0	77	8.9	A	60.6	0.0	1.6	3.9	1.4	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560568.4	4738839.5	216.2	0	77	11.2	A	63.8	0.0	-1.0	7.9	2.0	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560525.2	4738991.0	214.7	0	77	8.6	A	61.5	0.0	-0.5	7.4	1.6	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560494.3	4739093.4	215.4	0	77	4.1	A	60.5	0.0	1.6	0.0	1.4	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560493.7	4739095.6	215.3	0	77	2.8	A	60.5	0.0	1.6	0.0	1.4	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560492.2	4739100.5	215.0	0	77	9.2	A	60.5	0.0	1.6	0.0	1.4	0.0	0.0	0.0	0.0	0.0	22
RCP_RECYCLE	Recycling Plant	560737.6	4738782.9	207.0	0	116	0.0	A	64.0	0.0	0.4	8.1	1.5	0.0	0.0	0.0	0.0	0.0	42
D09_SCREEN	Screening Plant	560608.3	4738983.7	207.0	0	112	0.0	A	60.2	0.0	0.2	14.6	1.5	0.0	0.0	0.0	0.0	0.0	35
D09_FELE	Shipping Loader	560644.3	4739000.0	206.5	0	104	0.0	A	59.2	0.0	0.3	10.0	1.0	0.0	0.0	0.0	0.0	0.0	31
RCP_FELS	Shipping Loader	560699.7	4738779.1	206.5	0	104	0.0	A	64.2	0.0	-0.2	0.0	1.6	0.0	0.0	0.0	0.0	0.0	36
D09_FELE	Single Extraction Loader	560629.1	4739066.8	208.5	0	104	0.0	A	57.4	0.0	0.8	9.5	0.9	0.0	0.0	0.0	0.0	0.0	36

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R08
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	49

Receiver Name	Receiver ID	X	Y	Z
R08	R08	560721 m	4739225 m	208.7 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560614.3	4738970.1	206.4	0	77	7.5	A	59.8	0.0	-1.9	8.5	1.3	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560617.0	4738962.3	206.4	0	77	10.4	A	60.0	0.0	-1.9	6.2	1.4	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560621.7	4738948.7	206.4	0	77	12.5	A	60.4	0.0	-2.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	29
D09_TRUCKS	Highway Trucks x 30	560651.0	4738864.8	206.4	0	77	22.0	A	62.3	0.0	-2.4	5.4	1.7	0.0	0.0	0.0	0.0	0.0	32
D09_TRUCKS	Highway Trucks x 30	560605.0	4738761.1	207.2	0	77	11.7	A	64.6	0.0	-2.7	3.8	2.1	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560576.7	4738810.1	215.7	0	77	10.9	A	63.9	0.0	-2.6	0.0	2.0	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560675.5	4738784.7	206.4	0	77	9.9	A	63.9	0.0	-2.7	5.6	2.0	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560662.4	4738773.5	206.4	0	77	10.1	A	64.2	0.0	-2.7	5.2	2.1	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560620.3	4738763.8	206.4	0	77	9.7	A	64.5	0.0	-2.7	4.6	2.1	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560580.3	4738797.5	215.5	0	77	9.2	A	64.1	0.0	-2.6	1.8	2.0	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560629.0	4738765.3	206.4	0	77	9.2	A	64.4	0.0	-2.7	4.7	2.1	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560669.7	4738777.9	206.4	0	77	8.3	A	64.1	0.0	-2.7	5.2	2.0	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560587.8	4738771.2	215.0	0	77	7.9	A	64.5	0.0	-2.7	2.8	2.1	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560583.3	4738787.1	215.3	0	77	7.6	A	64.2	0.0	-2.6	2.2	2.1	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560642.5	4738768.0	206.4	0	77	7.5	A	64.3	0.0	-2.7	4.9	2.1	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560594.8	4738761.1	212.4	0	77	7.1	A	64.6	0.0	-2.7	3.4	2.2	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560573.9	4738819.9	215.9	0	77	5.8	A	63.7	0.0	-2.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560582.0	4738791.7	215.4	0	77	5.8	A	64.2	0.0	-2.6	2.0	2.1	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560592.1	4738762.1	214.9	0	77	6.2	A	64.6	0.0	-2.7	3.2	2.1	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560586.4	4738776.1	215.1	0	77	5.8	A	64.4	0.0	-2.7	2.7	2.1	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560585.4	4738779.5	215.2	0	77	5.1	A	64.4	0.0	-2.7	2.5	2.1	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560578.8	4738802.8	215.6	0	77	4.3	A	64.0	0.0	-2.6	1.8	2.0	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560511.5	4739036.4	216.3	0	77	13.1	A	60.0	0.0	0.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0	28
D09_TRUCKS	Highway Trucks x 30	560503.7	4739062.2	216.0	0	77	12.7	A	59.7	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	28
D09_TRUCKS	Highway Trucks x 30	560557.5	4738877.6	216.0	0	77	13.6	A	62.7	0.0	-2.3	0.0	1.8	0.0	0.0	0.0	0.0	0.0	28
D09_TRUCKS	Highway Trucks x 30	560496.2	4739087.0	215.4	0	77	10.4	A	59.4	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	26
D09_TRUCKS	Highway Trucks x 30	560540.1	4738939.2	214.4	0	77	12.0	A	61.6	0.0	-2.1	0.0	1.6	0.0	0.0	0.0	0.0	0.0	27
D09_TRUCKS	Highway Trucks x 30	560523.8	4738995.7	214.9	0	77	4.1	A	60.6	0.0	-1.7	0.0	1.4	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560522.0	4739001.6	215.2	0	77	9.9	A	60.5	0.0	-1.7	1.4	1.4	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560530.1	4738974.3	214.4	0	77	11.3	A	61.0	0.0	-1.9	0.0	1.5	0.0	0.0	0.0	0.0	0.0	27
D09_TRUCKS	Highway Trucks x 30	560549.8	4738905.0	215.4	0	77	12.4	A	62.2	0.0	-2.2	0.0	1.7	0.0	0.0	0.0	0.0	0.0	27
D09_TRUCKS	Highway Trucks x 30	560533.7	4738961.5	214.4	0	77	11.2	A	61.2	0.0	-2.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	27
D09_TRUCKS	Highway Trucks x 30	560498.9	4739078.0	215.6	0	77	8.9	A	59.5	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560520.3	4739007.3	215.5	0	77	3.4	A	60.4	0.0	-1.6	1.1	1.4	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560519.1	4739011.2	215.7	0	77	7.8	A	60.4	0.0	-1.1	0.0	1.4	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560507.4	4739050.0	216.2	0	77	8.5	A	59.8	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560515.5	4739023.1	216.1	0	77	8.5	A	60.2	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560525.2	4738991.0	214.7	0	77	8.6	A	60.7	0.0	-1.8	0.0	1.5	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560568.4	4738839.5	216.2	0	77	11.2	A	63.4	0.0	-2.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560543.5	4738927.1	214.7	0	77	9.0	A	61.8	0.0	-2.1	0.0	1.6	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560546.2	4738917.6	215.0	0	77	9.4	A	62.0	0.0	-2.2	0.0	1.7	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560572.1	4738826.4	216.0	0	77	9.9	A	63.6	0.0	-2.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560570.5	4738832.2	216.1	0	77	3.5	A	63.5	0.0	-2.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0	17

Receiver: R08
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	49

Receiver Name	Receiver ID	X	Y	Z
R08	R08	560721 m	4739225 m	208.7 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560562.0	4738862.0	216.3	0	77	9.7	A	63.0	0.0	-2.4	0.0	1.8	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560553.6	4738891.5	215.7	0	77	7.5	A	62.4	0.0	-2.3	0.0	1.7	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560552.5	4738895.4	215.6	0	77	3.9	A	62.4	0.0	-2.3	0.0	1.7	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560565.4	4738849.9	216.4	0	77	9.4	A	63.2	0.0	-2.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560500.6	4739072.7	215.8	0	77	5.3	A	59.6	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560517.1	4739017.8	215.9	0	77	5.9	A	60.3	0.0	-0.5	0.0	1.4	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560527.7	4738982.6	214.5	0	77	5.9	A	60.8	0.0	-1.8	0.0	1.5	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560537.3	4738948.9	214.4	0	77	6.5	A	61.4	0.0	-2.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560494.3	4739093.4	215.4	0	77	4.1	A	59.4	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560536.3	4738952.5	214.4	0	77	4.9	A	61.4	0.0	-2.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560493.7	4739095.6	215.3	0	77	2.8	A	59.4	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560517.9	4739015.0	215.9	0	77	3.0	A	60.3	0.0	-0.8	0.0	1.4	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560563.8	4738855.8	216.4	0	77	5.6	A	63.1	0.0	-2.4	0.0	1.8	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560526.6	4738986.1	214.6	0	77	1.0	A	60.8	0.0	-1.8	0.0	1.5	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560544.8	4738922.5	214.9	0	77	1.9	A	61.9	0.0	-2.2	0.0	1.6	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560535.7	4738954.5	214.4	0	77	0.8	A	61.3	0.0	-2.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560492.2	4739100.5	215.0	0	77	9.2	A	59.3	0.0	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	25
RCP_RECYCLE	Recycling Plant	560737.6	4738782.9	207.0	0	116	0.0	A	63.9	0.0	-2.5	15.9	1.5	0.0	0.0	0.0	0.0	0.0	38
D09_SCREEN	Screening Plant	560608.3	4738983.7	207.0	0	112	0.0	A	59.5	0.0	-1.3	8.3	1.4	0.0	0.0	0.0	0.0	0.0	44
D09_FELE	Shipping Loader	560644.3	4739000.0	206.5	0	104	0.0	A	58.5	0.0	-1.2	4.6	1.0	0.0	0.0	0.0	0.0	0.0	38
RCP_FELS	Shipping Loader	560699.7	4738779.1	206.5	0	104	0.0	A	64.0	0.0	-2.2	5.3	1.6	0.0	0.0	0.0	0.0	0.0	33
D09_FELE	Single Extraction Loader	560629.1	4739066.8	208.5	0	104	0.0	A	56.3	0.0	-0.5	4.9	0.8	0.0	0.0	0.0	0.0	0.0	43

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R09
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	50

Receiver Name	Receiver ID	X	Y	Z
R09	R09	560666 m	4739217 m	210.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560619.4	4738955.3	206.4	0	77	15.7	A	59.5	0.0	-1.9	10.7	1.3	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560627.3	4738932.9	206.4	0	77	10.3	A	60.1	0.0	-2.1	4.4	1.4	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560638.8	4738899.7	206.4	0	77	17.7	A	61.0	0.0	-2.2	3.4	1.5	0.0	0.0	0.0	0.0	0.0	31
D09_TRUCKS	Highway Trucks x 30	560662.9	4738830.4	206.4	0	77	19.4	A	62.7	0.0	-2.5	0.0	1.8	0.0	0.0	0.0	0.0	0.0	34
D09_TRUCKS	Highway Trucks x 30	560576.7	4738810.1	215.7	0	77	10.9	A	63.4	0.0	-2.6	0.0	1.9	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560605.9	4738761.3	207.1	0	77	11.1	A	64.2	0.0	-2.7	4.2	2.1	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560675.5	4738784.7	206.4	0	77	9.9	A	63.7	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560662.4	4738773.5	206.4	0	77	10.1	A	63.9	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560580.3	4738797.5	215.5	0	77	9.2	A	63.6	0.0	-2.6	0.0	1.9	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560620.3	4738763.8	206.4	0	77	9.7	A	64.2	0.0	-2.7	3.7	2.1	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560629.0	4738765.3	206.4	0	77	9.2	A	64.1	0.0	-2.7	3.1	2.0	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560669.7	4738777.9	206.4	0	77	8.3	A	63.8	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560587.8	4738771.2	215.0	0	77	7.9	A	64.1	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560583.3	4738787.1	215.3	0	77	7.6	A	63.8	0.0	-2.6	0.0	2.0	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560644.3	4738768.3	206.4	0	77	3.1	A	64.0	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560641.6	4738767.8	206.4	0	77	5.5	A	64.1	0.0	-2.7	1.8	2.0	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560594.8	4738761.1	212.4	0	77	7.1	A	64.3	0.0	-2.7	4.8	2.1	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560573.9	4738819.9	215.9	0	77	5.8	A	63.2	0.0	-2.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560637.7	4738767.0	206.4	0	77	6.3	A	64.1	0.0	-2.7	2.1	2.0	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560582.0	4738791.7	215.4	0	77	5.8	A	63.7	0.0	-2.6	0.0	2.0	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560592.1	4738762.1	214.9	0	77	6.2	A	64.3	0.0	-2.7	0.0	2.1	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560586.4	4738776.1	215.1	0	77	5.8	A	64.0	0.0	-2.6	0.0	2.0	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560585.4	4738779.5	215.2	0	77	5.1	A	64.0	0.0	-2.6	0.0	2.0	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560578.8	4738802.9	215.6	0	77	4.5	A	63.5	0.0	-2.6	0.0	1.9	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560589.7	4738764.4	214.9	0	77	5.1	A	64.2	0.0	-2.7	0.0	2.1	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560650.2	4738769.4	206.4	0	77	4.8	A	64.0	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560653.0	4738770.0	206.4	0	77	4.3	A	64.0	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560584.4	4738783.1	215.2	0	77	4.2	A	63.9	0.0	-2.6	0.0	2.0	0.0	0.0	0.0	0.0	0.0	17
D09_TRUCKS	Highway Trucks x 30	560589.0	4738767.1	215.0	0	77	3.5	A	64.2	0.0	-2.7	0.0	2.1	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560657.1	4738770.8	206.4	0	77	2.4	A	64.0	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560646.1	4738768.6	206.4	0	77	2.1	A	64.0	0.0	-2.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	15
D09_TRUCKS	Highway Trucks x 30	560511.5	4739036.4	216.3	0	77	13.1	A	58.5	0.0	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	30
D09_TRUCKS	Highway Trucks x 30	560503.7	4739062.2	216.0	0	77	12.7	A	58.0	0.0	0.4	0.0	1.1	0.0	0.0	0.0	0.0	0.0	30
D09_TRUCKS	Highway Trucks x 30	560496.2	4739087.0	215.4	0	77	10.4	A	57.6	0.0	0.4	0.0	1.1	0.0	0.0	0.0	0.0	0.0	28
D09_TRUCKS	Highway Trucks x 30	560557.5	4738877.6	216.0	0	77	13.6	A	62.0	0.0	-2.3	0.0	1.7	0.0	0.0	0.0	0.0	0.0	29
D09_TRUCKS	Highway Trucks x 30	560522.4	4739000.4	215.1	0	77	10.9	A	59.3	0.0	-1.6	0.0	1.3	0.0	0.0	0.0	0.0	0.0	28
D09_TRUCKS	Highway Trucks x 30	560530.1	4738974.3	214.4	0	77	11.3	A	59.9	0.0	-1.8	0.0	1.3	0.0	0.0	0.0	0.0	0.0	28
D09_TRUCKS	Highway Trucks x 30	560540.1	4738939.2	214.4	0	77	12.0	A	60.7	0.0	-2.0	3.0	1.5	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560498.9	4739078.0	215.6	0	77	8.9	A	57.7	0.0	0.4	0.0	1.1	0.0	0.0	0.0	0.0	0.0	26
D09_TRUCKS	Highway Trucks x 30	560535.0	4738957.1	214.4	0	77	6.0	A	60.3	0.0	-1.9	1.5	1.4	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560534.0	4738960.6	214.4	0	77	5.4	A	60.2	0.0	-1.9	0.0	1.4	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560532.7	4738965.1	214.4	0	77	7.6	A	60.1	0.0	-1.9	0.0	1.4	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560550.4	4738902.9	215.4	0	77	11.2	A	61.5	0.0	-2.2	0.0	1.6	0.0	0.0	0.0	0.0	0.0	27

Receiver: R09
Project: Allan's Excavating - Kelly Pit NIS
Project Number: 25135

Time Period	Total (dBA)*
Day	50

Receiver Name	Receiver ID	X	Y	Z
R09	R09	560666 m	4739217 m	210.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D09_TRUCKS	Highway Trucks x 30	560548.0	4738911.3	215.2	0	77	6.3	A	61.3	0.0	-2.2	0.0	1.5	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560507.4	4739050.0	216.2	0	77	8.5	A	58.2	0.0	0.4	0.0	1.1	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560519.4	4739010.1	215.6	0	77	9.1	A	59.1	0.0	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560515.5	4739023.1	216.1	0	77	8.5	A	58.8	0.0	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560525.2	4738991.0	214.7	0	77	8.6	A	59.5	0.0	-1.7	0.0	1.3	0.0	0.0	0.0	0.0	0.0	26
D09_TRUCKS	Highway Trucks x 30	560543.9	4738925.7	214.7	0	77	7.0	A	61.0	0.0	-2.1	0.0	1.5	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560542.7	4738929.9	214.5	0	77	5.6	A	60.9	0.0	-2.1	1.8	1.5	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560568.4	4738839.5	216.2	0	77	11.2	A	62.8	0.0	-2.5	0.0	1.8	0.0	0.0	0.0	0.0	0.0	26
D09_TRUCKS	Highway Trucks x 30	560546.2	4738917.6	215.0	0	77	9.4	A	61.2	0.0	-2.1	0.0	1.5	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560571.8	4738827.5	216.0	0	77	10.8	A	63.0	0.0	-2.5	0.0	1.8	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560500.6	4739072.7	215.8	0	77	5.3	A	57.8	0.0	0.4	0.0	1.1	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560553.3	4738892.7	215.6	0	77	9.1	A	61.7	0.0	-2.2	0.0	1.6	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560562.0	4738862.0	216.3	0	77	9.7	A	62.4	0.0	-2.4	0.0	1.7	0.0	0.0	0.0	0.0	0.0	25
D09_TRUCKS	Highway Trucks x 30	560517.1	4739017.8	215.9	0	77	5.9	A	58.9	0.0	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560565.4	4738849.9	216.4	0	77	9.4	A	62.6	0.0	-2.4	0.0	1.8	0.0	0.0	0.0	0.0	0.0	24
D09_TRUCKS	Highway Trucks x 30	560494.3	4739093.4	215.4	0	77	4.1	A	57.5	0.0	0.4	0.0	1.1	0.0	0.0	0.0	0.0	0.0	22
D09_TRUCKS	Highway Trucks x 30	560527.7	4738982.6	214.5	0	77	5.9	A	59.7	0.0	-1.7	0.0	1.3	0.0	0.0	0.0	0.0	0.0	23
D09_TRUCKS	Highway Trucks x 30	560537.3	4738948.9	214.4	0	77	6.5	A	60.5	0.0	-2.0	2.4	1.4	0.0	0.0	0.0	0.0	0.0	21
D09_TRUCKS	Highway Trucks x 30	560493.7	4739095.6	215.3	0	77	2.8	A	57.5	0.0	0.4	0.0	1.1	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560536.3	4738952.5	214.4	0	77	4.9	A	60.4	0.0	-1.9	2.1	1.4	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560517.9	4739015.0	215.9	0	77	3.0	A	59.0	0.0	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	19
D09_TRUCKS	Highway Trucks x 30	560563.8	4738855.8	216.4	0	77	5.6	A	62.5	0.0	-2.4	0.0	1.7	0.0	0.0	0.0	0.0	0.0	20
D09_TRUCKS	Highway Trucks x 30	560526.6	4738986.1	214.6	0	77	1.0	A	59.6	0.0	-1.7	0.0	1.3	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560544.8	4738922.5	214.9	0	77	1.9	A	61.1	0.0	-2.1	0.0	1.5	0.0	0.0	0.0	0.0	0.0	18
D09_TRUCKS	Highway Trucks x 30	560535.7	4738954.5	214.4	0	77	0.8	A	60.3	0.0	-1.9	1.8	1.4	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560527.0	4738984.8	214.5	0	77	-1.2	A	59.6	0.0	-1.7	0.0	1.3	0.0	0.0	0.0	0.0	0.0	16
D09_TRUCKS	Highway Trucks x 30	560492.2	4739100.5	215.0	0	77	9.2	A	57.4	0.0	0.4	0.0	1.0	0.0	0.0	0.0	0.0	0.0	27
RCP_RECYCLE	Recycling Plant	560737.6	4738782.9	207.0	0	116	0.0	A	63.9	0.0	-2.5	8.8	1.5	0.0	0.0	0.0	0.0	0.0	45
D09_SCREEN	Screening Plant	560608.3	4738983.7	207.0	0	112	0.0	A	58.6	0.0	-1.2	11.5	1.3	0.0	0.0	0.0	0.0	0.0	42
D09_FELE	Shipping Loader	560644.3	4739000.0	206.5	0	104	0.0	A	57.8	0.0	-1.1	4.2	0.9	0.0	0.0	0.0	0.0	0.0	40
RCP_FELS	Shipping Loader	560699.7	4738779.1	206.5	0	104	0.0	A	63.8	0.0	-2.2	0.0	1.5	0.0	0.0	0.0	0.0	0.0	38
D09_FELE	Single Extraction Loader	560629.1	4739066.8	208.5	0	104	0.0	A	54.8	0.0	-0.4	5.8	0.7	0.0	0.0	0.0	0.0	0.0	44

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Appendix E
Qualifications of the Author

aercoustics

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Kohl Clark, B.Eng., P.Eng.

Associate

Kohl holds a Bachelor of Engineering in Mechanical Engineering from McMaster University. As an Acoustical Engineer at Aercoustics Engineering Ltd., Kohl brings experience tackling projects in various industries, including architectural design, residential, environmental, aggregate and transit. Kohl is a professional engineer with Professional Engineers Ontario.

Education & Experience

- Bachelor of Engineering, Mechanical Engineering, McMaster University, June 2016
- Acoustical Engineer, Aercoustics Engineering Ltd., August 2016 to Present

Relevant Project Experience

Aggregate site modelling and design experience includes:

Waterford Sand & Gravel	Law Quarry Extension	Wainfleet, ON
CBM Aggregates	North Dorchester Pit	Thames Centre, ON
Brantam Excavating	Elgin Pit	Thames Centre, ON
Teeswater Aggregates	Paris Plains Pit	Paris, ON
Aaroc Aggregates	Wallace Pit	Thamesford, ON
Cornwall Gravel	Greely Quarry	Ottawa, ON
James Thoume Construction Ltd.	Litchy Pit	Centre Wellington, ON
Bruce Peninsula Stone Ltd.	Mar Quarry Bury Road Quarry Wiarton Quarry	Bruce Peninsula, ON

Aggregate site review and audit experience includes:

Waterford Sand & Gravel	Vinemount Quarries	Stoney Creek, ON
CBM Aggregates	Brown Pit Dance & Dabrowski Pit Thomas St. Quarry Codrington Pit	North Dumfries, ON North Dumfries, ON St Marys, ON Codrington, ON
CRH Aggregates	Hennig Pit Cedar Creek Pit	North Dumfries, ON North Dumfries, ON

Other relevant industrial noise modelling and assessment experience includes:

D.Crupi and Sons Ltd. Asphalt Plant	Oshawa, ON
Hamilton Wastewater Treatment Plant	Hamilton, ON
Lafarge Bath Cement Plant	Bath, ON
PureGold Mine	Madsen, ON
Cochenour Mine	Cochenour, ON
Red Lake Gold Mine	Red Lake, ON

End of Report

STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT OF 364 ST. JOHN'S ROAD EAST IN PART OF LOT 5, CONCESSION 5, FORMER TOWNSHIP OF WOODHOUSE, NOW TOWN OF SIMCOE, NORFOLK COUNTY, ONTARIO

SUBMITTED TO

ESHER PLANNING INC.

AND

THE ONTARIO MINISTRY OF CITIZENSHIP AND MULTICULTURALISM

REPORT TYPE: ORIGINAL
ARCHAEOLOGICAL LICENSE NUMBER P1289, KARA ADAMS

PIF P1289–0369-2023

JANUARY 2024

LINCOLN ENVIRONMENTAL CONSULTING

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EXECUTIVE SUMMARY

Lincoln Environmental Consulting Corp. (LEC) was retained by Esher Planning Inc. to complete a Stage 1-2 archaeological assessment of 364 St. John's Road East to meet the requirements of the *Planning Act* (Government of Ontario 2014) in advance of an aggregate pit application. The study area measures approximately 29.02 hectares in size and is located in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

This assessment was triggered by the Provincial Policy Statement that is informed by the *Planning Act* (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (1990b). According to Section 2.6.2 of the PPS, "*development* and *site alteration* shall not be permitted on lands containing *archaeological resources* or *areas of archaeological potential* unless *significant archaeological resources* have been *conserved*."

In accordance with Section 1.3.1 of the Ministry of Tourism, Culture and Sport's (MHSTCI) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the Stage 1 archaeological assessment of 364 St. John's Road East has determined that the study area exhibits high potential for the identification and recovery of archaeological resources and a Stage 2 archaeological assessment is recommended.

The Stage 2 assessment was conducted on December 2nd, 2022 under archaeological consulting license P1289 issued to Kara Adams, PhD, of LEC by the MHSTCI.

A total of one archaeological findspot was located and identified as a pre-contact lithic scatter.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 0.03 hectares. According to section 2.2 of the 2011 Standards and Guidelines for Consultant Archaeologists, Findspot 1 does not meet the provincial criteria to warrant a Stage 3 specific. **Findspot 1 does not retain cultural heritage value or interest. As such, Findspot 1 is not deemed to retain further cultural heritage value and interest and no further work is recommended.**

The MCM is asked to review the results presented and accept this report into the Ontario Public Register of Archaeological Reports.

Project Personnel

Licensed Archaeologist:	Kara Adams, PhD (P1289)
Project Manager:	Derek Lincoln, MA (P344)
Licensed Field Director:	Carley Adams, MSc (R1319)
Field Technicians:	Kyle Moore, Logan Schlinderer, Nick Maharaj, Owen Gillet, Jacob Chrisjohn
GIS Specialist:	Derek Lincoln, MA (P344)
Report Writer:	Carley Adams, MSc (R1319)
Senior Review:	Derek Lincoln, MA (P344)
Artifact Analyst:	Derek Lincoln, MA (P344)

Acknowledgements

Proponent Contact:	Melanie Horton, Esher Planning Inc.

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

Lincoln Environmental Consulting Corp. (LEC) was retained by Esher Planning Inc. to complete a Stage 1-2 archaeological assessment of 364 St. John's Road East to meet the requirements of the *Planning Act* (Government of Ontario 2014) in advance of an aggregate pit application. The study area measures approximately 29.02 hectares in size and is located in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

This assessment was triggered by the PPS that is informed by the *Planning Act* (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (1990b). According to Section 2.6.2 of the PPS, "*development* and *site alteration* shall not be permitted on lands containing *archaeological resources* or *areas of archaeological potential* unless *significant archaeological resources* have been *conserved*."

Permission to enter the study area and document archaeological resources was provided by Melanie Horton of Esher Planning Inc.

1.1.1 Objectives

In compliance with the provincial standards and guidelines set out in the Ministry of Citizenship and Multiculturalism (MCM) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 Archaeological Overview/Background Study are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork, and current land conditions;
- To evaluate in detail the study area's archaeological potential which will support recommendations for Stage 2 survey for all or parts of the property; and
- To recommend appropriate strategies for Stage 2 survey.

To meet these objectives LEC archaeologists employed the following research strategies:

- A review of relevant archaeological, historic and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- An examination of the Ontario Archaeological Sites Database (ASDB) to determine the presence of known archaeological sites in and around the project area.

The objective of the Stage 2 assessment was to provide an overview of archaeological resources on the property and to determine whether any of the resources might be archaeological sites with cultural heritage value or interest and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the MCM' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 2 Property Assessment are as follows:

- To document all archaeological resources within the study area;
- To determine whether the study area contains archaeological resources requiring further assessment; and
- To recommend appropriate Stage 3 assessment strategies for archaeological sites identified.

1.2 HISTORICAL CONTEXT

The study area is 29.02 hectares of which approximately 70% of the study area consists of active agricultural fields, approximately 10% of the study area consists of lawn and woodlot, approximately 3% of the study area consists of a creek, approximately 5% of the study area consists of built structures with associated parking and approximately 12% of the study area consists of steeply sloped areas >20%. The study area is located at 364 St. John's Road East in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

1.2.1 Pre and Early Post-contact Aboriginal Resources

Our knowledge of past First Peoples settlement and land use in Norfolk County is incomplete. Nonetheless, using province-wide (MCCR 1997) and region-specific archaeological data, a generalized cultural chronology for native settlement in the area can be proposed. The following paragraphs provide a basic textual summary of the known general cultural trends and a tabular summary appears in Table 1.

The Paleoindian Period

The first human populations to inhabit Ontario came to the region between 12,000 and 10,000 years ago, coincident with the end of the last period of glaciation. Climate and environmental conditions were significantly different than they are today; local environs would not have been welcoming to anything but short-term settlement. Termed Paleoindians by archaeologists, Ontario first peoples would have crossed the landscape in small groups (i.e., bands or family units) searching for food, particularly migratory game species. In the area, caribou may have provided the staple of the Paleoindian diet, supplemented by wild plants, small game, birds and fish. Given the low density of populations on the landscape at this time and their mobile nature, Paleoindian sites are small and ephemeral. They are usually identified by the presence of fluted projectile points and other finely made stone tools.

Table 1: Cultural Chronology for Native Settlement within Norfolk County

Period			Time Range (circa)	Diagnostic Features	Complexes
Paleoindian	Early		9000 – 8400 B.C.	fluted projectile points	Gainey, Barnes, Crowfield
	Late		8400 – 8000 B.C.	non-fluted and lanceolate points	Holcombe, Hi-Lo, Lanceolate
Archaic	Early		8000 – 6000 B.C.	serrated, notched, bifurcate base points	Nettling, Bifurcate Base Horizon
	Middle		6000 – 2500 B.C.	stemmed, side & corner notched points	Brewerton, Otter Creek, Stanly/Neville
	Late		2000 – 1800 B.C.	narrow points	Lamoka
			1800 – 1500 B.C.	broad points	Genesee, Adder Orchard, Perkiomen
			1500 – 1100 B.C.	small points	Crawford Knoll
	Terminal		1100 – 850 B.C.	first true cemeteries	Hind
Woodland	Early		800 – 400 B.C.	expanding stemmed points, Vinette pottery	Meadowood
	Middle		400 B.C. – A.D. 600	thick coiled pottery, notched rims; cord marked	Couture
	Late	Western Basin	A.D. 600 – 900	Wayne ware, vertical cord marked ceramics	Riviere au Vase-Algonquin
			A.D. 900 – 1200	first corn; ceramics with multiple band impressions	Young- Algonquin
			A.D. 1200 – 1400	longhouses; bag shaped pots, ribbed paddle	Springwells-Algonquin
			A.D 1400-1600	villages with earthworks; Parker Festoon pots	Wolf- Algonquin
Contact		Aboriginal	A.D. 1600 – 1700	early historic native settlements	Neutral Huron, Odawa, Wenro
		Euro-Canadian	A.D. 1700-1760	fur trade, missionization, early military establishments	French
			A.D. 1760-1900	Military establishments, pioneer settlement	British colonials, UELs

Archaic

The archaeological record of early native life in Southern Ontario indicates a change in lifeways beginning circa 10,000 years ago at the start of what archaeologists call the Archaic Period. The Archaic populations are better known than their Paleoindian predecessors, with numerous sites found throughout the area. The characteristic projectile points of early Archaic populations appear similar in some respects to early varieties and are likely a continuation of early trends. Archaic populations continued to rely heavily on game, particularly caribou, but diversified their diet and exploitation patterns with changing environmental conditions. A seasonal pattern of warm season riverine or lakeshore settlements and interior cold weather occupations has been documented in the archaeological record. Since the large cold weather mammal species that formed the basis of the Paleoindian subsistence pattern became extinct or moved northward with the onset of warmer climates, Archaic populations had a more varied diet, exploiting a range of plant, bird, mammal and fish species. Reliance on specific food resources like fish, deer and nuts becomes more pronounced through time and the presence of more hospitable environs and resource abundance led to the expansion of band and family sizes. In the archaeological record, this is evident in the presence of larger sites and aggregation camps, where several families or bands would come together in times of resource abundance. The change to more preferable environmental circumstances led to a rise in population density. As a result, Archaic sites are more abundant than those from the earlier period. Artifacts typical of these occupations include a variety of stemmed and notched projectile points, chipped stone

scrapers, ground stone tools (e.g. celts, adzes) and ornaments (e.g. bannerstones, gorgets), bifaces or tool blanks, animal bone and waste flakes, a by-product of the tool making process.

Woodland Period

Significant changes in cultural and environmental patterns are witnessed in the Woodland Period (circa 950 B.C to historic times). The coniferous forests of earlier times were replaced by stands of mixed and deciduous species. Occupations became increasingly more permanent in this period, culminating in major semi-permanent villages by 1,000 years ago. Archaeologically, the most significant changes by Woodland times are the appearance of artifacts manufactured from modeled clay and the construction of house structures. The Woodland Period is often defined by the occurrence of pottery, storage facilities and residential areas similar to those that define the incipient agricultural or Neolithic period in Europe. The earliest pottery was rather crudely made by the coiling method and house structures were simple enclosures.

Iroquoian Period

The primary Late Woodland occupants of the area were the Neutral Nation, an Iroquoian speaking population described by European missionaries. Like other known Iroquoian groups including the Huron (Wendat) and Petun, the Neutral practiced a system of intensive horticulture based on three primary subsistence crops (corn, beans and squash). Neutral villages incorporated a number of longhouses, multi-family dwellings that contained several families related through the female line. The Jesuit Relations describe several Neutral centres in existence in the 17th century, including a number of sites where missions were later established. While precontact Neutral sites may be identified by a predominance of well-made pottery decorated with various simple and geometric motifs, triangular stone projectile points, clay pipes and ground stone implements, sites post-dating European contact are recognized through the appearance of various items of European manufacture. The latter include materials acquired by trade (e.g., glass beads, copper/brass kettles, iron axes, knives and other metal implements) in addition to the personal items of European visitors and Jesuit priests (e.g., finger rings, stoneware, rosaries, glassware). The Neutral were dispersed, and their population decimated by the arrival of epidemic European diseases and inter-tribal warfare.

1.2.2 Historic Euro-Canadian Resources

The 1877 *Illustrated Historical Atlas of Norfolk County's* map of the Township of Woodhouse depicts a densely settled urban landscape with several landowners, structures, early transportation routes, and early town sites. A portion of the 1877 historic map of the Township of Woodhouse is depicted in Figure 3, and this part of the Lot is listed as being owned by one Jno. Forster, with one structure depicted within the study area.

1.3 ARCHAEOLOGICAL CONTEXT

The study area is 29.02 hectares of which approximately 70% of the study area consists of active agricultural fields, approximately 10% of the study area consists of lawn and woodlot, approximately 3% of

the study area consists of a creek, approximately 5% of the study area consists of built structures with associated parking and approximately 12% of the study area consists of steeply sloped areas >20%. The study area is located at 364 St. John's Road East in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

1.3.1 The Natural Environment

The project area is located in the Norfolk Sand Plains physiographic region as identified by Chapman and Putnam (1984). The Norfolk Sand Plains physiographic region is a wedge-shaped feature that extends from the Lake Erie shoreline and tapers northward to a point in Brantford on the Grand River. The region encompasses an area of 3,134 square kilometers.

The soils here are comprised of sandy loam, ideal for agricultural practices and aboriginal settlement.

Potable water is the single most important resource for any extended human occupation or settlement and since water sources in southwestern Ontario have remained relatively stable over time, proximity to drinkable water is regarded as a useful index for the evaluation of archaeological site potential. In fact, distance to water is one of the most commonly used variables for predictive modeling of archaeological site location in Ontario. The closest extant source of potable water is Lake Erier, which lies south of the study area.

1.3.2 Previously Known Archaeological Sites and Surveys

In order to compile an inventory of archaeological resources, the registered archaeological site records kept by the MCM were consulted. In Ontario, information concerning archaeological sites stored in the ASDB is maintained by the MCM. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 kilometers east to west and approximately 18.5 kilometers north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MCM will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the ASDB has shown that there are no archaeological sites registered within a one-kilometer radius of the study area (Sites Data Search, Government of Ontario, December 1st, 2022).

1.3.3 Summary of Past Archaeological Investigations within 50m

There have been no documented archaeological investigations within 50 meters of the subject property. However, it should be noted that the Ministry of Tourism, Culture and Sport currently does not provide an

inventory of archaeological assessments carried out within 50 meters of a property, so a complete inventory of assessments on lands adjacent to the subject property cannot be provided.

1.3.4 Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. LEC applied archaeological potential criteria commonly used by MCM (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography and the general topographic variability of the area.

Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential. Finally, extensive land disturbance can eradicate archaeological potential (Wilson and Horne 1995).

As discussed above, distance to water is an essential factor in archaeological potential modeling. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect sites' locations and types to varying degrees. The MCM categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

The closest extant source of potable water is Lake Erie which lies South of the study area. The water resources that exist and existed close to the study area indicate archaeological potential.

Soil texture can be an important determinant of past settlement, usually in combination with other factors such as topography. As indicated previously, the soils within the study area are variable, but include pockets of well-drained and sandy soils that would be suitable for pre-contact Aboriginal agriculture.

An examination of the ASDB has shown that there are no archaeological sites registered within a one-kilometer radius of the study area.

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties

listed on the municipal register or designated under the *Ontario Heritage Act* or property that local histories or informants have identified with possible historical events. The *Illustrated Historical Atlas of Norfolk County* demonstrates that the study area and its environs were densely occupied by Euro-Canadian settlers by the later 19th century. Much of the established road system and agricultural settlement from that time is still visible today.

When the above listed criteria are applied to the study area, the archaeological potential for pre-contact Aboriginal, post-contact Aboriginal, and Euro-Canadian sites is deemed to be moderate to high. Thus, in accordance with Section 1.3.1 of the MCM' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the Stage 1 archaeological assessment of the 364 St. John's Road East has determined that the study area exhibits moderate to high potential for the identification and recovery of archaeological resources and a Stage 2 archaeological assessment is recommended.

2.0 FIELD METHODS

The Stage 2 assessment of 364 St. John's Road East was conducted on December 2nd, 2022 under PIF # P1289-0369-2023 issued to Kara Adams, PhD, of LEC by the MHSTCI. The study area is 29.02 hectares of which approximately 70% of the study area consists of active agricultural fields, approximately 10% of the study area consists of lawn and woodlot, approximately 3% of the study area consists of a creek, approximately 5% of the study area consists of built structures with associated parking and approximately 12% of the study area consists of steeply sloped areas >20%. The study area is located at 364 St. John's Road East in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

During the Stage 2 survey, assessment conditions were excellent and at no time were the field, weather, or lighting conditions detrimental to the recovery of archaeological material (Table 2). Photos 1 to 12 confirm that field conditions met the requirements for a Stage 2 archaeological assessment, as per the MHSTCI' 2011 *Standards and Guidelines for Consultant Archaeologists* (Section 7.8.6 Standard 1a; Government of Ontario 2011). Figure 4 provides an illustration of the Stage 2 assessment methods, as well as photograph locations and directions.

Table 2: Field and Weather Conditions

Date	Activity	Weather	Field Conditions
December 2nd, 2023	Test pit survey, Pedestrian survey	Cold, overcast	soils dry and friable, screens well

Approximately 70% of the study area consists of active agricultural fields. These areas were subject to pedestrian survey at 5-metre intervals in accordance with Section 2.1.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The fields were ploughed and allowed to weather sufficiently. Conditions were optimal and visibility at the time of the assessment was well above 85%. One archaeological findspot was identified during the pedestrian survey, and the survey was intensified to 1-metre intervals to a distance of 20 meters beyond the outermost surface finds.

Approximately 10% of the study area consists of lawn and woodlot. These areas were subject to test pit survey at 5-metre intervals in accordance with Section 2.1.2 of the MHSTCI' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Each test pit was at least 30 centimeters in diameter and excavated five centimeters into sterile subsoil. Test pitting was conducted within one meter of built structures in accordance with Section 2.1.1 Standard 4 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The soils and test pits were then examined for stratigraphy, cultural features, or evidence of fill. All soil was screened through six millimeter (mm) mesh hardware cloth to facilitate the recovery of small artifacts and then used to backfill the pit. No further archaeological methods were employed since no artifacts were recovered during the test pit survey.

Approximately 3% of the study area consists of a creek. These areas were not assessed but were subjected to photo documentation.

Approximately 5% of the study area consists of built structures with associated parking. These areas were visually deemed to be disturbed and to not retain archaeological potential. These areas were not assessed but were subject to photo documentation.

Approximately 12% of the study area consists of steeply sloped areas >20%. These areas were not assessed but were subjected to photo documentation.

A total of one archaeological findspot was located and identified as a pre-contact lithic scatter of undetermined age or function.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 15 by 15 meter area.

A CSP was conducted for the entirety of the site area as part of the Stage 2 property assessment. Visibility during the CSP was optimal and the CSP consisted of accurately mapping the location of all artifacts on the surface with a Top Con FC-5000 Network Rover, using NADD83. All coordinates taken during the Stage 2 assessment are listed in the Supplementary Documentation to this report.

3.0 RECORD OF FINDS

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.0. An inventory of the documentary record generated by fieldwork is provided in Table 3 below. No archaeological resources were identified during the Stage 2 archaeological assessment of the study area.

Table 3: Inventory of Documentary Record

Document Type	Document Location	Additional Comments
1 Page of field notes	LEC office, London	In original field book and photocopied in project file
1 Hand drawn map	LEC office, London	In original field book and photocopied in project file
1 Map provided by Client	LEC office, London	Hard and digital copies in project file
47 Digital photographs	LEC office, London	Stored digitally in project file
5 Findspot 1 Artifacts	LEC office, London	Stored in individual bags in 1 banker's box
1 Artifact Catalog	LEC office, London	Artifact Catalog

All the material culture collected during the Stage 2 property assessment is contained in 1 Bankers' box. It will be temporarily housed at the LEC London office until formal arrangements can be made for transfer to an MTCS collections facility.

3.1 CULTURAL MATERIAL

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 0.03 hectares.

A CSP was conducted for the entirety of the site area as part of the Stage 2 property assessment. A Stage 3 site specific assessment is not recommended for Findspot 1. Appendix A provides a full catalogue of the artifacts recovered during the Stage 2 assessment. Table 4 summarizes the artifacts recovered during the Stage 2 assessment of Findspot 1. A sample of the artifacts recovered from the Stage 2 assessment of Findspot 1 are depicted in Plate 1 in Section 8.2 of this report.

3.1.1 Chipping Detritus

A total of 5 pieces of chipping detritus were recovered. All pieces of chipping detritus were subject to morphological analysis following the classification scheme described by Andrefsky (1998), Thomas (1992), and Odell (2004). Table 4 outlines the results of the detailed morphological analysis of the chipping detritus.

Table 4: Inventory of Documentary Record

Material	Primary Knapping Flake		Secondary Retouch Flake		Secondary Knapping Flake		Biface Thinning Flake		Flake Fragment		Shatter		Total Analyzed	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Onondaga	1	20	0	0	3	60	0	0	1	20	0	0	**5**	**100**
Total	**1**	**20**	**0**	**0**	**3**	**60**	**0**	**0**	**1**	**20**	**0**	**0**	**5**	**100**

The morphological analysis of the chipped stone debitage indicates that secondary knapping flakes comprise most of the assemblage (3) while 1 primary knapping flake and 1 flake fragment were also recovered. The morphological analysis of the flake assemblage from Findspot 1 suggests that the lithic practices at this site consisted mainly of the re-sharpening and maintenance of expedient tools from existing inventory or debitage.

Primary flakes are produced during the initial reduction phases of raw material blanks and tend to exhibit minimal dorsal flake scarring. These flakes are also characterized by the presence of cortex, or original un-flaked area, on their dorsal surfaces and proximal ends. Secondary knapping flakes are long and thin and have three or more flake scars on the dorsal face and little or no cortex (Thomas 1992). Secondary Reduction flakes are the result of precise flake removal through pressure flaking, where the maker applies direct pressure onto a specific part of the tool to facilitate flake removal. Pressure flaking generally produces smaller, thinner flakes than does percussion flaking.

Onondaga formation chert is from the Middle Devonian age, with outcrops occurring along the north shore of Lake Erie between Long Point and the Niagara River (Eley and von Bitter 1989). It is a high-quality raw material frequently utilized by pre-contact people and often found at archaeological sites in southern Ontario. Onondaga chert occurs in nodules or irregular thin beds. It is a dense non-porous rock that may be light to dark grey, bluish grey, brown or black and can be mottled with a dull to vitreous or waxy lustre (Eley and von Bitter 1989).

The entirety of the assemblage is manufactured from Onondaga chert. Chert type identifications were accomplished visually using reference materials located in the LEC London office. The sole use of Onondaga chert indicates that the people at the site were relying on a single source of raw material. Primary outcrops of Onondaga chert are found along Lake Erie.

3.1.2 Summary

Findspot 1 has been identified as a pre-contact lithic scatter of indeterminate age where manufacturing activities involved tool maintenance. Findspot 1 does not fulfill section 2.2 Standard 1c of the 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). **As such Findspot 1 is not deemed to retain further cultural heritage value and interest and a Stage 3 site specific assessment is not recommended.**

3.2 ARTIFACT CATALOGUE

A complete artifact catalogue for Findspot 1 is presented in Appendix A.

4.0 ANALYSIS AND CONCLUSIONS

The Stage 2 assessment of 364 St. John's Road East was conducted on December 2nd, 2022 in accordance with the MHSTCI' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 2 property assessment consisted of pedestrian survey at 5m and 1m intervals, and test pit survey at 5m intervals.

A total of one archaeological findspot was located and identified as a pre-contact lithic scatter.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 15 by 15 meters. Findspot 1 does not fulfill section 2.2 Standard 1c of the 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). **As such Findspot 1 is not deemed to retain further cultural heritage value and interest and a Stage 3 site specific assessment is not recommended.**

A CSP was conducted for the entirety of the site areas as part of the Stage 2 property assessment. Visibility during the CSP was optimal and the CSP consisted of accurately mapping the location of all artifacts on the surface with a Top Con FC-5000 Network Rover, using NADD83. All coordinates taken during the Stage 2 assessment are listed in the Supplementary Documentation to this report.

5.0 RECOMMENDATIONS

The Stage 2 archaeological assessment was carried out in accordance with the Ministry of Heritage, Sport, Tourism, and Culture Industries' Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011).

All work met provincial standards and no archaeological sites were identified during the Stage 2 assessment. If construction plans change to incorporate new areas that were not subject to a Stage 2 field survey, these must be assessed prior to the initiation of construction. In keeping with legislative stipulations, all construction, and demolition-related impacts (including, for example, machine travel, material storage and stockpiling, earth moving) must be restricted to the areas that were archaeologically assessed and cleared by the Ministry of Heritage, Sport, Tourism, and Culture Industries through acceptance of the assessment report into the provincial register.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over an approximately 15 by 15 meter area. Findspot 1 does not fulfill section 2.2 Standard 1c of the 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). **As such Findspot 1 is not deemed to retain further cultural heritage value and interest and a Stage 3 site specific assessment is not recommended.**

The MCM is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports. Additional archaeological assessment is still required and so the archaeological site recommended for further archaeological fieldwork remains subject to Section 48(1) of the Ontario Heritage Act and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

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8.0 IMAGES

8.1 FIELD PHOTOS

Photo 1: Grass Assessed by 5m Interval Test Pit Survey Facing South

Photo 2: Assessed by 5m Interval Test Pit Survey Facing North

Photo 3: Visually Disturbed, No Archaeological Potential Facing South

Photo 4: Assessed by 5m Interval Pedestrian Survey Facing East

Photo 5: Assessed by 5m Interval Pedestrian Survey Facing West

Photo 6: Assessed by 5m Interval Pedestrian Survey Facing North

Photo 7: Assessed by 5m Interval Pedestrian Survey Facing East

Photo 8: Assessed by 5m Interval Pedestrian Survey Facing South

Photo 9: Assessed by 5m Interval Pedestrian Survey Facing North

Photo 10: Creek, Photo Documented Facing East

Photo 11: Field Conditions Facing North

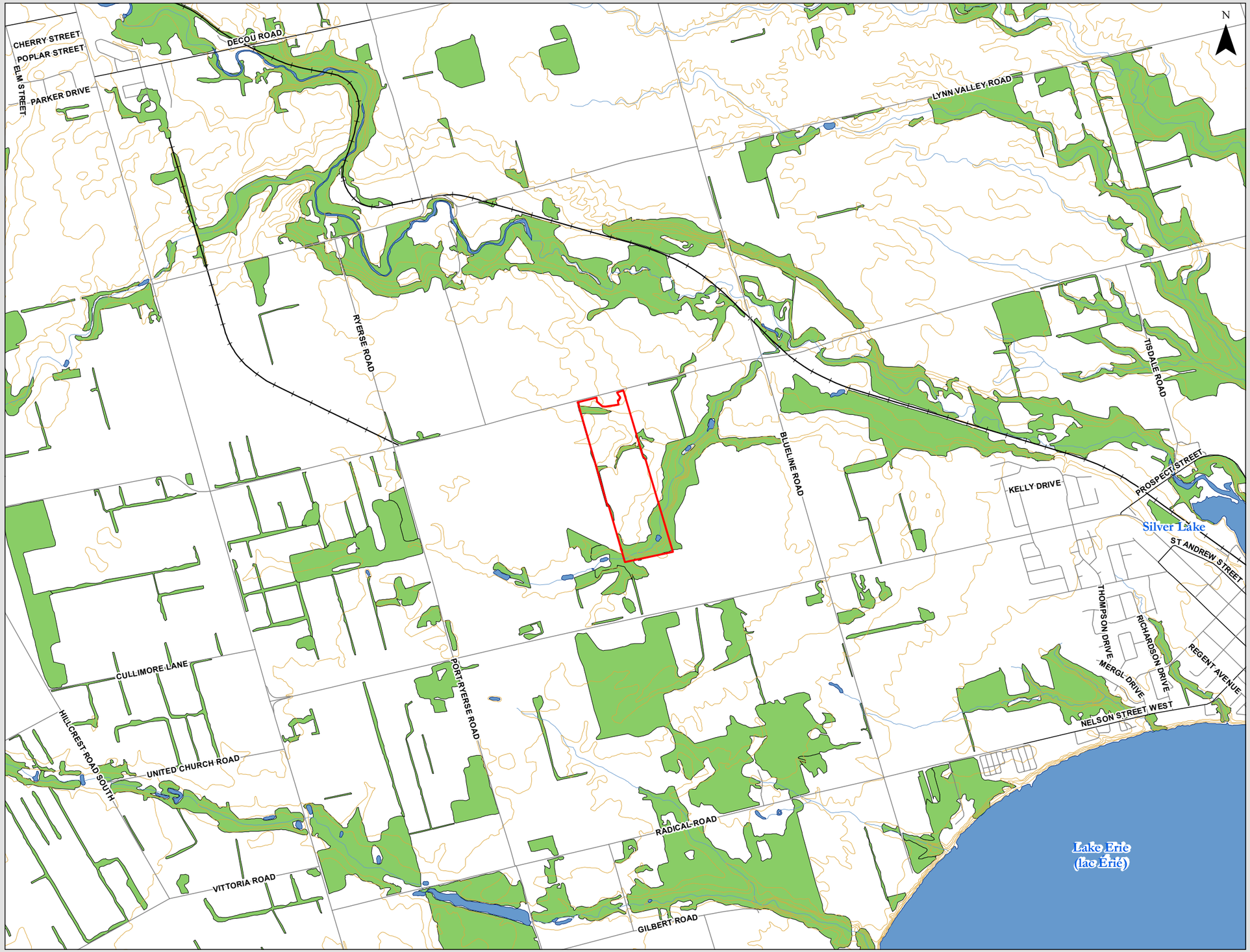
Photo 12: Typical Test Pit Facing North

Photo 13: Steeply Sloped, Photo Documented Facing South

8.2 ARTIFACTS

Plate 1: Findspot 1 Artifacts

9.0 MAPS



LINCOLN ENVIRONMENTAL CONSULTING

Supplementary Documentation for 364 St. John's Rd E, Norfolk County, Ontario

Figure 1: Topographic Map of Study Area

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Date: November, 2023

Source: OBM
http://www.geographynetwork.ca/website/obm/viewer.htm

Scale 1:25,000

Datum: NAD 1983 UTM Zone 17N

Legend

- Study Area
- Local Road
- Major Road
- Railroad
- Contour Lines
- Watercourse
- Waterbody
- Wooded Area

Metres
0 500 1,000

LINCOLN ENVIRONMENTAL CONSULTING

Supplementary Documentation for 364 St. John's Rd E, Norfolk County, Ontario

Figure 2: Study Area

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Date: November, 2023

Source: Bing Maps

Scale 1:5,000

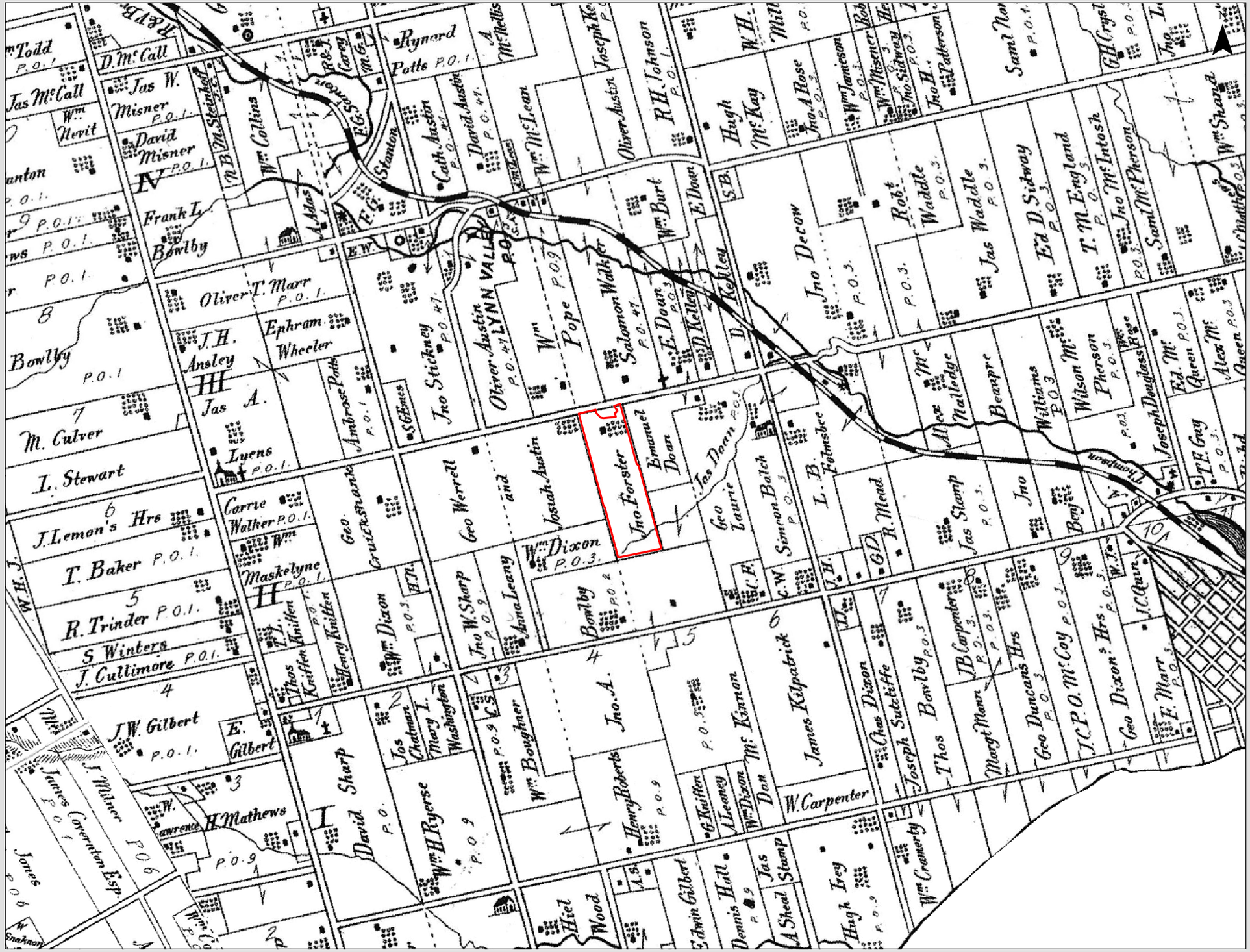
Datum: NAD 1983 UTM Zone 17N

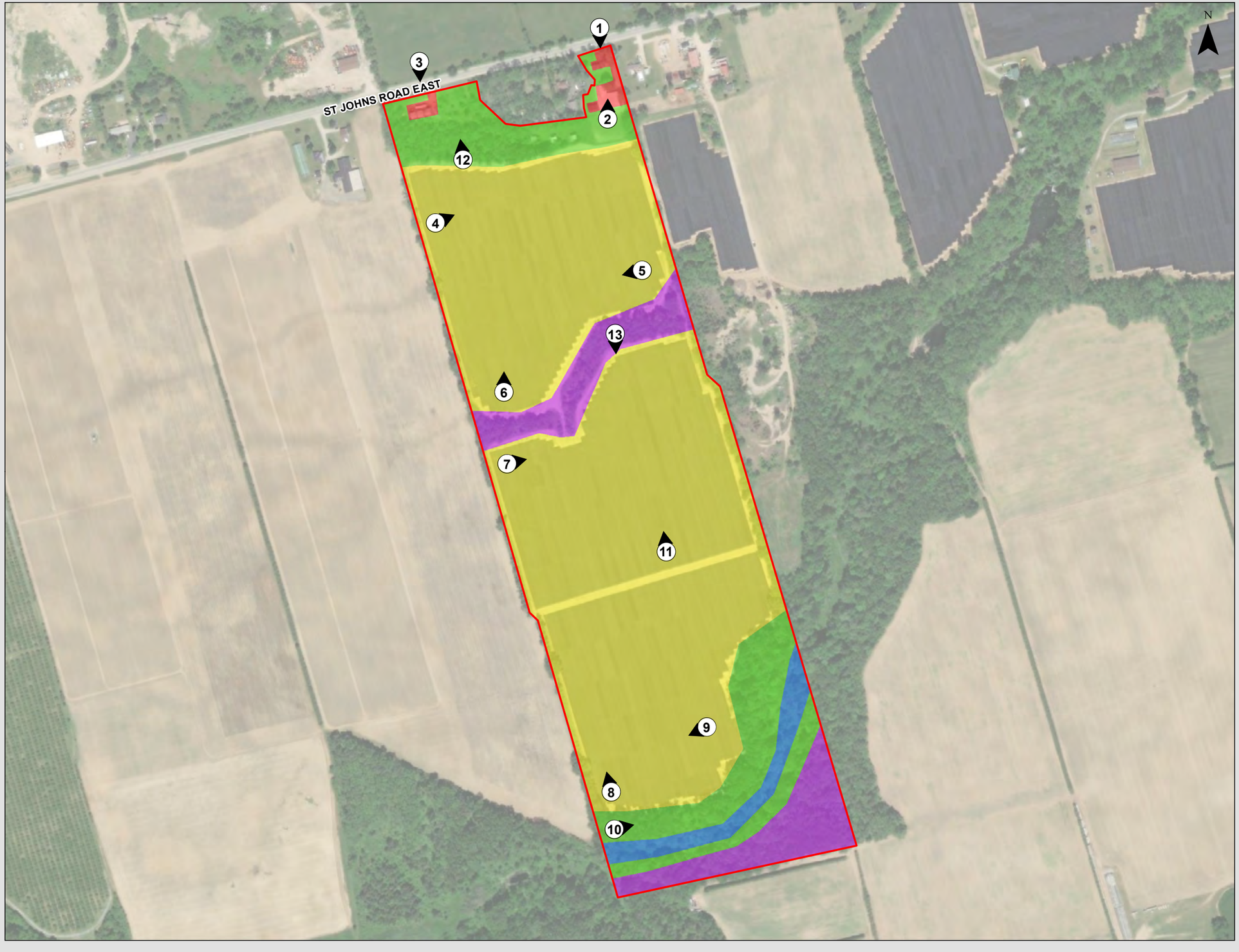
Legend

- Surface Artifact
- Study Area
- Findspot

Metres

0 100 200


Jno Forster
Jno Decow
Jno. A.
Wm Dixon
Wm Pope
Jno Stickney
Oliver Austin
Salomon Walker
E. Doan
D. Kelley
Wm Burt
Wm H. Ryerse
Henry Roberts
James Kilpatrick
W. Carpenter
Mc Kinnon
Dan
Hugh Mc Kay
Rob.t Waddle
Jas Waddle
Ed D. Sidway
T. M. England
Jno Mc Intosh
Sam.l Mc Pherson
Wm Sharp
Alex Mc Queen
Ed. Mc Queen
Jno Bayly
Thos Bowlby
Joseph Sutcliffe
Chas Dixon
Margt Mann
Geo Duncans Hrs
Wm Crawerty
Hugh Frey
Jas Stamp
A Sheal
Dennis Hall
Edwin Gilbert
Geo Laurie
Simeon Balch
R. Mead
Jno Leeney
Wm Dixon
Jno A. Rose
Wm Jamieson
Jno Sidway
Jno H. Patterson
Geo Werrell
Josiah Austin
Anna Leany
Jno W. Sharp
Wm Boughner
Jno Kitchen
Thos Kitchen
Henry Kitchen
Wm Collins
Wm Mc Lean
Oliver Austin
Cath. Austin
David Austin
Ryerse
Rynard Potts
Jas W. Misner
David Misner
Frank L. Bowlby
Oliver T. Marr
J.H. Ansley
Ephram Wheeler
Jas A. Lyens
Jno Stickney
Ambrose Potts
Wm Maskelyne
Carrie Walker
Geo. Cruickshanks
Jos Chatmore
Mary I. Washington
David Sharp
J.W. Gilbert
E. Gilbert
T. Baker
R. Trinder
S Winters
J. Cullimore
J. Lemon's Hrs
I. Stewart
M. Culver
Jas Mc Call
Wm Merrit
D. Mc Call
Todd
Bowlby
Anton
Jno Bayly
Jno Mc Coy
Geo Dixon's Hrs
J.C. Quin
E. Marr
Jno
Jas
Wm
Geo
Thos
Margt
Jos
Mary
Jno
Wm
Jno
Jno
Jno



LINCOLN ENVIRONMENTAL CONSULTING

Stage 1-2 Archaeological Assessment of 364 St. John's Rd E, Norfolk County, Ontario

Figure 4: Assessment Strategies and Results

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Date: January, 2024

Source: Bing Maps

Scale 1:5,000

Datum: NAD 1983 UTM Zone 17N

Legend

- Photo Location
- Study Area
- Assessed by Pedestrian Survey at 5m Intervals
- Assessed by Test Pit Survey at 5m Intervals
- Low Lying and Wet, Not Assessed
- Steeply Sloped, Not Assessed
- Visually Disturbed, Not Assessed

Metres

0 100 200

LINCOLN ENVIRONMENTAL CONSULTING

Stage 1-2 Archaeological Assessment of 364 St. John's Rd E, Norfolk County, Ontario

Figure 5: Findspot 1
Artifact Distribution

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Date: November, 2023

Source: Bing Maps

Scale 1:100

Datum: NAD 1983 UTM Zone 17N

Legend

- Surface Artifact

Metres

0 2 4

10.0 APPENDIX A : FINDSPOT 1 CATALOGUE

CSP #	Catalogue #	Artifact	Qty.	Chert	Morphology
1	1	Chipping Detritus	1	Onondaga	Secondary Knapping flake
2	2	Chipping Detritus	1	Onondaga	Primary Knapping flake
3	3	Chipping Detritus	1	Onondaga	Secondary Knapping flake
4	4	Chipping Detritus	1	Onondaga	Flake fragment
5	5	Chipping Detritus	1	Onondaga	Secondary Knapping flake

STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT OF 364 ST. JOHN'S ROAD EAST IN PART OF LOT 5, CONCESSION 5, FORMER TOWNSHIP WOODHOUSE, NOW TOWN OF SIMCOE, NORFOLK COUNTY, ONTARIO

SUBMITTED TO

CJDL CONSULTING ENGINEERS
261 BROADWAY STREET
TILSONBURG, ONTARIO N4G 3R6

AND

THE ONTARIO MINITRY OF CITIZENSHIP AND MULTICULTURALISM

REPORT TYPE: ORIGINAL
ARCHAEOLOGICAL LICENSE NUMBER P1289, KARA ADAMS

PIF P1289–0369-2023

NOVEMBER 2023

LINCOLN ENVIRONMENTAL CONSULTING

LINCOLN ENVIRONMENTAL CONSULTING

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Executive Summary

Lincoln Environmental Consulting Corp. (LEC) was retained by CJDL Consulting Engineers to complete a Stage 1-2 archaeological assessment of 364 St. John's Road East to meet the requirements of the *Planning Act* (Government of Ontario 2014) in advance of an aggregate pit aplication. The study area measures approximately 29.02 hectares in size and is located in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

This assessment was triggered by the Provincial Policy Statement that is informed by the *Planning Act* (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (1990b). According to Section 2.6.2 of the PPS, "*development* and *site alteration* shall not be permitted on lands containing *archaeological resources* or *areas of archaeological potential* unless *significant archaeological resources* have been *conserved*."

In accordance with Section 1.3.1 of the Ministry of Tourism, Culture and Sport's (MHSTCI) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the Stage 1 archaeological assessment of 364 St. John's Road East has determined that the study area exhibits high potential for the identification and recovery of archaeological resources and a Stage 2 archaeological assessment is recommended.

The Stage 2 assessment was conducted on December 2nd, 2022 under archaeological consulting license P1289 issued to Kara Adams, MSc, of LEC by the MHSTCI.

A total of one archaeological findspot was located and identified as a pre-contact lithic scatter.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 0.03 hectares. According to section 2.2 of the 2011 Standards and Guidelines for Consultant Archaeologists, Findspot 1 does not meet the provincial criteria to warrant a Stage 3 specific. **Findspot 1 does not retain cultural heritage value or interest. As such, Findspot 1 is not deemed to retain further cultural heritage value and interest and no further work is recommended.**

The MCM is asked to review the results presented and accept this report into the Ontario Public Register of Archaeological Reports.

Project Personnel

Licensed Archaeologist:	Kara Adams, MSc (P1289)
Project Manager:	Derek Lincoln, MA (P344)
Licensed Field Director:	Carley Adams, MSc (R1319)
Field Technicians:	Kyle Moore, Logan Schlinderer, Nick Maharaj, Owen Gillet, Jacob Chrisjohn
GIS Specialist:	Derek Lincoln, MA (P344)
Report Writer:	Carley Adams, MSc (R1319)
Senior Review:	Derek Lincoln, MA (P344)

Acknowledgements

Proponent Contact:	Peter Penner, CJDL Consulting Engineers

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

Lincoln Environmental Consulting Corp. (LEC) was retained by CJDL Consulting Engineers to complete a Stage 1-2 archaeological assessment of 364 St. John's Road East to meet the requirements of the *Planning Act* (Government of Ontario 2014) in advance of a planning permit. The study area measures approximately 29.02 hectares in size and is located in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

This assessment was triggered by the PPS that is informed by the *Planning Act* (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (1990b). According to Section 2.6.2 of the PPS, "*development* and *site alteration* shall not be permitted on lands containing *archaeological resources* or *areas of archaeological potential* unless *significant archaeological resources* have been *conserved*."

Permission to enter the study area and document archaeological resources was provided by Pete Penner of CJDL Consulting Engineers.

1.1.1 Objectives

In compliance with the provincial standards and guidelines set out in the Ministry of Citizenship and Multiculturalism (MCM) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 Archaeological Overview/Background Study are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork, and current land conditions;
- To evaluate in detail the study area's archaeological potential which will support recommendations for Stage 2 survey for all or parts of the property; and
- To recommend appropriate strategies for Stage 2 survey.

To meet these objectives LEC archaeologists employed the following research strategies:

- A review of relevant archaeological, historic and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- An examination of the Ontario Archaeological Sites Database (ASDB) to determine the presence of known archaeological sites in and around the project area.

The objective of the Stage 2 assessment was to provide an overview of archaeological resources on the property and to determine whether any of the resources might be archaeological sites with cultural heritage value or interest and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the MCM' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 2 Property Assessment are as follows:

- To document all archaeological resources within the study area;
- To determine whether the study area contains archaeological resources requiring further assessment; and
- To recommend appropriate Stage 3 assessment strategies for archaeological sites identified.

1.2 HISTORICAL CONTEXT

The study area is 29.02 hectares of which approximately 76% of the study area consists of active agricultural fields, approximately 12% of the study area consists of lawn and woodlot, approximately 3% of the study area consists of low lying and wet areas, approximately 2% of the study area consists of built structures with associated parking and approximately 7% of the study area consists of steeply sloped areas >20%. The study area is located at 364 St. John's Road East in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

1.2.1 Pre and Early Post-contact Aboriginal Resources

Our knowledge of past First Peoples settlement and land use in Norfolk County is incomplete. Nonetheless, using province-wide (MCCR 1997) and region-specific archaeological data, a generalized cultural chronology for native settlement in the area can be proposed. The following paragraphs provide a basic textual summary of the known general cultural trends and a tabular summary appears in Table 1.

The Paleoindian Period

The first human populations to inhabit Ontario came to the region between 12,000 and 10,000 years ago, coincident with the end of the last period of glaciation. Climate and environmental conditions were significantly different than they are today; local environs would not have been welcoming to anything but short-term settlement. Termed Paleoindians by archaeologists, Ontario first peoples would have crossed the landscape in small groups (i.e., bands or family units) searching for food, particularly migratory game species. In the area, caribou may have provided the staple of the Paleoindian diet, supplemented by wild plants, small game, birds and fish. Given the low density of populations on the landscape at this time and their mobile nature, Paleoindian sites are small and ephemeral. They are usually identified by the presence of fluted projectile points and other finely made stone tools.

Table 1: Cultural Chronology for Native Settlement within Norfolk County

Period			Time Range (circa)	Diagnostic Features	Complexes
Paleoindian	Early		9000 – 8400 B.C.	fluted projectile points	Gainey, Barnes, Crowfield
	Late		8400 – 8000 B.C.	non-fluted and lanceolate points	Holcombe, Hi-Lo, Lanceolate
Archaic	Early		8000 – 6000 B.C.	serrated, notched, bifurcate base points	Nettling, Bifurcate Base Horizon
	Middle		6000 – 2500 B.C.	stemmed, side & corner notched points	Brewerton, Otter Creek, Stanly/Neville
	Late		2000 – 1800 B.C.	narrow points	Lamoka
			1800 – 1500 B.C.	broad points	Genesee, Adder Orchard, Perkiomen
			1500 – 1100 B.C.	small points	Crawford Knoll
	Terminal		1100 – 850 B.C.	first true cemeteries	Hind
Woodland	Early		800 – 400 B.C.	expanding stemmed points, Vinette pottery	Meadowood
	Middle		400 B.C. – A.D. 600	thick coiled pottery, notched rims; cord marked	Couture
	Late	Western Basin	A.D. 600 – 900	Wayne ware, vertical cord marked ceramics	Riviere au Vase-Algonquin
			A.D. 900 – 1200	first corn; ceramics with multiple band impressions	Young- Algonquin
			A.D. 1200 – 1400	longhouses; bag shaped pots, ribbed paddle	Springwells-Algonquin
			A.D 1400-1600	villages with earthworks; Parker Festoon pots	Wolf- Algonquin
Contact		Aboriginal	A.D. 1600 – 1700	early historic native settlements	Neutral Huron, Odawa, Wenro
		Euro-Canadian	A.D. 1700-1760	fur trade, missionization, early military establishments	French
			A.D. 1760-1900	Military establishments, pioneer settlement	British colonials, UELs

Archaic

The archaeological record of early native life in Southern Ontario indicates a change in lifeways beginning circa 10,000 years ago at the start of what archaeologists call the Archaic Period. The Archaic populations are better known than their Paleoindian predecessors, with numerous sites found throughout the area. The characteristic projectile points of early Archaic populations appear similar in some respects to early varieties and are likely a continuation of early trends. Archaic populations continued to rely heavily on game, particularly caribou, but diversified their diet and exploitation patterns with changing environmental conditions. A seasonal pattern of warm season riverine or lakeshore settlements and interior cold weather occupations has been documented in the archaeological record. Since the large cold weather mammal species that formed the basis of the Paleoindian subsistence pattern became extinct or moved northward with the onset of warmer climates, Archaic populations had a more varied diet, exploiting a range of plant, bird, mammal and fish species. Reliance on specific food resources like fish, deer and nuts becomes more pronounced through time and the presence of more hospitable environs and resource abundance led to the expansion of band and family sizes. In the archaeological record, this is evident in the presence of larger sites and aggregation camps, where several families or bands would come together in times of resource abundance. The change to more preferable environmental circumstances led to a rise in population density. As a result, Archaic sites are more abundant than those from the earlier period. Artifacts typical of these occupations include a variety of stemmed and notched projectile points, chipped stone

scrapers, ground stone tools (e.g. celts, adzes) and ornaments (e.g. bannerstones, gorgets), bifaces or tool blanks, animal bone and waste flakes, a by-product of the tool making process.

Woodland Period

Significant changes in cultural and environmental patterns are witnessed in the Woodland Period (circa 950 B.C to historic times). The coniferous forests of earlier times were replaced by stands of mixed and deciduous species. Occupations became increasingly more permanent in this period, culminating in major semi-permanent villages by 1,000 years ago. Archaeologically, the most significant changes by Woodland times are the appearance of artifacts manufactured from modeled clay and the construction of house structures. The Woodland Period is often defined by the occurrence of pottery, storage facilities and residential areas similar to those that define the incipient agricultural or Neolithic period in Europe. The earliest pottery was rather crudely made by the coiling method and house structures were simple enclosures.

Iroquoian Period

The primary Late Woodland occupants of the area were the Neutral Nation, an Iroquoian speaking population described by European missionaries. Like other known Iroquoian groups including the Huron (Wendat) and Petun, the Neutral practiced a system of intensive horticulture based on three primary subsistence crops (corn, beans and squash). Neutral villages incorporated a number of longhouses, multi-family dwellings that contained several families related through the female line. The Jesuit Relations describe several Neutral centres in existence in the 17th century, including a number of sites where missions were later established. While precontact Neutral sites may be identified by a predominance of well-made pottery decorated with various simple and geometric motifs, triangular stone projectile points, clay pipes and ground stone implements, sites post-dating European contact are recognized through the appearance of various items of European manufacture. The latter include materials acquired by trade (e.g., glass beads, copper/brass kettles, iron axes, knives and other metal implements) in addition to the personal items of European visitors and Jesuit priests (e.g., finger rings, stoneware, rosaries, glassware). The Neutral were dispersed, and their population decimated by the arrival of epidemic European diseases and inter-tribal warfare.

1.2.2 Historic Euro-Canadian Resources

The 1877 *Illustrated Historical Atlas of Norfolk County's* map of the Township of Woodhouse depicts a densely settled urban landscape with several landowners, structures, early transportation routes, and early town sites. A portion of the 1877 historic map of the Township of Woodhouse is depicted in Figure 3, and this part of the Lot is listed as being owned by one Jno. Forster, with one structure depicted within the study area.

1.3 ARCHAEOLOGICAL CONTEXT

The study area is 29.02 hectares of which approximately 76% of the study area consists of active agricultural fields, approximately 12% of the study area consists of lawn and woodlot, approximately 3% of the study area consists of low lying and wet areas, approximately 2% of the study area consists of built structures with associated parking and approximately 7% of the study area consists of steeply sloped areas >20%. The study area is located at 364 St. John's Road East in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

1.3.1 The Natural Environment

The project area is located in the Norfolk Sand Plains physiographic region as identified by Chapman and Putnam (1984). The Norfolk Sand Plains physiographic region is a wedge-shaped feature that extends from the Lake Erie shoreline and tapers northward to a point in Brantford on the Grand River. The region encompasses an area of 3,134 square kilometers.

The soils here are comprised of sandy loam, ideal for agricultural practices and aboriginal settlement.

Potable water is the single most important resource for any extended human occupation or settlement and since water sources in southwestern Ontario have remained relatively stable over time, proximity to drinkable water is regarded as a useful index for the evaluation of archaeological site potential. In fact, distance to water is one of the most commonly used variables for predictive modeling of archaeological site location in Ontario. The closest extant source of potable water is Lake Erier, which lies south of the study area.

1.3.2 Previously Known Archaeological Sites and Surveys

In order to compile an inventory of archaeological resources, the registered archaeological site records kept by the MCM were consulted. In Ontario, information concerning archaeological sites stored in the ASDB is maintained by the MCM. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 kilometers east to west and approximately 18.5 kilometers north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MCM will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the ASDB has shown that there are no archaeological sites registered within a one-kilometer radius of the study area (Sites Data Search, Government of Ontario, December 1st, 2022).

1.3.3 Summary of Past Archaeological Investigations within 50m

There have been no documented archaeological investigations within 50 meters of the subject property. However, it should be noted that the Ministry of Tourism, Culture and Sport currently does not provide an inventory of archaeological assessments carried out within 50 meters of a property, so a complete inventory of assessments on lands adjacent to the subject property cannot be provided.

1.3.4 Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. LEC applied archaeological potential criteria commonly used by MCM (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography and the general topographic variability of the area.

Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential. Finally, extensive land disturbance can eradicate archaeological potential (Wilson and Horne 1995).

As discussed above, distance to water is an essential factor in archaeological potential modeling. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect sites' locations and types to varying degrees. The MCM categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

The closest extant source of potable water is Lake Erie which lies South of the study area. The water resources that exist and existed close to the study area indicate archaeological potential.

Soil texture can be an important determinant of past settlement, usually in combination with other factors such as topography. As indicated previously, the soils within the study area are variable, but include pockets of well-drained and sandy soils that would be suitable for pre-contact Aboriginal agriculture.

An examination of the ASDB has shown that there are no archaeological sites registered within a one-kilometer radius of the study area.

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* or property that local histories or informants have identified with possible historical events. The *Illustrated Historical Atlas of Norfolk County* demonstrates that the study area and its environs were densely occupied by Euro-Canadian settlers by the later 19th century. Much of the established road system and agricultural settlement from that time is still visible today.

When the above listed criteria are applied to the study area, the archaeological potential for pre-contact Aboriginal, post-contact Aboriginal, and Euro-Canadian sites is deemed to be moderate to high. Thus, in accordance with Section 1.3.1 of the MCM' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the Stage 1 archaeological assessment of the 364 St. John's Road East has determined that the study area exhibits moderate to high potential for the identification and recovery of archaeological resources and a Stage 2 archaeological assessment is recommended.

2.0 FIELD METHODS

The Stage 2 assessment of 364 St. John's Road East was conducted on December 2nd, 2022 under PIF # P1289-0369-2023 issued to Kara Adams, MSc, of LEC by the MHSTCI. The study area is 29.02 hectares of which approximately 76% of the study area consists of active agricultural fields, approximately 12% of the study area consists of lawn and woodlot, approximately 3% of the study area consists of low lying and wet areas, approximately 2% of the study area consists of built structures with associated parking and approximately 7% of the study area consists of steeply sloped areas >20%. The study area is located at 364 St. John's Road East in part of Lot 5, Concession 2, Former Township of Woodhouse, Now Town of Simcoe, Norfolk County, Ontario.

During the Stage 2 survey, assessment conditions were excellent and at no time were the field, weather, or lighting conditions detrimental to the recovery of archaeological material (Table 2). Photos 1 to 12 confirm that field conditions met the requirements for a Stage 2 archaeological assessment, as per the MHSTCI' 2011 *Standards and Guidelines for Consultant Archaeologists* (Section 7.8.6 Standard 1a; Government of Ontario 2011). Figure 4 provides an illustration of the Stage 2 assessment methods, as well as photograph locations and directions.

Table 2: Field and Weather Conditions

Date	Activity	Weather	Field Conditions
December 2nd, 2023	Test pit survey, Pedestrian survey	Cold, warm	soils dry and friable, screens well

Approximately 76% of the study area consists of active agricultural fields. These areas were subject to pedestrian survey at 5-metre intervals in accordance with Section 2.1.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The fields were ploughed and allowed to weather sufficiently. Conditions were optimal and visibility at the time of the assessment was well above 85%. One archaeological findspot was identified during the pedestrian survey, and the survey was intensified to 1-metre intervals to a distance of 20 meters beyond the outermost surface finds.

Approximately 12% of the study area consists of lawn and woodlot. These areas were subject to test pit survey at 5-metre intervals in accordance with Section 2.1.2 of the MHSTCI' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Each test pit was at least 30 centimeters in diameter and excavated five centimeters into sterile subsoil. Test pitting was conducted within one meter of built structures in accordance with Section 2.1.1 Standard 4 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The soils and test pits were then examined for stratigraphy, cultural features, or evidence of fill. All soil was screened through six millimeter (mm) mesh hardware cloth to facilitate the recovery of small artifacts and then used to backfill the pit. No further archaeological methods were employed since no artifacts were recovered during the test pit survey.

Approximately 3% of the study area consists of low lying and wet areas. These areas were not assessed by were subjected to photo documentation.

Approximately 2% of the study area consists of built structures with associated parking. These areas were visually deemed to be disturbed and to not retain archaeological potential. These areas were not assessed but were subject to photo documentation.

Approximately 7% of the study area consists of steeply sloped areas >20%. These areas were not assessed but were subjected to photo documentation.

A total of one archaeological findspot was located and identified as a pre-contact lithic scatter of undetermined age or function.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 15 by 15 meter area.

A CSP was conducted for the entirety of the site area as part of the Stage 2 property assessment. Visibility during the CSP was optimal and the CSP consisted of accurately mapping the location of all artifacts on the surface with a Top Con FC-5000 Network Rover, using NADD83. All coordinates taken during the Stage 2 assessment are listed in the Supplementary Documentation to this report.

3.0 RECORD OF FINDS

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.0. An inventory of the documentary record generated by fieldwork is provided in Table 3 below. No archaeological resources were identified during the Stage 2 archaeological assessment of the study area.

Table 3: Inventory of Documentary Record

Document Type	Document Location	Additional Comments
1 Page of field notes	LEC office, London	In original field book and photocopied in project file
1 Hand drawn map	LEC office, London	In original field book and photocopied in project file
1 Map provided by Client	LEC office, London	Hard and digital copies in project file
47 Digital photographs	LEC office, London	Stored digitally in project file
5 Findspot 1 Artifacts	LEC office, London	Stored in individual bags in 1 banker's box
1 Artifact Catalog	LEC office, London	Artifact Catalog

All the material culture collected during the Stage 2 property assessment is contained in 1 Bankers' box. It will be temporarily housed at the LEC London office until formal arrangements can be made for transfer to an MTCS collections facility.

3.1 CULTURAL MATERIAL

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 0.03 hectares.

A CSP was conducted for the entirety of the site area as part of the Stage 2 property assessment. A Stage 3 site specific assessment is not recommended for Findspot 1. Appendix A provides a full catalogue of the artifacts recovered during the Stage 2 assessment. Table 4 summarizes the artifacts recovered during the Stage 2 assessment of Findspot 1. A sample of the artifacts recovered from the Stage 2 assessment of Findspot 1 are depicted in Plate 1 in Section 8.2 of this report.

3.1.1 Chipping Detritus

A total of 5 pieces of chipping detritus were recovered. All pieces of chipping detritus were subject to morphological analysis following the classification scheme described by Andrefsky (1998), Thomas (1992), and Odell (2004). Table 4 outlines the results of the detailed morphological analysis of the chipping detritus.

Table 4: Inventory of Documentary Record

Material	Primary Knapping Flake		Secondary Retouch Flake		Secondary Knapping Flake		Biface Thinning Flake		Flake Fragment		Shatter		Total Analyzed	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Onondaga	1	20	0	0	3	60	0	0	1	20	0	0	**5**	**100**
Total	**1**	**20**	**0**	**0**	**3**	**60**	**0**	**0**	**1**	**20**	**0**	**0**	**5**	**100**

The morphological analysis of the chipped stone debitage indicates that secondary knapping flakes comprise most of the assemblage (3) while 1 primary knapping flake and 1 flake fragment were also recovered. The morphological analysis of the flake assemblage from Findspot 1 suggests that the lithic practices at this site consisted mainly of the re-sharpening and maintenance of expedient tools from existing inventory or debitage.

Primary flakes are produced during the initial reduction phases of raw material blanks and tend to exhibit minimal dorsal flake scarring. These flakes are also characterized by the presence of cortex, or original un-flaked area, on their dorsal surfaces and proximal ends. Secondary knapping flakes are long and thin and have three or more flake scars on the dorsal face and little or no cortex (Thomas 1992). Secondary Reduction flakes are the result of precise flake removal through pressure flaking, where the maker applies direct pressure onto a specific part of the tool to facilitate flake removal. Pressure flaking generally produces smaller, thinner flakes than does percussion flaking.

Onondaga formation chert is from the Middle Devonian age, with outcrops occurring along the north shore of Lake Erie between Long Point and the Niagara River (Eley and von Bitter 1989). It is a high-quality raw material frequently utilized by pre-contact people and often found at archaeological sites in southern Ontario. Onondaga chert occurs in nodules or irregular thin beds. It is a dense non-porous rock that may be light to dark grey, bluish grey, brown or black and can be mottled with a dull to vitreous or waxy lustre (Eley and von Bitter 1989).

The entirety of the assemblage is manufactured from Onondaga chert. Chert type identifications were accomplished visually using reference materials located in the LEC London office. The sole use of Onondaga chert indicates that the people at the site were relying on a single source of raw material. Primary outcrops of Onondaga chert are found along Lake Erie.

3.1.2 Summary

Findspot 1 has been identified as a pre-contact lithic scatter of indeterminate age where manufacturing activities involved tool maintenance. Findspot 1 does not fulfill section 2.2 Standard 1c of the 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). **As such Findspot 1 is not deemed to retain further cultural heritage value and interest and a Stage 3 site specific assessment is not recommended.**

3.2 ARTIFACT CATALOGUE

A complete artifact catalogue for Findspot 1 is presented in Appendix A.

4.0 ANALYSIS AND CONCLUSIONS

The Stage 2 assessment of 364 St. John's Road East was conducted on December 2nd, 2022 in accordance with the MHSTCI' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 2 property assessment consisted of pedestrian survey at 5m and 1m intervals, and test pit survey at 5m intervals.

A total of one archaeological findspot was located and identified as a pre-contact lithic scatter.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over approximately 15 by 15 meters. Findspot 1 does not fulfill section 2.2 Standard 1c of the 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). **As such Findspot 1 is not deemed to retain further cultural heritage value and interest and a Stage 3 site specific assessment is not recommended.**

A CSP was conducted for the entirety of the site areas as part of the Stage 2 property assessment. Visibility during the CSP was optimal and the CSP consisted of accurately mapping the location of all artifacts on the surface with a Top Con FC-5000 Network Rover, using NADD83. All coordinates taken during the Stage 2 assessment are listed in the Supplementary Documentation to this report.

5.0 RECOMMENDATIONS

The Stage 2 archaeological assessment was carried out in accordance with the Ministry of Heritage, Sport, Tourism, and Culture Industries' Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011).

All work met provincial standards and no archaeological sites were identified during the Stage 2 assessment. If construction plans change to incorporate new areas that were not subject to a Stage 2 field survey, these must be assessed prior to the initiation of construction. In keeping with legislative stipulations, all construction, and demolition-related impacts (including, for example, machine travel, material storage and stockpiling, earth moving) must be restricted to the areas that were archaeologically assessed and cleared by the Ministry of Heritage, Sport, Tourism, and Culture Industries through acceptance of the assessment report into the provincial register.

Findspot 1 was identified during pedestrian survey in the southwest corner of the property. The assemblage consists of 5 pieces of chipping detritus, distributed over an approximately 15 by 15 meter area. Findspot 1 does not fulfill section 2.2 Standard 1c of the 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). **As such Findspot 1 is not deemed to retain further cultural heritage value and interest and a Stage 3 site specific assessment is not recommended.**

The MCM is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports. Additional archaeological assessment is still required and so the archaeological site recommended for further archaeological fieldwork remains subject to Section 48(1) of the Ontario Heritage Act and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

7.0 BIBLIOGRAPHY AND SOURCES

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8.0 IMAGES

8.1 FIELD PHOTOS

Photo 1: Grass Assessed by 5m Interval Test Pit Survey Facing South

Photo 2: Assessed by 5m Interval Test Pit Survey Facing North

Photo 3: Visually Disturbed, No Archaeological Potential Facing South

Photo 4: Assessed by 5m Interval Pedestrian Survey Facing East

Photo 5: Assessed by 5m Interval Pedestrian Survey Facing West

Photo 6: Assessed by 5m Interval Pedestrian Survey Facing North

Photo 7: Assessed by 5m Interval Pedestrian Survey Facing East

Photo 8: Assessed by 5m Interval Pedestrian Survey Facing South

Photo 9: Assessed by 5m Interval Pedestrian Survey Facing North

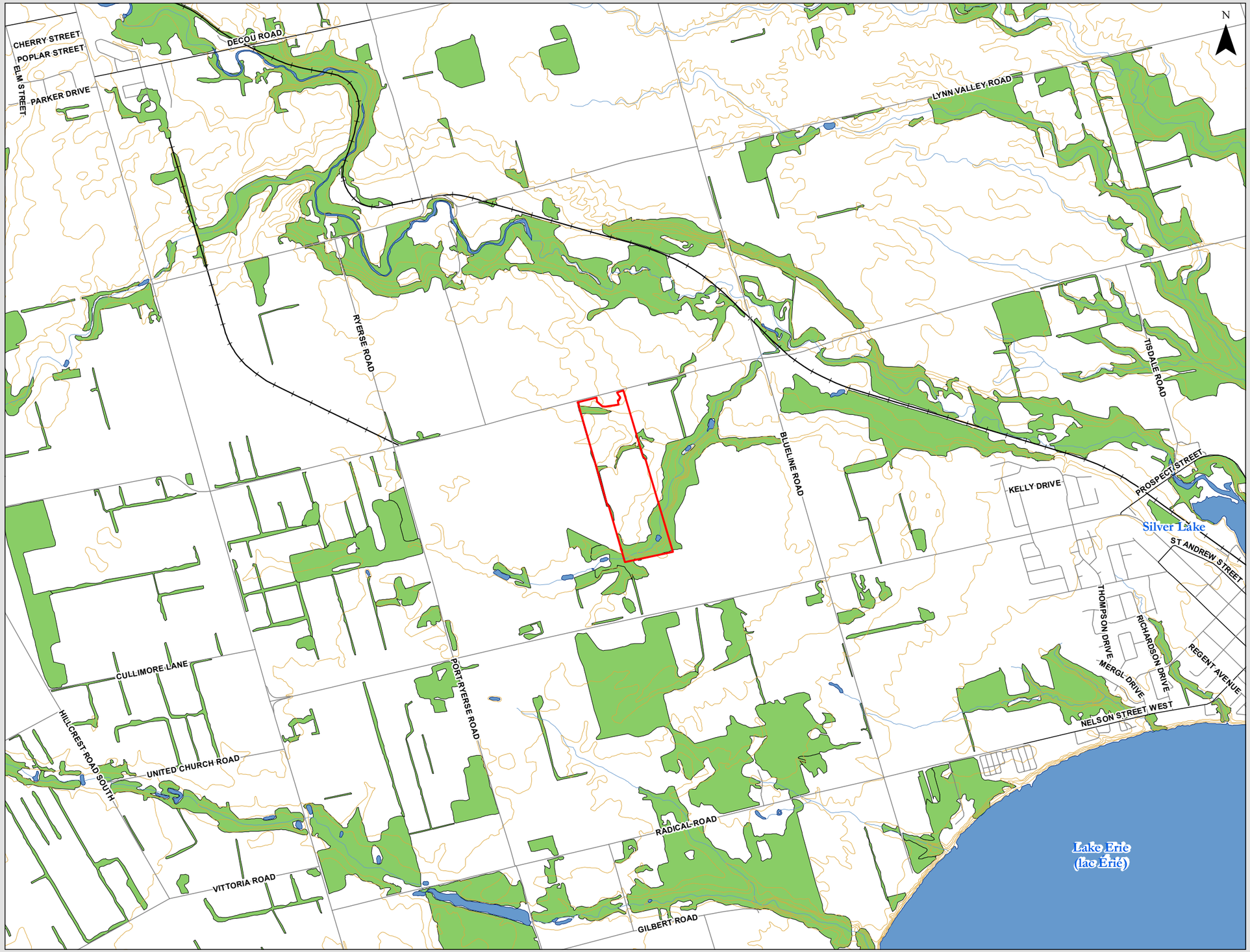
Photo 10: Low Lying and Wet, Photo Documented Facing East

Photo 11: Field Conditions Facing North

Photo 12: Typical Test Pit Facing North

8.2 ARTIFACTS

9.0 MAPS



LINCOLN ENVIRONMENTAL CONSULTING

Supplementary Documentation for 364 St. John's Rd E, Norfolk County, Ontario

Figure 1: Topographic Map of Study Area

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Date: November, 2023

Source: OBM
http://www.geographynetwork.ca/website/obm/viewer.htm

Scale 1:25,000

Datum: NAD 1983 UTM Zone 17N

Legend

- Study Area
- Local Road
- Major Road
- Railroad
- Contour Lines
- Watercourse
- Waterbody
- Wooded Area

Metres
0 500 1,000

LINCOLN ENVIRONMENTAL CONSULTING

Supplementary Documentation for 364 St. John's Rd E, Norfolk County, Ontario

Figure 2: Study Area

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Date: November, 2023

Source: Bing Maps

Scale 1:5,000

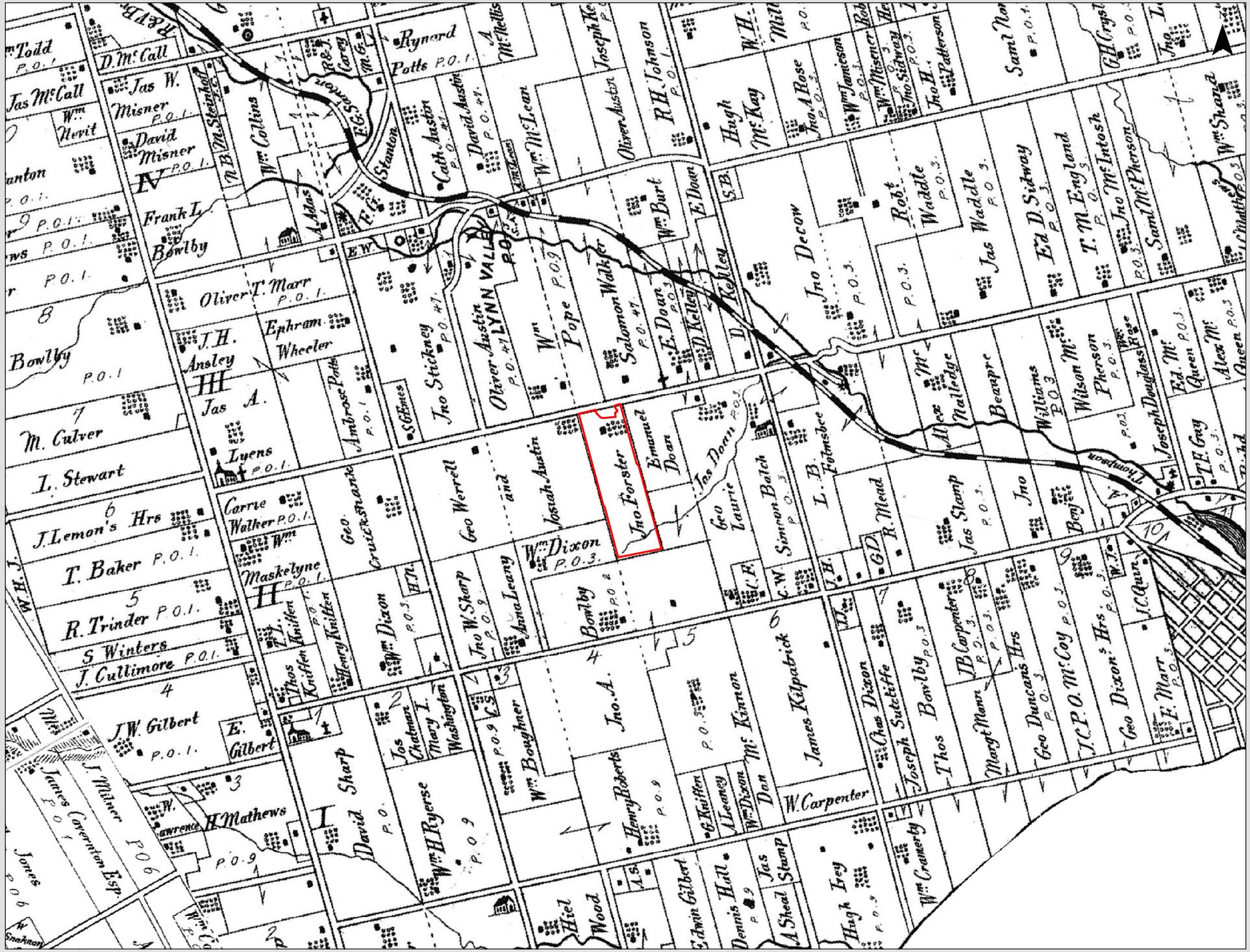
Datum: NAD 1983 UTM Zone 17N

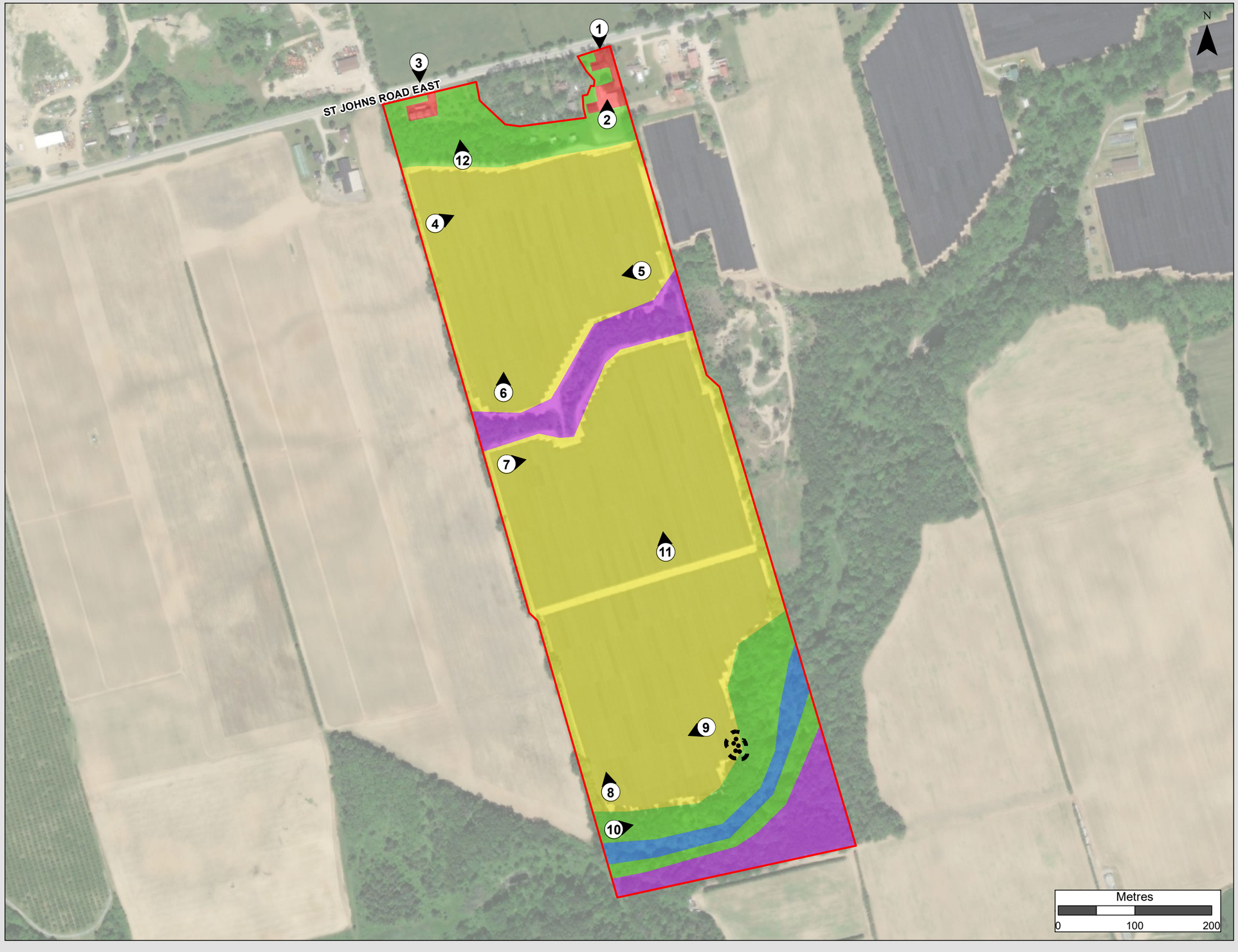
Legend

- Surface Artifact
- Study Area
- Findspot

Metres

0 100 200


Jno Forster
Jno Decow
Hugh McKay
Robt. Waddle
Jas Waddle
Ed D Sidway
T. M. England
Jno McIntosh
Sam'l McPherson
Wm Sharp
Alex Mc Queen
Ed. Mc Queen
Jno Stickney
Oliver Austin
Wm Pope
Salomon Walker
E. Doan
D. Kelley
Wm Burt
Oliver T. Marr
Ephram Wheeler
J.H. Ansley
Jas A. Lyens
Frank L. Bowlby
David Misner
Jas W. Misner
D. McCall
Ryerse
Wm Dixon
Jno. A.
Henry Roberts
Wm Boughner
Jno W. Sharp
Anna Leany
Josiah Austin
Geo Werrell
Wm Maskelyne
Carrie Walker
Geo. Cruickshanks
Thos Griffen
Henry Knitter
Jos Chatmore
Mary I. Washington
E. Gilbert
J.W. Gilbert
S Winters
J. Cullimore
R. Trinder
T. Baker
J. Lemon's Hrs
I. Stewart
M. Culver
H. Mathews
W. Lawrence
David Sharp
Wm H. Ryerse
Jno Stickney
Jas Kilpatrick
Mr Kinnon
Dan W. Carpenter
Thos Bowlby
Joseph Sutcliffe
Chas Dixon
Margt Mann
Geo Duncans Hrs
Wilson Mc Pherson
Williams
Alex Mallledge
Bearpre
Jno Mc Kay
Jno A Rose
Wm Jamieson
Wm Misener
Jno Sidway
Jno H. Patterson
Sam'l Nor
Geo Laurie
Simeon Balch
Jas Stamp
R. Mead
Jno
Bayes
Wm Crameriy
Hugh Frey
Jas Stamp
A Sheal
Dennis Hall
Edwin Gilbert
Jno Leeney
Wm Dixon
Geo Dixon's Hrs
J.C. Quin
E. Marr
J.B. Carpenter
Thompson
Wm Dixon
Bowlby
Jno Leany
Josiah Austin
Geo Werrell
Jno W. Sharp
Wm Dixon
Henry Knitter
Thos Griffen
Geo. Cruickshanks
Wm Maskelyne
Carrie Walker



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Supplementary Documentation for 364 St. John's Rd E, Norfolk County, Ontario

Figure 4: Assessment Strategies and Results

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Date: November, 2023

Source: Bing Maps

Scale 1:5,000

Datum: NAD 1983 UTM Zone 17N

Legend

- Surface Artifact
- Photo Location
- Study Area
- Findspot
- Assessed by Pedestrian Survey at 5m Intervals
- Assessed by Test Pit Survey at 5m Intervals
- Low Lying and Wet, Not Assessed
- Steeply Sloped, Not Assessed
- Visually Disturbed, Not Assessed

LINCOLN ENVIRONMENTAL CONSULTING

Supplementary Documentation for 364 St. John's Rd E, Norfolk County, Ontario

Figure 5: Findspot 1
Artifact Distribution

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Date: November, 2023

Source: Bing Maps

Scale 1:200

Datum: NAD 1983 UTM Zone 17N

Legend

- Surface Artifact

Metres

0 5 10

STRIK BALDINELLI MONIZ

PLANNING • CIVIL • STRUCTURAL • MECHANICAL • ELECTRICAL

TRAFFIC IMPACT STUDY

364 ST. JOHN'S ROAD EAST

NORFOLK COUNTY, ONTARIO

PROPOSED GRAVEL PIT

2690905 ONTARIO INC.

NOVEMBER 2025

SBM-24-2024

LONDON LOCATION

1599 Adelaide Street N Unit 301
London, ON, N5X 4E8
P: 519.471.6667

KITCHENER LOCATION

132 Queen St. S. Unit 4
Kitchener, ON, N2G 1V9
P: 519.725.8093

www.sbmltd.ca

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KITCHENER LOCATION
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2690905 Ontario Inc.
869 Charlotteville Road 7
Simcoe, Ontario N3Y 4K5

November 10, 2025
SBM-24-2024

Attn: Allan & Joanna Gee

Re: Traffic Impact Study
364 St. John's Road East - Proposed Gravel Pit
Norfolk County, Ontario

Strik, Baldinelli, Moniz Ltd. is pleased to provide you with the enclosed Traffic Impact Study report for the proposed gravel pit at 364 St. John's Road East in Norfolk County, Ontario. The report generally concludes that the proposed pit can be accommodated by the existing transportation network with no significant impact to traffic operations and no road improvements required.

We trust this submission meets your satisfaction and will assist with the approval of the gravel pit. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Respectfully submitted,
Strik, Baldinelli, Moniz Ltd.
Planning • Civil • Structural • Mechanical • Electrical

Jonah Lester, P.Eng.
Transportation Engineer

Michelle Alegria, EIT
Civil Engineering Trainee I

EXECUTIVE SUMMARY

This Traffic Impact Study (TIS) has been prepared by Strik, Baldinelli, Moniz Ltd. (SBM) for 2690905 Ontario Inc. to identify transportation impacts, or a lack thereof, associated with a proposed gravel pit located at 364 St. John's Road East in in Norfolk County. The proposed pit would have a maximum annual tonnage limit of 325,000 metric tonnes with access from an existing site access on St. John's Road East at the west limit of the property. The existing house and outbuildings on the north end of the property will remain with separate driveways (existing).

This study has forecasted traffic volumes for a 2035 horizon year and assessed traffic operations within the vicinity of the subject site for existing, future background, and future total traffic conditions. Site access considerations, left turn lane warrants, and traffic signal warrants have also been reviewed. Based on the analysis completed, the following key conclusions and recommendations are made in this TIS:

- It is forecast that the proposed gravel pit will generate an average of 10 truck trips per hour (5 in and 5 out) on an annual basis, with up to 34 trips per hour (17 in and 17 out) generated in a peak hour during the peak season.
- Under existing conditions, all movements at the study area intersections are operating acceptably, with ample reserve capacity and LOS C or better.
- Under 2035 background and total traffic conditions, the study area intersections will continue to operate acceptably with all movements at LOS C or better and reasonable v/c ratios, except for a few movements reaching LOS D or E. The LOS E movement is at the St. John's Road East and Blueline Road intersection, which we understand the County is already monitoring for the need for future improvements.

  Overall, the analysis results show that the operations for 2035 total traffic conditions are very similar to the 2035 background traffic operations, with only minor increases in v/c ratios for certain movements, which indicates that the site traffic should have a minimal impact on intersection operations.
- The location of the site access does not conflict with any intersections or driveways, meets minimum sight distance requirements, and will operate well throughout and beyond the horizon period.
- Left turn lane warrants were checked for the study area intersections, including the site access on St. John's Road East, for future total traffic conditions, and a left turn lane will not be warranted at any location.
- Traffic signal warrants were reviewed for the unsignalized study area intersections and it was found that traffic signals are not expected to be warranted at any of the intersections within the 2035 horizon period.
- Direct access to the County road network, which already serves several existing gravel pits in the area, provides ideal haul routes to and from the site with no significant impact expected from the minor additional truck traffic.
- No road network improvements are required to accommodate the proposed gravel pit.

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1 INTRODUCTION

This Traffic Impact Study (TIS) has been prepared by Strik, Baldinelli, Moniz Ltd. (SBM) for 2690905 Ontario Inc. to identify transportation impacts, or a lack thereof, associated with a proposed gravel pit located at 364 St. John's Road East in in Norfolk County. The proposed pit would have a maximum annual tonnage limit of 325,000 metric tonnes with access from an existing site access on St. John's Road East at the west limit of the property. The existing house and outbuildings on the north end of the property will remain with separate driveways (existing). The location of the subject property is illustrated in Figure 1.

1.1 SCOPE AND METHODOLOGY

The general scope of the analysis was confirmed with the County of Norfolk (County) prior to commencing the study and is summarized in Table 1.

Table 1: Study Scope and Parameters

Study Scope and Parameters	
Analysis Intersections (Study Area)	• St. John's Road East (County Road 3) / Norfolk Street South (County Road 24) • St. John's Road East (County Road 3) / Cockshutt Road (County Road 5) • St. John's Road East (County Road 3) / Blueline Road • Blueline Road / Highway No. 6 • St. John's Road East (County Road 3) / Site Access • St. John's Road East / Highway No. 6
Analysis Time Periods	• Weekday AM peak hour • Weekday PM peak hour
Analysis Scenarios (Years)	• Existing Traffic • 2035 Background Traffic • 2035 Total Traffic

The intersection operational analysis has been performed using Synchro 11 software based on the Highway Capacity Manual 2000 (HCM 2000) methodology published by the Transportation Research Board National Research Council.

The operational analysis has identified the volume to capacity ratio (v/c ratio) and Level of Service (LOS) for all movements at the study area intersections. 95th percentile queues have also been summarized and queuing problems (queues projected to exceed available lane storage) would also be noted, if applicable.

Figure 1: Site Location

Map Source: Google Earth

Level of Service (LOS) is a function of the average control delay for an entire intersection or an individual movement. The relationships between the LOS letters and average delay ranges are defined in Table 2 for signalized and unsignalized intersections.

Table 2: Vehicular Level of Service Designations

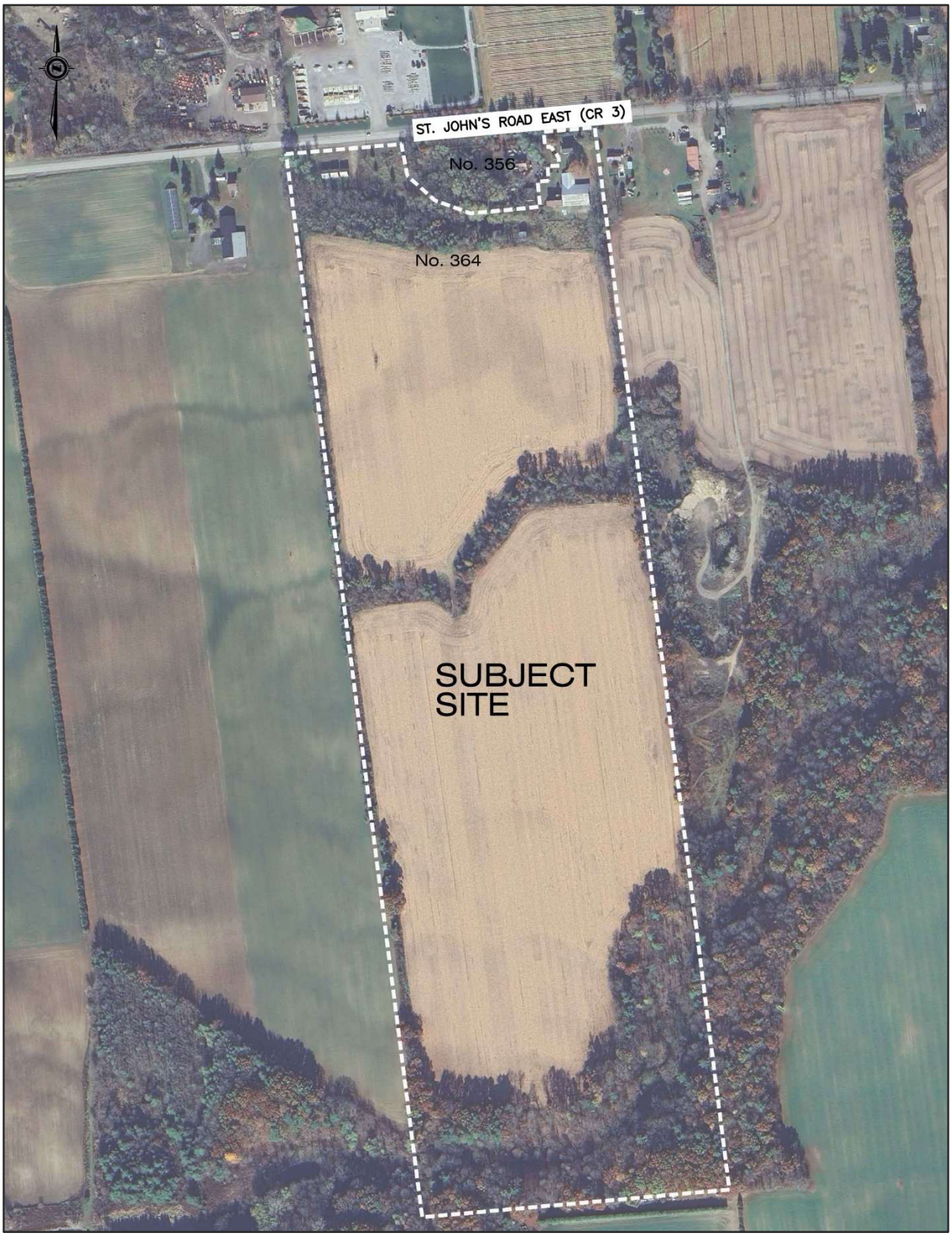
LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (s)	
	SIGNALIZED INTERSECTION	UNSIGNALIZED INTERSECTION
A	≤ 10	≤ 10
B	10 to 20	10 to 15
C	20 to 35	15 to 25
D	35 to 55	25 to 35
E	55 to 80	35 to 50
F	> 80	> 50

2 EXISTING CONDITIONS

2.1 SITE CONTEXT

The site is located on the south side of St. John's Road East, approximately 1 km west of Blueline Road. The site is bounded by the St. John's Road East right-of-way (ROW) to the north, and agricultural lands to the east, south and west, as shown in Figure 2. A small (Class B) aggregate pit (the Thompson Pit) is also located on the property to the east, which is accessed through the 364 St. John's Road East property via the site access at the west end of the property that will serve the proposed pit. The site currently contains a home and outbuildings at the north end of the site, which will remain and function independently from the pit operation.

Figure 2: Site Area



Map Source: Google Earth (2020 imagery)

2.2 EXISTING ROAD NETWORK

A site visit was carried out on September 9, 2025, to confirm the existing study area conditions. The existing road network related to the study area intersections is described below and the existing lane configurations and traffic control are illustrated in Figure 3.

St. John's Road East (County Road 3) is a two-lane County road (arterial) running east-west. St. John's Road East has a rural-cross section (no curb and gutter or sidewalks). The posted speed limit is generally 80 km/h, however, St. John's Road West has a posted speed limit of 60km/h approaching the intersection with Norfolk Street South. Existing traffic volumes on St. John's Road East are relatively light and there are several existing Class A and B aggregate pits located on St. John's Road East.

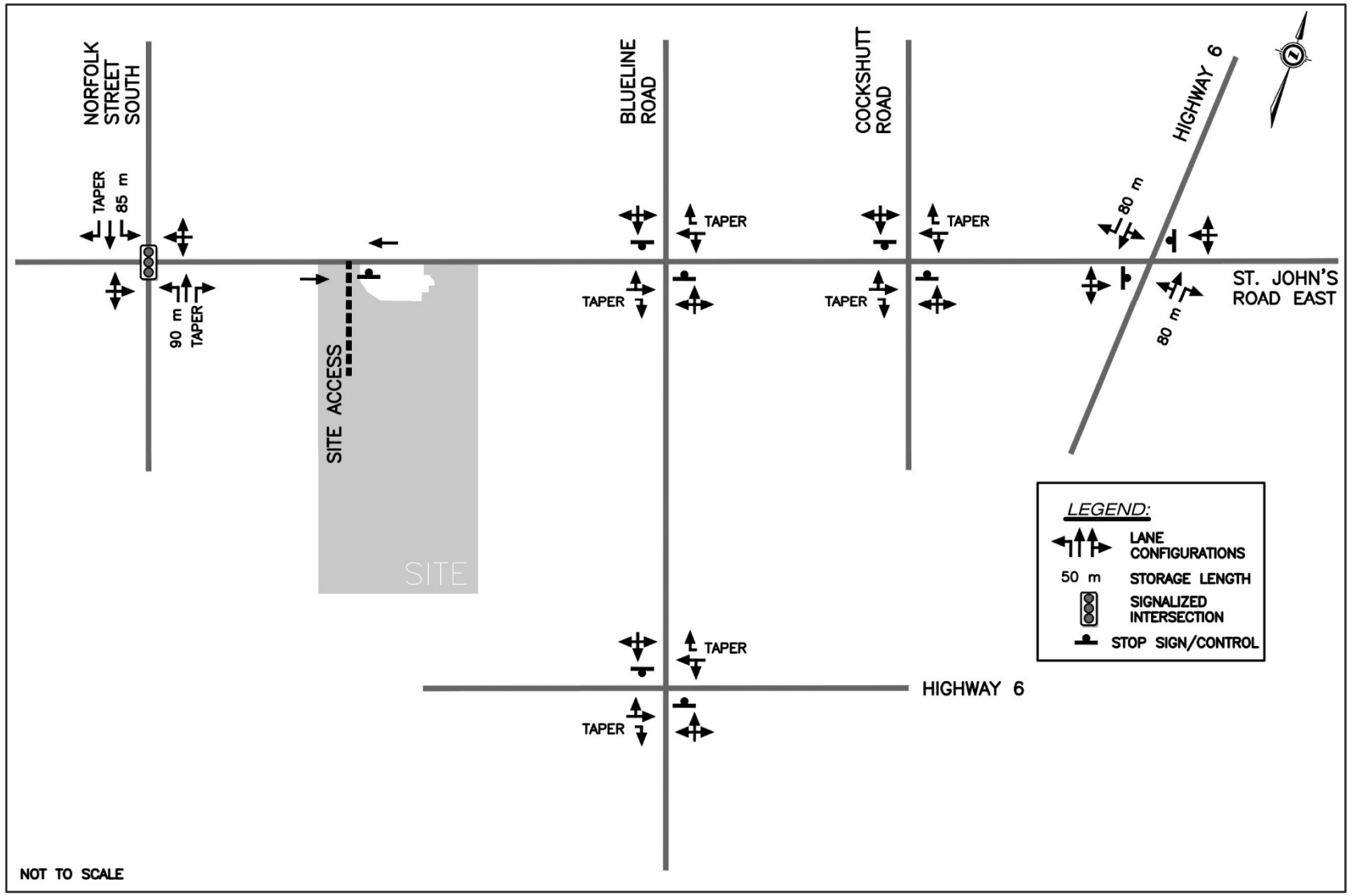
Norfolk Street South (County Road 24) is a two-lane County road (arterial) running north-south, which passes through the middle of Simcoe. In the study area (i.e. the vicinity of St. John's Road East), Norfolk Street South has a rural cross-section with partially paved and gravel shoulders and a posted speed limit of 80 km/h.

Cockshutt Road (County Road 5) is a two-lane County road (arterial) running north-south with a posted speed limit of 80 km/h. Cockshutt Road has a rural cross-section with no curb and gutter or sidewalks.

Blueline Road is an arterial road running north-south with a posted speed limit of 80 km/h. Blueline Road has a rural cross-section with no curb and gutter or sidewalks.

Highway 6 is a two-lane arterial road running east-west under the jurisdiction of the County between Norfolk Street South and Port Dover. It has a rural cross-section and a posted speed limit of 80 km/h. On the east side of Port Dover, Highway 6 is a provincial highway under the jurisdiction of the MTO that runs to/from the northeast (considered to run north-south in this TIS). That section of Highway 6 is also two-lanes with a rural cross-section and posted speed limit of 80 km/h.

Figure 3: Existing Study Area Traffic Control and Lane Configuration



2.3 EXISTING TRAFFIC VOLUMES

Traffic count data for this study was obtained from several different sources. Turning movement counts were undertaken on September 4, 2025, by Accu-Traffic Inc. during the AM and PM peak periods at the following intersections:

- St. John's Road and Norfolk Street South;
- St. John's Road East and Blueline Road;
- and St. John's Road East and Cockshutt Road.

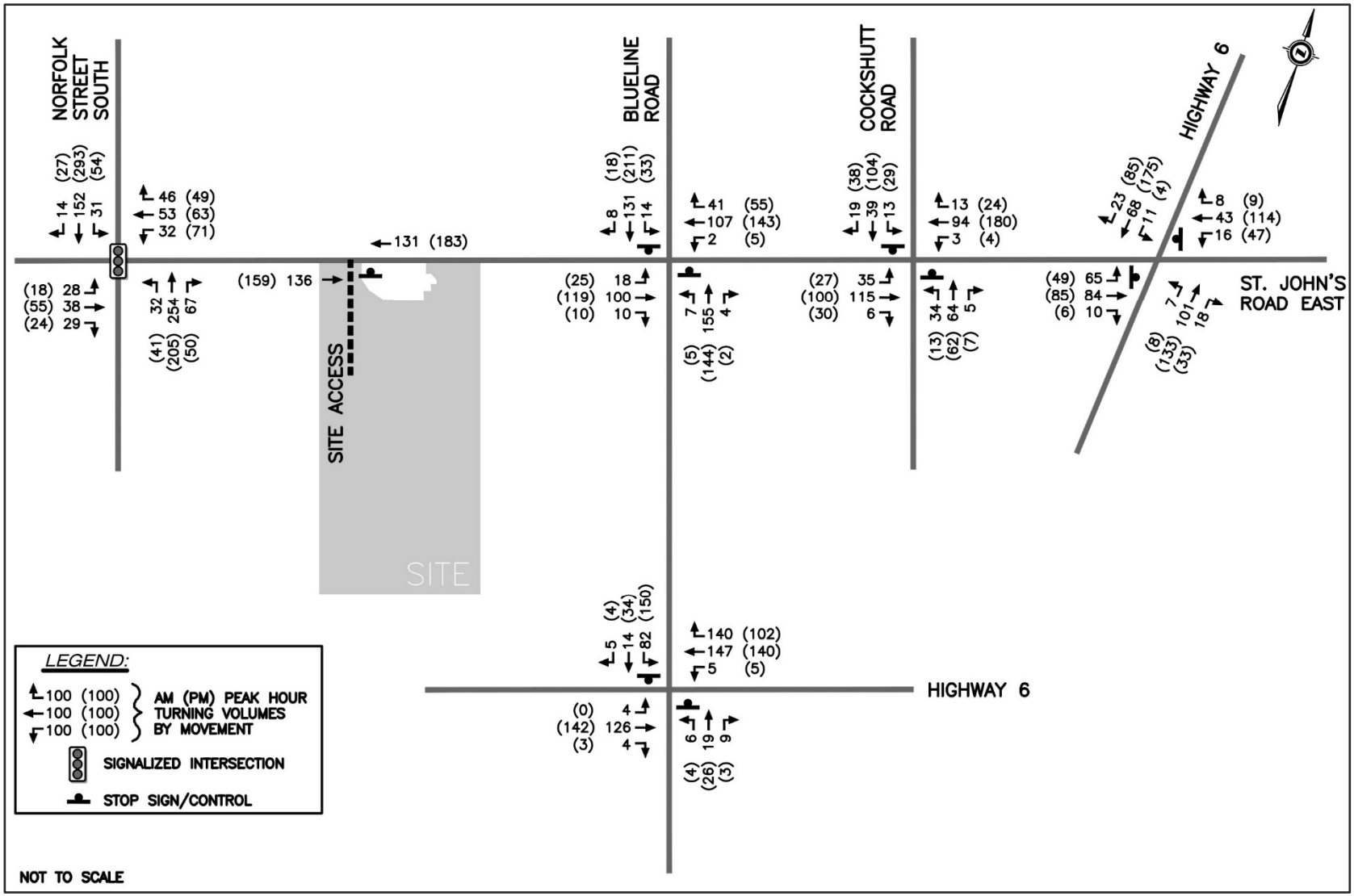
Turning movement count data for the intersection of Highway 6 and St. John's Road East collected on August 24, 2024 was provided by the MTO.

Turning movement count data for the intersection of Highway 6 and Blueline Road from January 16, 2024 was obtained from the Lynn River Heights, Phase 2 Transportation Impact Study (NexTrans Consulting Engineers, April 2024).

For turning movement counts collected in previous years, a growth rate of 1% per year was applied to approximate 2025 conditions. The resulting "existing" peak hour traffic volumes for the study area intersections are illustrated in Figure 4 and the traffic count data is provided in Appendix A.

It is noted that while the existing site access currently provides access to the Thompson Pit (on the property to the east of the site), it is our understanding that the use of the Thompson Pit is infrequent, therefore the existing peak hour traffic volumes do not include any turning movements at the site access.

Figure 4: Existing Peak Hour Traffic Volumes



2.4 EXISTING TRAFFIC OPERATIONS

Existing traffic operations were assessed at the study area intersections based on the existing lane configuration and traffic volumes presented in Sections 2.2 and 2.3.

Table 3 provides a summary of the existing intersection operations and complete Synchro output reports are provided in Appendix B.

Table 3: 2025 Intersection Operations Summary

INTERSECTIONS / MOVEMENTS		2025 TRAFFIC			
		AM PEAK HOUR		PM PEAK HOUR	
		V/C	LOS	V/C	LOS
St. John's Road East/West and Norfolk Street South	Overall	0.31	B	0.34	B
	EB LTR	0.39	C	0.27	C
	WB LTR	0.51	C	0.60	C
	NB L	0.05	A	0.06	A
	NB T	0.26	A	0.18	A
	NB R	0.07	A	0.04	A
	SB L	0.05	A	0.07	A
	SB T	0.16	A	0.26	A
	SB R	0.01	A	0.02	A
St. John's Road East and Blueline Road	EB LTR	0.02	A	0.02	A
	WB LTR	0.00	A	0.00	A
	NB LTR	0.34	B	0.33	C
	SB LTR	0.31	B	0.55	C
St. John's Road East and Cockshutt Road	EB LTR	0.03	A	0.02	A
	WB LTR	0.00	A	0.00	A
	NB LTR	0.19	B	0.17	B
	SB LTR	0.12	B	0.33	B
St. John's Road East and Highway 6	EB LTR	0.27	B	0.31	C
	WB LTR	0.12	B	0.37	C
	NB LT	0.01	A	0.01	A
	NB R	0.01	A	0.02	A
	SB LT	0.01	A	0.00	A
	SB R	0.01	A	0.05	A
Blueline Road and Highway 6	EB LTR	0.00	A	0.00	A
	WB LTR	0.00	A	0.00	A
	NB LTR	0.08	B	0.06	B
	SB LTR	0.27	C	0.36	C

Notes: V/C - Volume to Capacity Ratio, LOS – Level of Service
EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound
L – Left, T – Through, R – Right

From the results shown, it can be seen that the existing intersections are operating well during the peak hours, with most movements having v/c ratios below 0.39 and only a few movements between 0.5 and 0.6, which are all acceptable levels and indicate there is reserve capacity at the intersections. All movements operate at LOS C or better.

Queuing results were also reviewed looking at the 95th percentile queue length from the Synchro analysis in order to determine where queues may cause operational concerns. The results are summarized in Table 4.

Table 4: 2025 Intersection Queuing

INTERSECTIONS / MOVEMENTS		TURN LANE STORAGE (m)	95th PERCENTILE QUEUE (m) 2025 TRAFFIC	
			AM	PM
St. John's Road East/West and Norfolk Street South	EB LTR	-	21	21
	WB LTR	-	27	40
	NB L	90	5	6
	NB T	-	26	23
	NB R*	5	6	5
	SB L	85	5	8
	SB T	-	16	33
	SB R*	5	5	5
St. John's Road East and Blueline Road	NB LTR	-	11	11
	SB LTR	-	10	25
St. John's Road East and Cockshutt Road	NB LTR	-	5	5
	SB LTR	-	5	11
St. John's Road East and Highway 6	EB LTR	-	8	10
	WB LTR	-	5	13
Blueline Road and Highway 6	NB LTR	-	5	5
	SB LTR	-	8	12

Notes: EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound
L – Left, T – Through, R – Right
Queue lengths that were less than 5 m have been rounded up to 5 m to represent a minimum of one car length.
* – 5 m storage assumed where taper is provided

The existing queuing results show that the existing turning lane storage lengths sufficiently accommodate the 95th percentile queues for the existing traffic volumes and there are no other queuing concerns.

3 FUTURE BACKGROUND TRAFFIC

Future background traffic includes existing traffic with a general growth rate applied, plus traffic anticipated to be generated from other developments surrounding the study area. For the purposes of this study, a 10-year (2035) horizon year was selected for future traffic projections and analysis.

3.1 BACKGROUND GROWTH RATE

As recommended by County staff, a background growth rate of 1.0% per annum was applied to the traffic volumes in the study area.

3.2 BACKGROUND DEVELOPMENT TRAFFIC

The County identified the following developments in the surrounding area to be taken into consideration in the 2035 background traffic forecasts and provided the associated traffic studies that were undertaken for each:

- **Port Dover Residential Subdivision**[1] – A subdivision that will be built out in two phases. Phase 1 consisting of 157 single family homes, and Phase 2 consisting of 526 family dwellings with a mix

[1]Eggink Development, Town of Port Dover – Traffic Impact Study by RC Spencer Associates, dated June 2019

of single detached housing, duplex dwellings, and low to mid rise apartments. The primary access will be from Cockshutt Road and Dover Mills Road.

- **Lynn River Heights, Phase 2**[2] – A subdivision proposed to have 393 single-detached dwelling units, 56 semi-detached dwelling units, and two mixed-use future developments which will contain approximately 260 dwelling units. The primary access will be from existing local roads to the east of the site and future direct access from Highway 6.

The locations of the background developments are shown in Figure 5, and excerpts from the background development traffic studies are shown in Figure 6 and Figure 7 illustrating the localized site-generated traffic from each development.

The background development trips were expanded through the current study area assuming traffic on Blueline Road and Cockshutt Road continue on those roads through the study area (i.e. trips don't turn on St. John's Road East). The background development traffic volumes applied to the study area are illustrated in Figure 8.

[2]Lynn River Heights, Phase 2 - Transportation Impact Study by NexTrans, dated April 16, 2024

Figure 5: Background Development Map

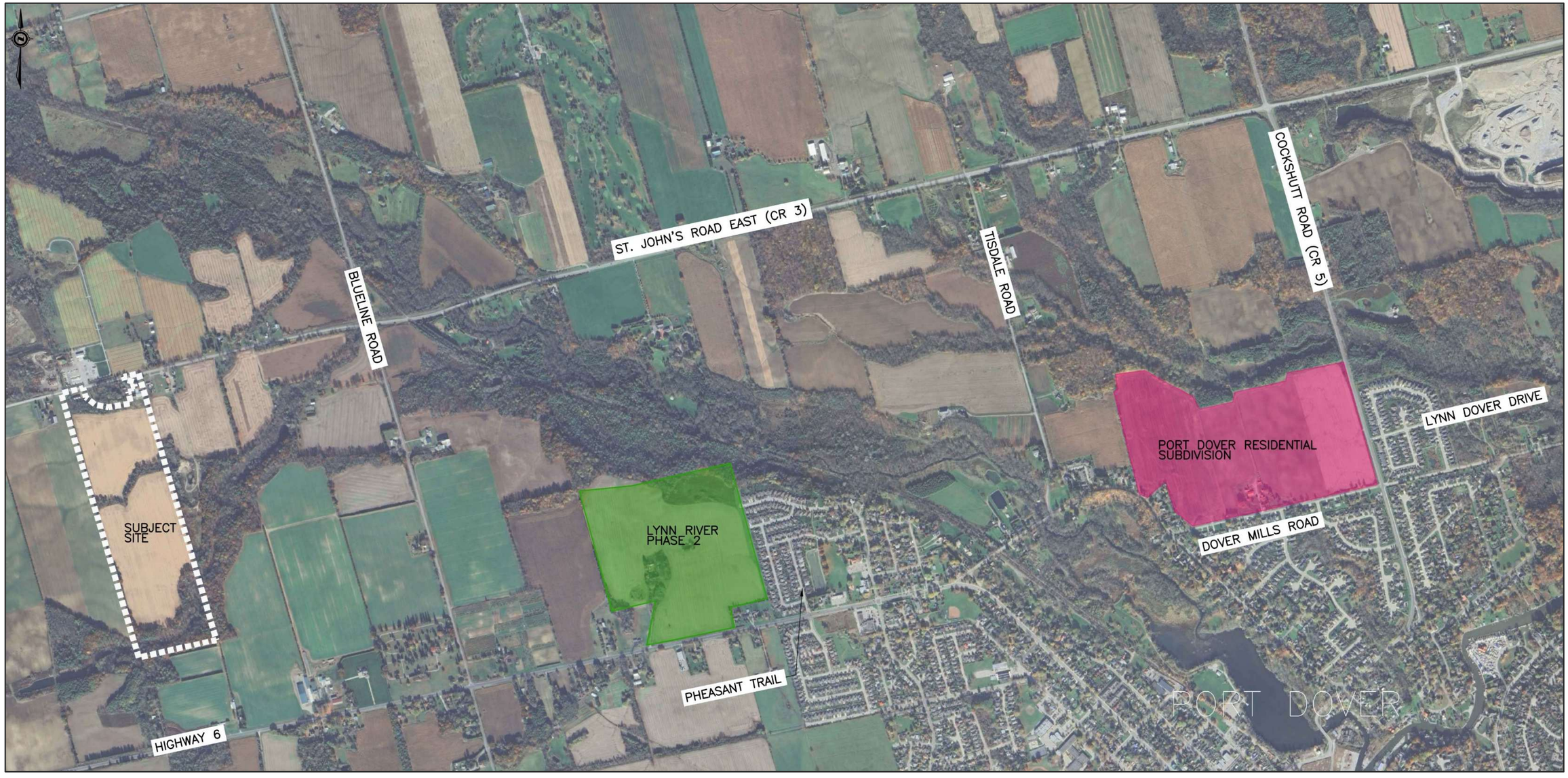
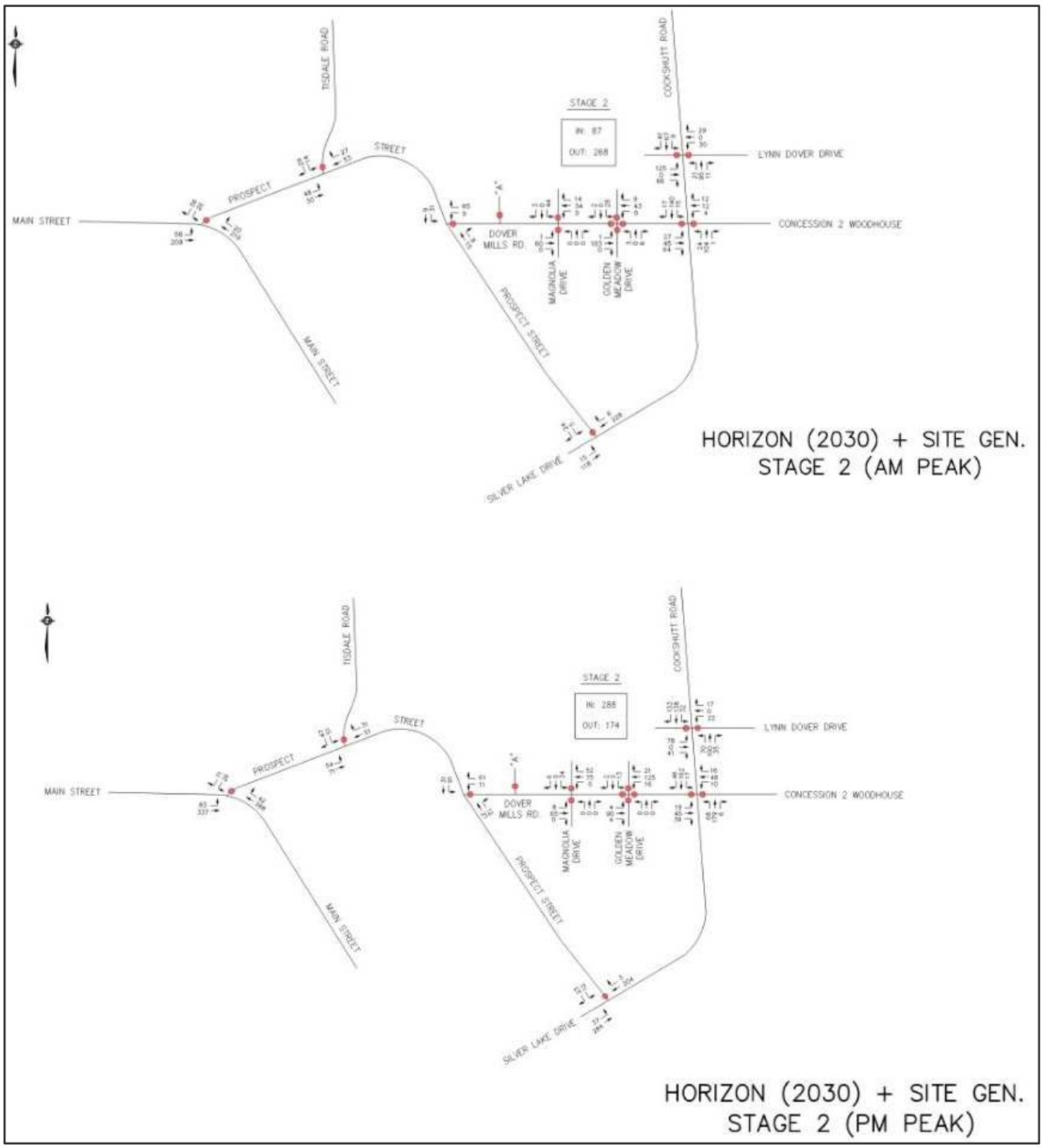
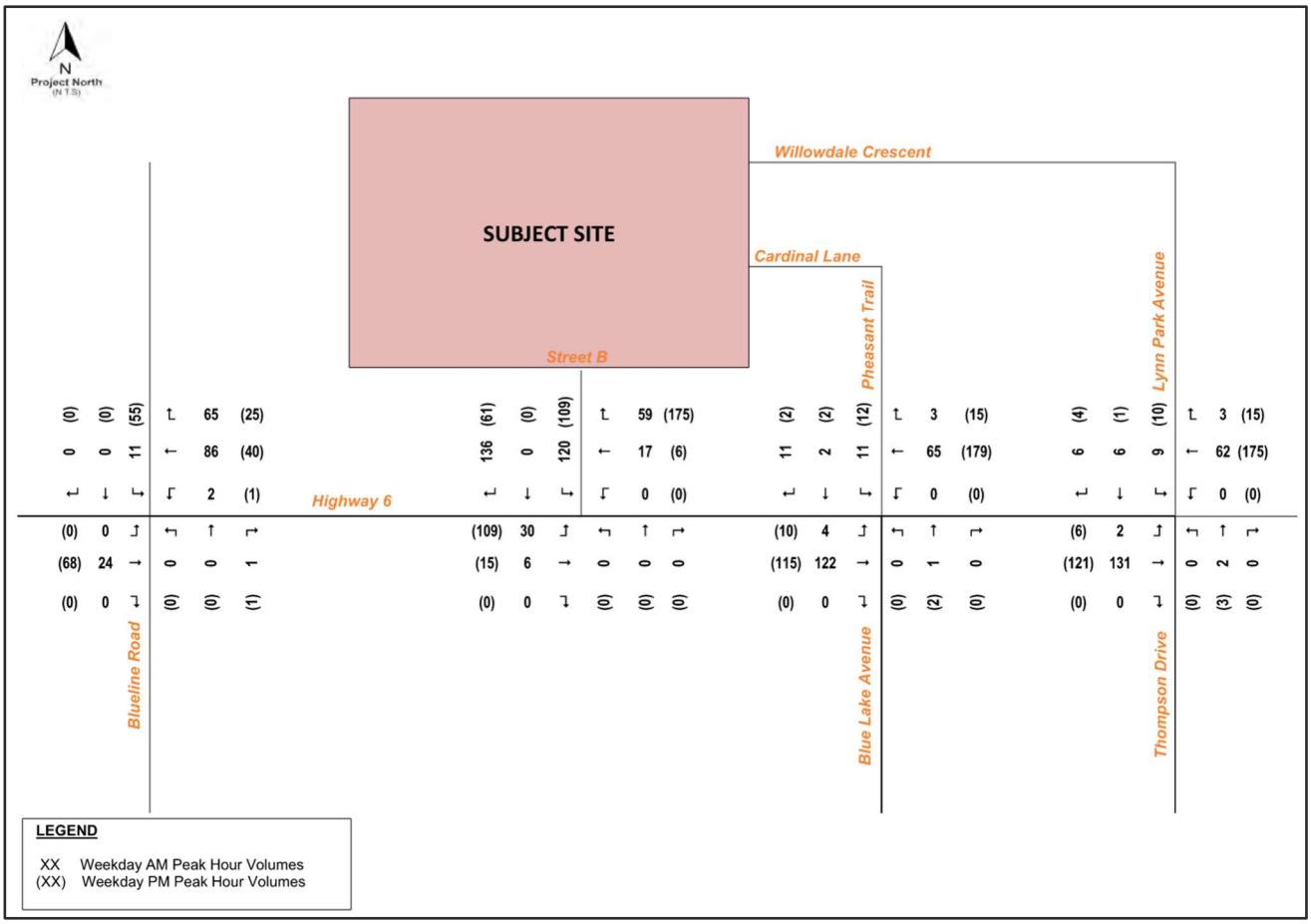


Figure 6: Port Dover Residential Subdivision TIS Excerpt – Development-Generated Traffic



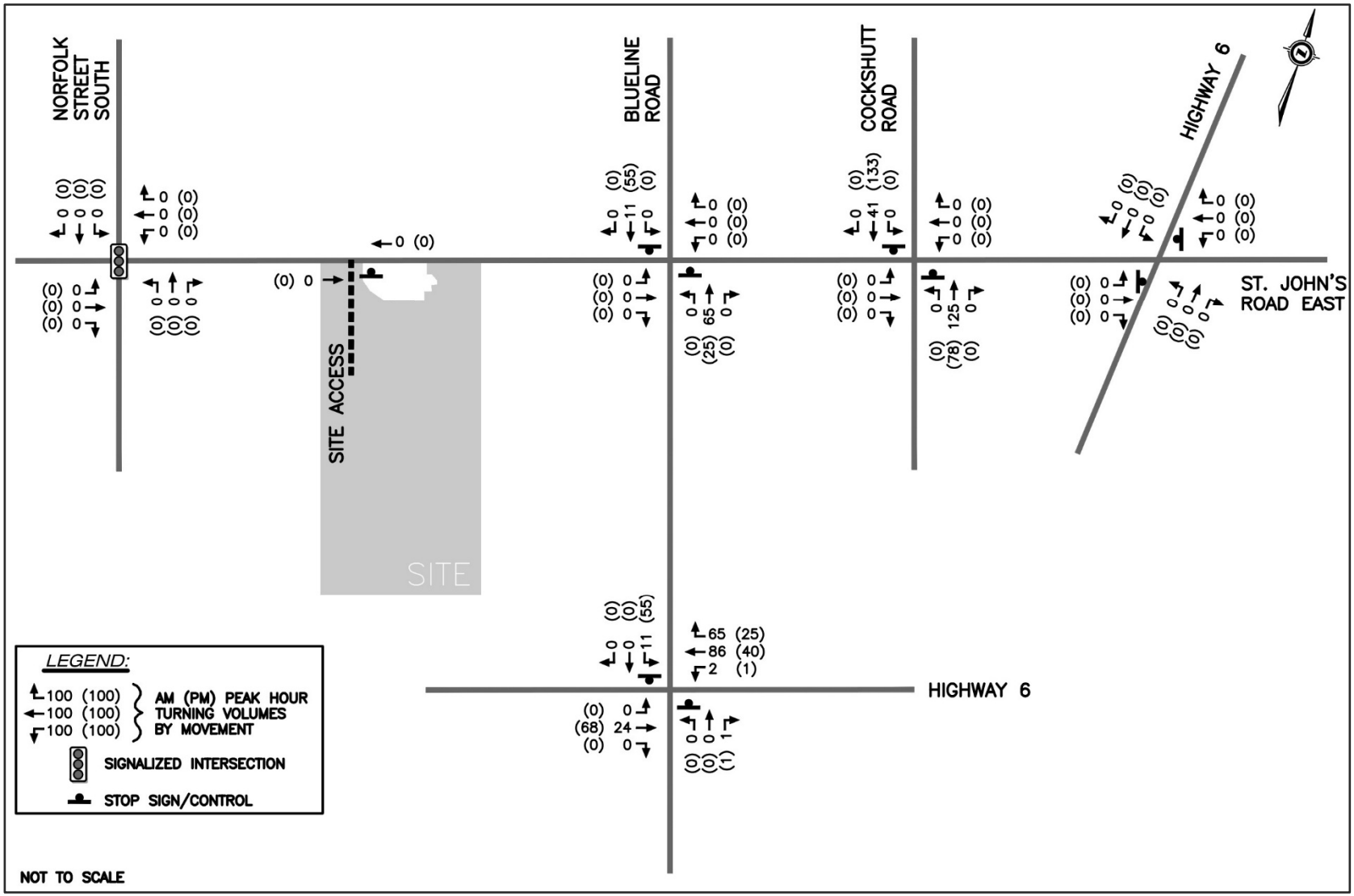
Source: Eggink Development, Town of Port Dover – Traffic Impact Study by RC Spencer Associates, dated June 2019

Figure 7: Lynn River Heights, Phase 2 TIS Excerpt – Development-Generated Traffic



Source: Lynn River Heights, Phase 2 - Transportation Impact Study by NexTrans, dated April 16, 2024

Figure 8: 2035 Background Development Traffic



3.3 BACKGROUND TRAFFIC VOLUMES

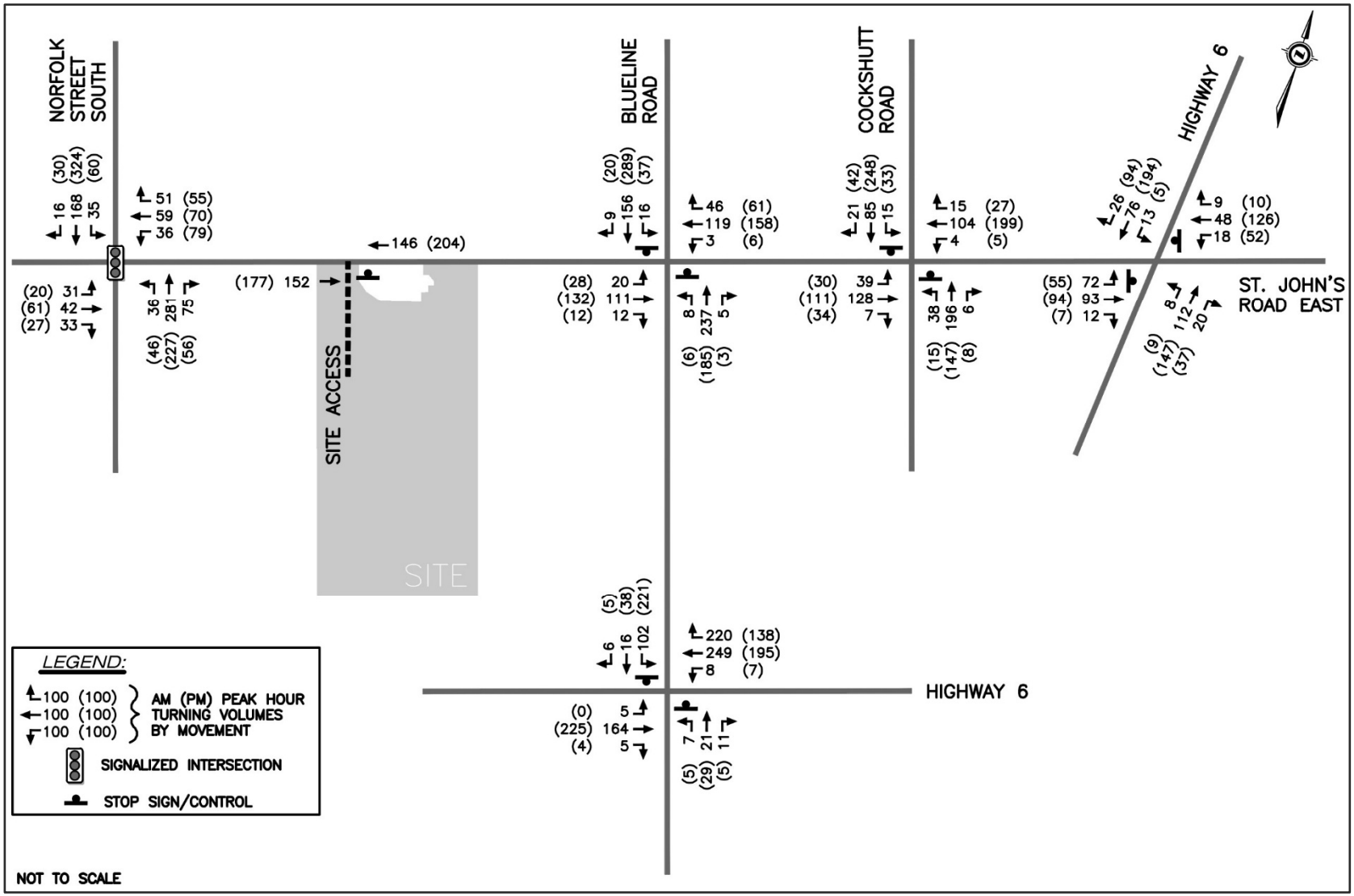
With the background growth rate applied to the existing traffic, and then combined with the background development traffic discussed in Section 3.2, the resulting 2035 background traffic volumes for the study area intersections are presented in Figure 9.

3.4 FUTURE ROAD NETWORK

No planned improvements were identified by the County for the study area intersections that would affect the operations within the horizon period of this study.

It is our understanding that the County has intersection improvements planned for Blueline Road and Cockshutt Road intersections with St. John's Road East, however, no details about these improvements were available from the County, therefore we have assumed the intersections remain as per existing conditions. This represents a conservative approach, as it can be assumed that any future intersection improvements would account for future traffic projections and provide for sufficient capacity and operations.

Figure 9: 2035 Background Traffic



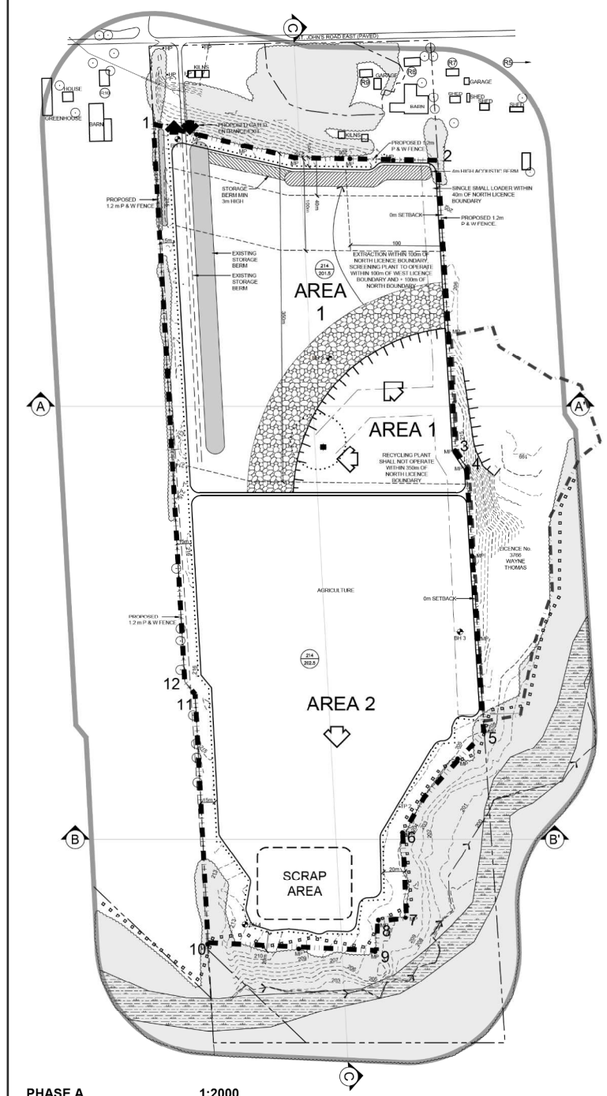
4 PROPOSED GRAVEL PIT

4.1 DEVELOPMENT PLAN

The proposed gravel pit will have an overall licensed area of approximately 25 hectares with the area of extraction limited to 22.4 hectares. The proposed maximum annual extraction limit is 325,000 tonnes.

Access to the pit is proposed to be via the existing site access on St. John's Road East at the west limit of the property. A reduced version of the Operational Plan Phases A to C drawing by Harrington McAvan Ltd., showing the subject property, existing site access, and the boundary of the area to be licensed and extraction area, is shown in Figure 10. The full version of the plan is provided in Appendix C.

Figure 10: Operation Plan Phases A to C



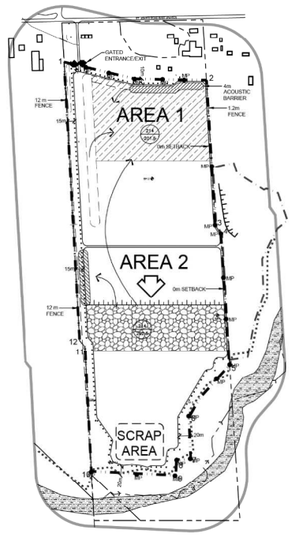
PHASE A

1:2000

0 10 40 80m

PHASE A NOTES

1. UPGRADE ENTRANCE/EXIT ON ST. JOHNS ROAD EAST TO ACCORDING TO THE APPROPRIATE MUNICIPAL STANDARDS. AN ENTRANCE PERMIT IF REQUIRED, SHALL BE OBTAINED.
2. PRIOR TO ANY ON SITE OPERATIONS, INSTALL OR REPAIR 1.2m POST AND WIRE FENCE AND INSTALL MARKER POSTS ON THE LICENCED BOUNDARIES, ACCORDING TO SITE PLAN VARIANCES.
3. CONSTRUCT THE HAUL ROAD THROUGH AREA 1 AND USE STRIPPED MATERIAL TO CONSTRUCT ACOUSTIC BERM AS SHOWN.
4. PRIOR TO EXTRACTION IN AREA 1, DEMARCATE NATURAL FEATURE SETBACKS.
5. STRIP TOPSOIL AND OVERBURDEN SEPARATELY AND COMPLETE CONSTRUCTION OF ACOUSTIC BERM. EXCESS MATERIAL MAY BE STORED IN BERMS AS SHOWN ON IN STOCKPILES ON PIT FLOOR.
6. BEGIN EXTRACTION IN AREA 1 IN DIRECTION SHOWN. STOCKPILING AREA MAY BE TEMPORARILY LOCATED NEAR THE PIT FACE DURING THE INITIAL EXCAVATION OF AGGREGATE.
7. UNDISTURBED PORTIONS OF AREA 2 SHALL REMAIN IN AGRICULTURAL USE.
8. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION



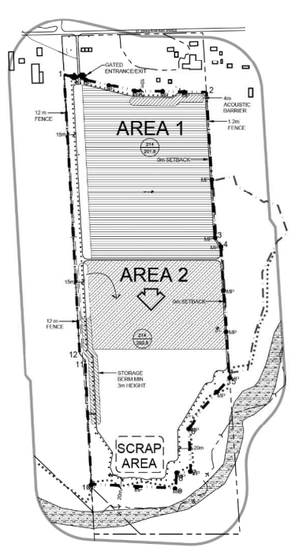
PHASE B

1:4000

0 5 10 15m

PHASE B NOTES

1. BEGIN PROGRESSIVE REHABILITATION OF AREA 1 AS RESOURCES ARE DEPLETED USING MATERIAL STORED IN BERMS AND IMPORTED EXCESS SOIL.
2. STRIP TOPSOIL AND OVERBURDEN SEPARATELY FROM AREA 2 AND USE THE MATERIALS TO COMPLETE REHABILITATION OF 50 % OF AREA 1 PRIOR TO EXTRACTION IN AREA 2. EXCESS OVERBURDEN AND TOPSOIL MAY BE USED TO CONTINUE REHABILITATION OF AREA 1 OR STOCKPILED ON PIT FLOOR.
3. BEGIN EXTRACTION OF AREA 2 IN DIRECTION SHOWN. STOCKPILING AND PROCESSING AREA MAY BE TEMPORARILY LOCATED NEAR THE PIT FACE DURING THE INITIAL EXCAVATION OF AGGREGATE.
4. UNDISTURBED PORTIONS OF AREA 2 REMAIN IN AGRICULTURAL USE.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION



PHASE C

1:4000

0 5 10 15m

PHASE C NOTES

1. COMPLETE REHABILITATION OF AREA 1 USING STOCKPILED MATERIAL AND IMPORTED EXCESS SOIL.
2. BEGIN PROGRESSIVE REHABILITATION OF AREA 2 AS RESOURCES ARE DEPLETED.
3. COMPLETE EXTRACTION IN AREA 2.
4. CONTINUE REHABILITATION OF AREA 2 USING MATERIAL STORED IN BERMS AND IMPORTED EXCESS SOIL.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION

PHASE D (NOT SHOWN)

PHASE D NOTES

1. COMPLETE REHABILITATION OF AREA 2 USING STOCKPILED MATERIAL AND IMPORTED EXCESS SOIL.
2. COMPLETE REHABILITATION OF ALL REMAINING AREAS AND HAUL ROADS USING IMPORTED EXCESS SOIL.
3. REMOVE ALL SCRAP AND EQUIPMENT.
4. SITE IS REHABILITATED TO AGRICULTURE.

OPERATIONS NOTES

GENERAL INFORMATION

1a) THIS PLAN DEPICTS A SCHEMATIC OPERATIONS AND REHABILITATION SEQUENCE FOR THIS PROPERTY BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION. PHASE 5 SHOWN ARE SCHEMATIC AND WILL BE OPERATED ACCORDING TO MATERIAL QUALITY, SITE HYDROLOGY AND HYDROGEOLOGY OR MARKET DEMAND. PHASES DO NOT REPRESENT ANY SPECIFIC OR EQUAL TIME PERIOD.

b) EXTRACTION SHALL FOLLOW THE SEQUENCE SHOWN ON THIS PAGE AND ON THE 'OPERATIONAL PLAN PHASES B-E AND DETAILS' (PAGE 3 OF 4). PROGRESSIVE REHABILITATION SHALL BE CARRIED OUT, AS DEPICTED ON THE 'OPERATIONAL PLAN PHASES B-E AND DETAILS' (PAGE 3 OF 4) AND THE REHABILITATION PLAN (PAGE 4 OF 4). VARIATIONS FROM THE EXTRACTION PLANS OR BLENDING OF MATERIALS WILL REQUIRE SOME DEVIATION IN THE EXTRACTION AND REHABILITATION PHASING. ANY DEVIATIONS FROM THE OPERATIONS SEQUENCE SHOWN WILL REQUIRE APPROVAL FROM MNR.

2. SITE PLAN VARIANCES ARE LISTED IN THE SITE PLAN OVERBRIDE TABLE SHOWN ON THIS PAGE.

EXTRACTION/PROCESSING/HAULING INFORMATION

3. TOTAL AREA TO BE EXTRACTED IS 22.4 HECTARES.

4. MAXIMUM NUMBER OF TONNES OF AGGREGATE TO BE REMOVED FROM THE SITE IN ANY CALENDAR YEAR IS 325,000 TONNES.

5a) EXTRACTION OF SAND AND GRAVEL ABOVE WATER TABLE WILL TAKE PLACE IN TWO BENCHES, WITH A MAXIMUM HEIGHT OF 5 METRES B AND WILL COMPLY WITH OHSA REGULATIONS REGARDING FACE HEIGHTS. FRONT END LOADERS WILL BE USED TO EXTRACT MATERIAL AND HAUL TRUCKS OR CONVEYORS WILL CARRY MATERIAL TO THE PLANT FOR FURTHER PROCESSING. HAUL ROADS WILL BE CONSTRUCTED AS REQUIRED. REFER TO SECTIONS A-A', B-B', C-C' ON DRAWING 3 OF 4 FOR FURTHER DETAILS. HAUL ROADS SHALL BE CONSTRUCTED AS REQUIRED.

b) PORTABLE PROCESSING EQUIPMENT, FOR CRUSHING, SCREENING, AND WASHING WILL BE USED ON SITE AND WILL BE LOCATED ON THE PIT FLOOR CLOSE TO THE FACE. IN ADDITION TO PROCESSING, SITE ACTIVITIES WILL INCLUDE STRIPPING AND REHABILITATION. OPERATIONAL EQUIPMENT MAY INCLUDE TRUCKS, LOADERS, EXCAVATOR, BACKHOES, BULLDOZERS, SCRAPERS, CONVEYORS, AND OTHER RELATED EQUIPMENT. PROCESSING EQUIPMENT, STACKERS AND PRODUCT STOCKPILES WILL NOT EXCEED ±15 METRES IN HEIGHT AND WILL BE LOCATED IN THE AREAS SHOWN AND/OR CLOSE TO PIT FACES.

c) A PERMIT TO TAKE WATER SHALL BE APPLIED FOR PRIOR TO WASHING ON SITE.

6. MATERIAL FROM OTHER PROPERTIES MAY BE IMPORTED INTO THE SITE FOR BLENDING, CUSTOM PRODUCTS AND/OR RESALE. THIS MAY INCLUDE AGGREGATE AND/OR PLANT IN AREA 2.

i) EXCESS SOIL SHALL ONLY BE IMPORTED FOR BLENDING, RESALE AND/OR TEMPORARY STORAGE ON SITE IN ACCORDANCE WITH ONTARIO REGULATION 244/97 UNDER THE AGGREGATE RESOURCES ACT.

ii) LIQUID SOIL, AS DEFINED IN ONTARIO REGULATION 406/19 UNDER THE ENVIRONMENTAL PROTECTION ACT, IS NOT AUTHORIZED FOR IMPORTATION TO THE SITE.

iii) THERE SHALL BE NO FURTHER IMPORTATION OF EXCESS SOIL FOR BLENDING, RESALE, AND/OR TEMPORARY STORAGE ONCE EXCAVATION ON SITE HAS BEEN COMPLETED.

iv) THE TOTAL AMOUNT OF EXCESS SOIL BROUGHT ONTO THE SITE ANNUALLY AND THE TOTAL AMOUNT STORED ON SITE AT ANY ONE TIME WILL NOT EXCEED 25,000 M3.

7. TEMPORARY STORAGE BUILDINGS/TRAILERS MAY BE LOCATED ON SITE AS REQUIRED.

HYDROGEOLOGICAL INFORMATION

8. THE MAXIMUM PREDICTED WATER TABLE ELEVATION WITHIN THE KELLY PIT EXTRACTION AREA FROM APPROXIMATELY 280.5 MASL (NEAR BH-03-23) TO 265 MASL (NEAR BH-04-23) (A.S.L.). REFER TO SECTIONS ON SHEET 3 OF 4.

9. SURFACE DRAINAGE WILL BE DIRECTED TO LOW AREAS FOR WATER TO INFILTRATE INTO THE GRANULAR MATERIALS ON THE PIT FLOOR. THERE WILL BE NO OFF-SITE DITCHING DISCHARGE.

NOISE MITIGATION INFORMATION

10. HOURS OF OPERATION:
SITE PREPARATION AND REHABILITATION: 07:00-19:00 WEEKDAYS, 07:00 - NOON SATURDAYS
EXCAVATION AND PROCESSING: 07:00-19:00 WEEKDAYS, 07:00 - NOON SATURDAYS
SHIPPING: 07:00-19:00 WEEKDAYS, 07:00 - NOON SATURDAYS

AIR QUALITY INFORMATION

11. WATER OR CALCIUM CHLORIDE WILL BE APPLIED TO INTERNAL HAUL ROADS AND PROCESSING AREAS AS OFTEN AS REQUIRED TO MITIGATE DUST.

SITE MANAGEMENT INFORMATION

MAINTENANCE / PROTECTION OF VEGETATION INFORMATION

12. EXISTING VEGETATION WITHIN THE LICENCED AREA SHALL BE MAINTAINED IN A HEALTHY VIGOROUS GROWING CONDITION UNTIL SEQUENTIAL STRIPPING BEGINS ON UNTIL THE REHABILITATION IS COMPLETE. ANY VEGETATION PLANTED AS PART OF SITE IMPROVEMENTS OR PROGRESSIVE AND FINAL REHABILITATION WILL ALSO BE MAINTAINED IN A HEALTHY, VIGOROUS GROWING CONDITION.

FENCING INFORMATION

13. UNFENCED BOUNDARIES SHALL BE DEMARCATED WITH HIGHLY VISIBLE MARKER POSTS AT INTERVISIBLE INTERVALS. ALL FENCING AND MARKER POSTS SHALL BE MAINTAINED. SILTERSION CONTROL FENCING WILL BE CONSTRUCTED ONCE STRIPPING OCCURS WITHIN 50m OF THE SETBACK ADJACENT TO THE HUMPHREY DRAIN AND THE NATURAL FEATURES AND SHALL BE MAINTAINED UNTIL ADJACENT AREA IS STABLE AND VEGETATED. ALL FENCING AND POSTS/STAKES SHALL BE MAINTAINED.

TOPSOIL/SUBSOIL/OVERBURDEN STORAGE INFORMATION

14. TOPSOIL AND OVERBURDEN SHALL BE STRIPPED AND STORED SEPARATELY IN BERMS WHERE SHOWN AND IN STOCKPILES ON THE PIT FLOOR.

BERM INFORMATION

15. BERMS SHALL BE A MINIMUM OF +2.0 METRES ABOVE THE EXISTING GRADE, OR AS SPECIFIED IN THE NOISE ASSESSMENT REPORT DATED JULY 2025 AND SHOWN ON OPERATIONAL PLAN. BERMS SHALL NOT EXCEED +6M AS PER TYPICAL BERM CROSS SECTION ON DRAWING 3 OF 4 DETAILS AND SECTIONS. ALL BERMS SHALL BE SEEDED USING GRASS/LEGUME MIXTURE. SEE REHABILITATION PLAN. NOTE: MINIMIZE DAILY UPON COMPLETION TO MINIMIZE NOISE, DUST AND EROSION.

16. ON COMPLETION OF THE BERMS, EXCESS ON-SITE OVERBURDEN WILL BE USED TO PROGRESSIVELY BACKFILL AND REHABILITATE THE SITE. TOPSOIL CAN BE TEMPORARILY STOCKPILED ON THE PIT FLOOR.

SCRAP STORAGE INFORMATION

17. ALL SCRAP, USED MACHINERY AND STUMPS GENERATED THROUGH THE OPERATIONS WITHIN THIS LICENCE WILL BE STORED IN THE SCRAP AREA AS SHOWN. A MINIMUM OF 30m FROM THE BOUNDARY OF THE SITE AND NOT WITHIN 30m OF ANY BODY OF WATER. SCRAP SHALL BE DISPOSED OF ON AN ONGOING BASIS, UPON COMPLETION OF EXTRACTION, ALL SCRAP EQUIPMENT AND USED MACHINERY SHALL BE REMOVED.

TREE/STUMP REMOVAL

18. STUMPS/ WOODY MATERIAL MAY BE CHIPPED AND USED FOR SOIL ENHANCEMENT DURING PROGRESSIVE REHABILITATION. TREES WILL BE HARVESTED AND SOLD AS LUMBER OR UTILIZED FOR FIREWOOD AND/ OR THEIR BEST USE.

FUEL STORAGE

19. THERE SHALL BE NO FUEL STORAGE ON SITE. REFUELING SHALL BE BY PORTABLE FUEL TANKS.

SPILLS PLAN

20. IN CASE OF AN ACCIDENTAL SPILL OF PETROLEUM PRODUCTS, THE FOLLOWING CONTINGENCY PLAN WILL BE ACTIVATED:
a) THE MINISTRY OF ENVIRONMENT & CLIMATE CHANGE (SEE ADDRESS & PHONE NUMBER BE, OW) AND THE MUNICIPALITY LANDOWNERS WILL BE NOTIFIED.
b) FOR A LEAKAGE OR SPILL IMMEDIATE ACTION WILL BE TAKEN TO STOP IT, AT THE SAME TIME MEASURES WILL BE TAKEN TO PREVENT SPREADING. THESE MEASURES MAY INCLUDE BUILDING OF A BERM OR CONSTRUCTION OF A DITCH FOR INSTANCE.
c) THE PIT OPERATOR SHALL COMMENCE RECOVERY PROCEDURES BY THE SPILLED SUBSTANCE INTO CONTAINERS.
d) THE SOIL IN THE AREA AFFECTED BY THE SPILL OR LEAK SHALL BE REMOVED AND DISPOSED OF AT A LOCATION PRESCRIBED BY THE MINISTRY OF THE ENVIRONMENT & CLIMATE CHANGE.

SITE PLAN VARIANCES

THE FOLLOWING CONDITIONS ILLUSTRATED ON THESE PLANS VARY FROM THE OF THE PROVINCIAL STANDARDS MADE UNDER THE AGGREGATE RESOURCES ACT

ITEM		SECTION
1.	THE EAST BOUNDARY REGULATORY SETBACK IS REDUCED TO 0m PER AGREEMENT WITH ADJACENT LICENSEE/LANDOWNER.	0.13(1)10i
2.	THE NORTH AND SOUTH BOUNDARY REGULATORY SETBACK IS REDUCED TO 0m, ADJACENT LAND IS OWNED BY LICENSEE.	
3.	STOCKPILING AND PROCESSING EQUIPMENT MAY BE LOCATED WITHIN 30m OF THE COMMON EAST BOUNDARY PER AGREEMENT WITH ADJACENT LICENSEE/LANDOWNER AND WITHIN 30m OF THE SOUTH AND NORTH BOUNDARY, LICENSEE OWNS ADJACENT LAND.	0.13(1)13i
4.	FENCING SHALL BE OMITTED ALONG THE COMMON EAST LICENCE BOUNDARY PER AGREEMENT WITH ADJACENT LICENCEE.	0.13(2)a
5.	FENCING SHALL BE OMITTED ALONG THE SOUTH AND NORTH WOODED BOUNDARY, ADJACENT LAND OWNED BY LICENSEE AND WOODLANDS/MAYNE PREVENT ACCESS.	
6.	AN ENTRANCE/EXIT MAY BE LOCATED ANYWHERE ALONG THE COMMON EAST LICENSED BOUNDARY AND A GATE SHALL BE OMITTED PER AGREEMENT WITH ADJACENT LICENSEE.	0.13(1)1

LEGEND

- BOUNDARY OF PROPOSED LICENCE
- BOUNDARY OF EXISTING LICENCED AREA
- 120m INFORMATION BOUNDARY
- PROPERTY LINES
- LOT LINE
- EXTRACTION LIMIT/SETBACK
- LPRCA REGULATED AREA LINE
- EXISTING WATERWAY
- EXISTING FENCE
- 285 EXISTING 5m ASL CONTOUR LINE
- 284 EXISTING 1m ASL CONTOUR LINE
- EXISTING VEGETATION
- EXISTING WATER
- EXISTING WETLAND
- A LOCATION OF SECTION
- EXTRACTION FACE
- BERM (MIN. HEIGHT AS SHOWN)
- UNDISTURBED AREA
- AREA STRIPPED OF TOPSOIL AND OVERBURDEN
- SILT FENCE
- PROGRESSIVE REHABILITATION
- FINAL REHABILITATION
- 214 201.5 EXISTING ELEVATION PROPOSED ELEVATION
- EXISTING BUILDING
- MP EXISTING HYDRO POLE
- DIRECTION OF SURFACE WATER DRAINAGE
- EXISTING ENTRANCE/EXIT
- BH 1 BOREHOLE LOCATION AND NUMBER DRILLED AND MONITORING WELL LOCATION AND NUMBER BY ELEMENTS GEO CORP. UNDER THE SUPERVISION OF ENGLOBE
- TP 10 TEST PIT LOCATION AND NUMBER DUG MAY 2023 BY ALLAN'S EXCAVATING UNDER THE SUPERVISION OF ENGLOBE
- GATED FARM ACCESS
- GATED ENTRANCE/EXIT
- DIRECTION OF EXTRACTION
- DIRECTION OF TOPSOIL AND OVERBURDEN MOVEMENT
- R3 LOCATION OF NOISE RECEPTOR
- MP PROPOSED MARKER POST

NO.	BY	REVISIONS	MONTH	YR	MAR

Pre Licence Review — Site Plan Amendments

Harrington McAvan Ltd
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Unionville, Ontario L3R 2E5
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Project Name

2690905 ONTARIO INC.

KELLY PIT

LICENCE No.

LICENCEE SIGNATURE

LOT 5, CONCESSION 2 WOODHOUSE
(FORMERLY TOWNSHIP OF WOODHOUSE), COUNTY OF NORFOLK

Scale 1:2000 (0 10 40 80m)	North	Stamp
Drawing Status: SUBMITTED FOR LICENCE APPROVAL		
Drawn SR	Checked RM	Issue Date AUG 2025
Drawing Title: OPERATIONAL PLAN PHASES A TO C		Project Number 24-26
		Drawing Number 2 OF 4

4.2 SITE TRAFFIC GENERATION AND DISTRIBUTION

Site-generated traffic volumes from the proposed gravel pit have been estimated based on operational forecasts for average daily extraction to determine the average truck traffic for the site. The following outlines the rationale used:

- Maximum of 325,000 tonnes extracted per year.
- Assuming 210 construction days per year, average daily extraction would be 1,548 tonnes per work day.
- Assuming an average load of 33 tonnes per truck, would mean average daily truck traffic of 47 trucks per day.
- Assuming a 10-hour workday, the truck traffic would **average 5 trucks per hour** over the course of a year.

For consideration of the peak hour site traffic, conservative assumptions for increased demand during the peak season and peak hour were applied as follows:

- Assuming peak season days may have a 120% greater output demand than the annual average, peak daily extraction would be 3,710 tonnes per day.
- This would equate to peak daily truck traffic of 113 trucks per day and a peak season average of 11 trucks per hour.
- Assuming the peak hour of truck traffic may be approximately one and a half times (1.5x) that of the average hour, the **peak truck traffic would be 17 trucks per hour (17 trips in and 17 trips out**).

While the peak hour for truck traffic is most likely to occur outside of the peak hours of the road traffic, we have applied the peak truck traffic to both the AM and PM peak hours being assessed in this study.

It is our understanding that there is no principal destination for the aggregate from the proposed pit, and it will largely serve the local area, therefore the site traffic has been distributed through the study area to reflect the surrounding populated areas and potential routes on County roads. The resulting trip distribution is summarized in Table 5.

Table 5: Trip Distribution Summary

DIRECTION TO / FROM	VIA	IN	OUT
North	Norfolk Street South (CR 24)	12%	12%
	Blueline Road	12%	12%
	Cockshutt Road	12%	12%
	Highway 6	12%	12%
South	Norfolk Street South (CR 24)	12%	12%
	Cockshutt Road	5%	5%
West	St. John's Road East	18%	18%
	Highway 6 (at Blueline Road)	0%	0%
East	St. John's Road East	5%	5%
	Highway 6 (at Blueline Road)	12%	12%
	Total	100%	100%

With the above distribution applied, the resulting site traffic for the AM and PM peak hours is illustrated in **Figure** 11.

4.3 SITE ACCESS CONSIDERATIONS

The existing site access that will serve the proposed pit was installed in 2023 (with County approval) to provide an alternative primary access to the Thompson Pit. The site access is located at the west end of the property and does not conflict with any other driveways or intersections.

Sightlines along St. John's Road East at the proposed site access location were reviewed with respect to Transportation Association of Canada (TAC) guidelines for intersection sight distances. For a conservative design speed of 100 km/h, the TAC GDGCR recommends a minimum intersection sight distance of 210 m for passenger cars and 265 m for trucks. The available sight distance is over 300 m in each direction, therefore there are no concerns about sight distances at the proposed site access.

The potential need for a left turn lane on St. John's Road East at the site access was reviewed based on left turn lane warrant graphs from the Ministry of Transportation Design Supplement for the TAC Geometric Design Guide for Canadian Roads, June 2017 (MTO Design Supplement). For an undivided two-lane road, the warrant is based on the hourly percentage of left-turning vehicles, the advancing traffic volume and the volume of opposing traffic. Using the combination of site traffic and 2035 background traffic (i.e. the 2035 total traffic condition, as presented in Section 5), the warrant graph is shown in Figure 12.

Figure 11: Site Traffic

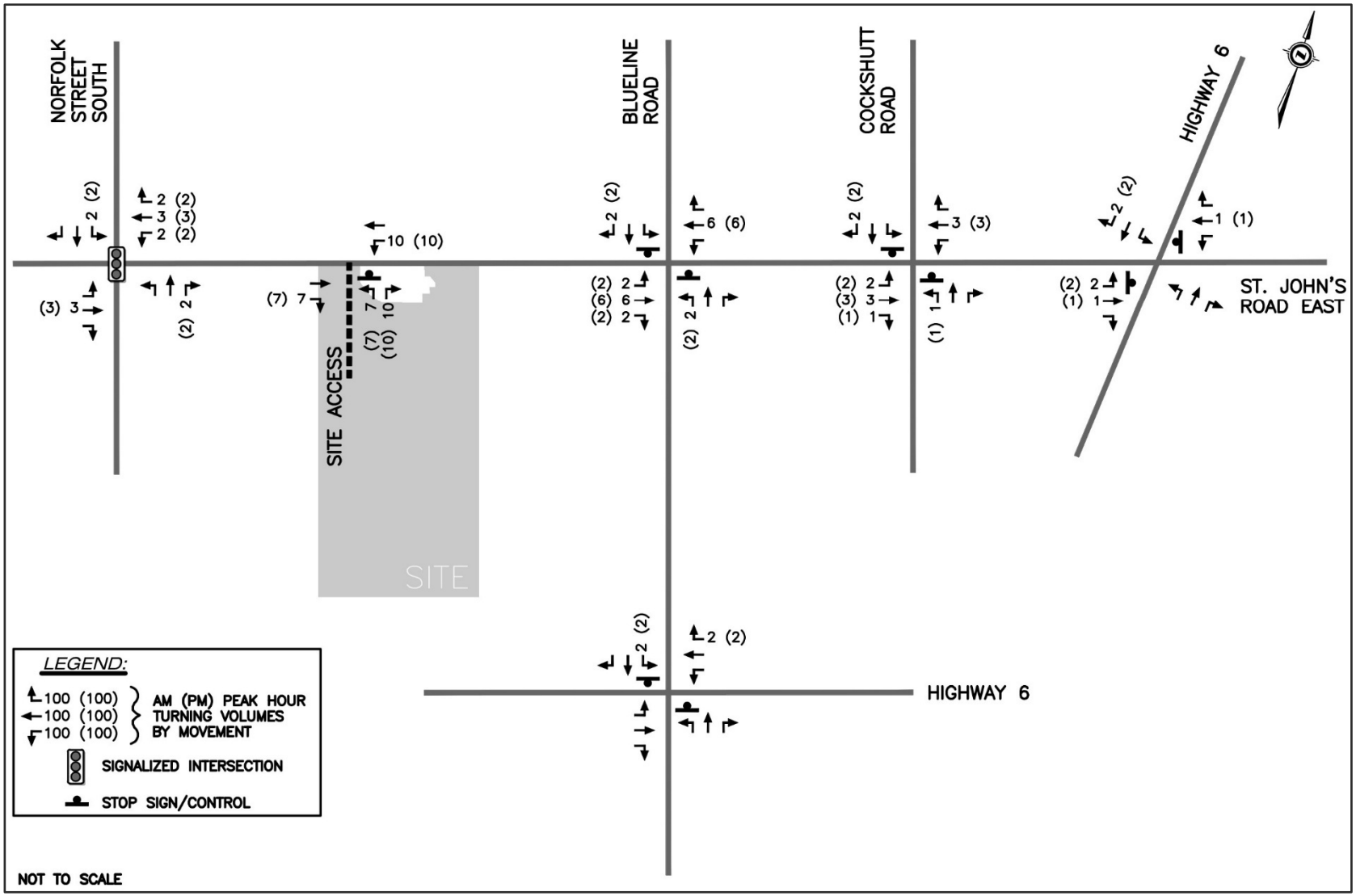
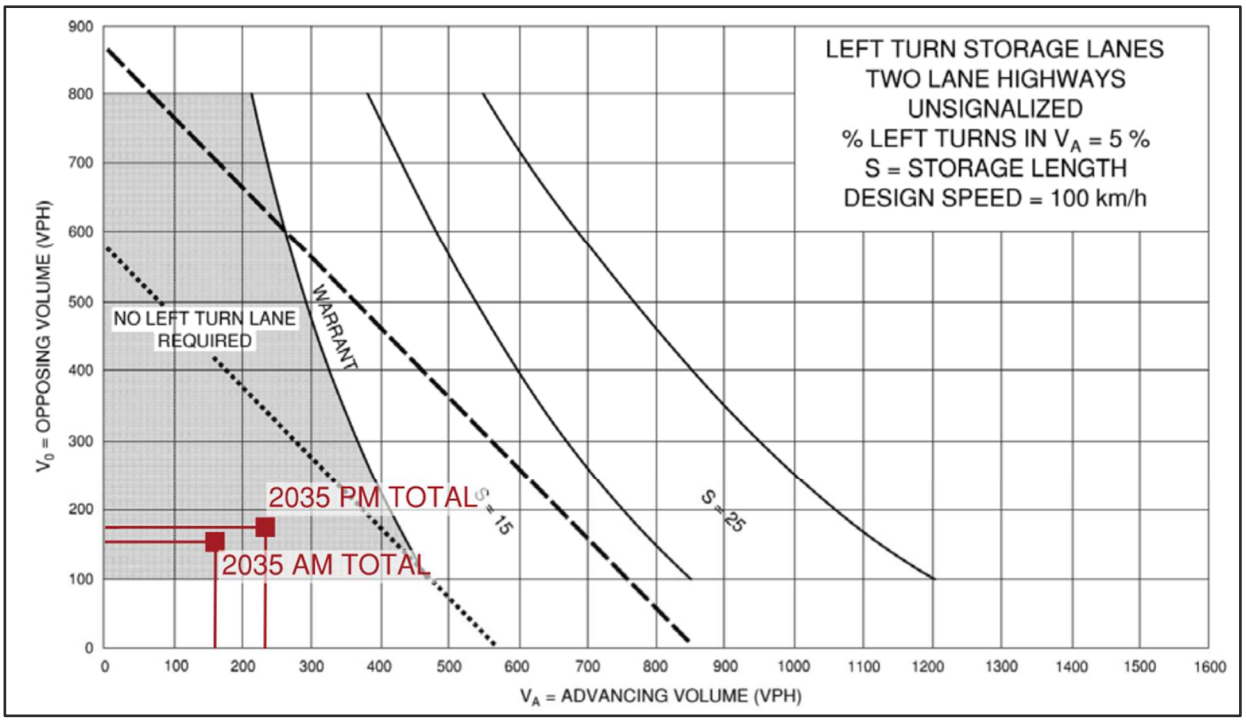


Figure 12: Left Turn Lane Warrant Analysis for the Proposed Site Access



Source: MTO Design Supplement

Based on the warrant graph, a left turn lane is not warranted on St. John's Road East at the site access.

4.4 HAUL ROUTE CONSIDERATIONS

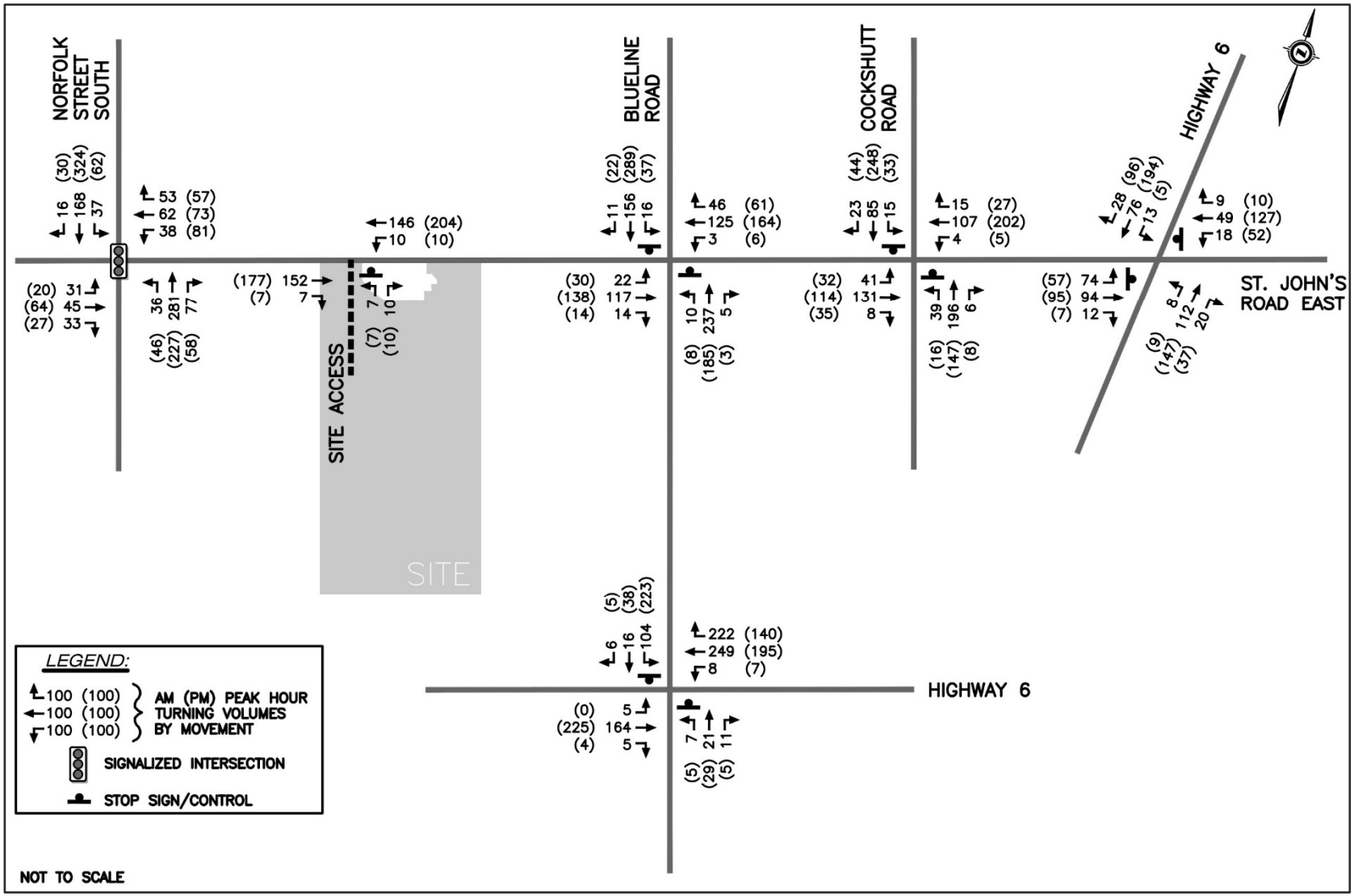
The proposed pit location has direct access to the County road network, which is designed to accommodate heavy truck traffic and provide acceptable haul routes in all directions. St. John's Road East already serves multiple aggregate pits and provides good connectivity to the local area and route options to the broader region that can allow truck traffic to avoid travel through built-up areas.

The study area intersections were reviewed with respect to accommodating truck traffic and there are no concerns to note. Sightlines were reviewed at the unsignalized intersections and it was concluded that sufficient intersection sight distance (greater than 265 m, which satisfies sight requirements for trucks at 100 km/h design speed) is available at all locations. The potential need for left turn lanes and/or traffic signals at the unsignalized study area intersections are reviewed later in Section 7 and Section 8, respectively.

5 FUTURE TOTAL TRAFFIC

The total future traffic is determined by combining the development traffic (site traffic) from Section 4.2 with the future background traffic from Section 3.3. The resulting 2035 total traffic volumes for the weekday AM and PM peak hours are shown in Figure 13.

Figure 13: 2035 Total Traffic



6 FUTURE TRAFFIC OPERATIONAL ANALYSIS

Intersection operations were re-assessed for future background and total traffic conditions. The results of the future conditions analysis are summarized in Table 6. Detailed Synchro reports for the future background traffic and future total traffic are available in Appendix D and Appendix E, respectively.

Table 6: 2035 Intersection Operations Summary

INTERSECTIONS / MOVEMENTS		2035 BACKGROUND				2035 TOTAL			
		AM PEAK HOUR		PM PEAK HOUR		AM PEAK HOUR		PM PEAK HOUR	
		V/C	LOS	V/C	LOS (DELAY)	V/C	LOS (DELAY)	V/C	LOS (DELAY)
St. John's Road East/West and Norfolk Street South	Overall	0.35	B	0.37	B	0.36	B	0.38	B
	EB LTR	0.44	C	0.29	C	0.44	C	0.29	C
	WB LTR	0.56	C	0.63	C	0.59	C	0.65	C
	NB L	0.06	A	0.07	A	0.06	A	0.08	A
	NB T	0.29	A	0.20	A	0.29	A	0.21	A
	NB R	0.08	A	0.05	A	0.09	A	0.05	A
	SB L	0.06	A	0.09	A	0.07	A	0.09	A
	SB T	0.18	A	0.29	A	0.18	A	0.29	A
	SB R	0.01	A	0.02	A	0.01	A	0.02	A
St. John's Road East and Blueline Road	EB LTR	0.02	A	0.02	A	0.02	A	0.03	A
	WB LTR	0.00	A	0.00	A	0.00	A	0.00	A
	NB LTR	0.54	C	0.46	C	0.57	C	0.49	C
	SB LTR	0.41	C	0.80	E	0.43	C	0.83	E
St. John's Road East and Cockshutt Road	EB LTR	0.03	A	0.02	A	0.03	A	0.03	A
	WB LTR	0.00	A	0.00	A	0.00	A	0.00	A
	NB LTR	0.48	C	0.40	C	0.49	C	0.41	C
	SB LTR	0.24	B	0.70	D	0.25	B	0.71	D
St. John's Road East and Highway 6	EB LTR	0.31	B	0.38	C	0.31	B	0.39	C
	WB LTR	0.14	B	0.45	C	0.14	B	0.45	C
	NB LT	0.01	A	0.01	A	0.01	A	0.01	A
	NB R	0.01	A	0.02	A	0.01	A	0.02	A
	SB LT	0.01	A	0.00	A	0.01	A	0.00	A
	SB R	0.02	A	0.06	A	0.02	A	0.06	A
Blueline Road and Highway 6	EB LTR	0.01	A	0.00	A	0.01	A	0.00	A
	WB LTR	0.01	A	0.01	A	0.01	A	0.01	A
	NB LTR	0.13	C	0.09	B	0.14	C	0.09	B
	SB LTR	0.49	D	0.67	D	0.50	D	0.67	D
St. John's Road East and Site Access	EB TR	N/A		N/A		0.10	A	0.12	A
	WB LT					0.01	A	0.01	A
	NB LR					0.03	B	0.03	B

Notes: V/C - Volume to Capacity Ratio, LOS – Level of Service, Delay – Average Delay in Seconds
EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound
L – Left, T – Through, R – Right

The results show that study area intersections will generally continue to operate acceptably through the horizon period with all movements at LOS C or better, except for two movements at LOS D and one movement at LOS E.

The LOS E movement is the southbound movement at St. John's Road East and Blueline Road, which reaches a maximum v/c ratio of 0.83. It is our understanding that the County is already giving consideration to improvements at this intersection, therefore we expect that operations will be monitored in the future and intersection improvements implemented when deemed necessary.

The key conclusion from the results is that the operations for the 2035 total traffic are very similar to the background traffic operations, with only minor increases in v/c ratios for certain movements, which indicates that the site traffic should have a minimal impact on intersection operations.

The St. John's Road East and site access intersection will have no operational issues, and the egress movement is expected to operate well at LOS B.

Queuing results for the 2035 background and total traffic conditions were reviewed from the Synchro analysis to check 95th percentile queue lengths and the results are presented in Table 7.

Table 7: 2035 Intersection Queuing Summary

INTERSECTIONS / MOVEMENTS		TURN LANE STORAGE (m)	95th PERCENTILE QUEUE (m)			
			2035 BACKGROUND TRAFFIC		2035 TOTAL TRAFFIC	
			AM	PM	AM	PM
St. John's Road East/West and Norfolk Street South	EB LTR	-	23	23	24	24
	WB LTR	-	30	44	32	46
	NB L	90	6	8	6	8
	NB T	-	30	27	32	28
	NB R*	5	7	6	7	6
	SB L	85	6	9	6	10
	SB T	-	18	39	19	41
	SB R*	5	5	5	5	5
St. John's Road East and Blueline Road	NB LTR	-	24	18	27	20
	SB LTR	-	15	57	16	61
St. John's Road East and Cockshutt Road	NB LTR	-	18	14	21	15
	SB LTR	-	7	41	7	43
St. John's Road East and Highway 6	EB LTR	-	10	13	10	14
	WB LTR	-	5	17	5	18
Blueline Road and Highway 6	NB LTR	-	5	5	5	5
	SB LTR	-	19	36	20	37
St. John's Road East and Site Access	NB LR	-	N/A		5	5

Notes: EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound
L – Left, T – Through, R – Right
Queue lengths that were less than 5 m have been rounded up to 5 m to represent a minimum of one car length.
* – Taper Length

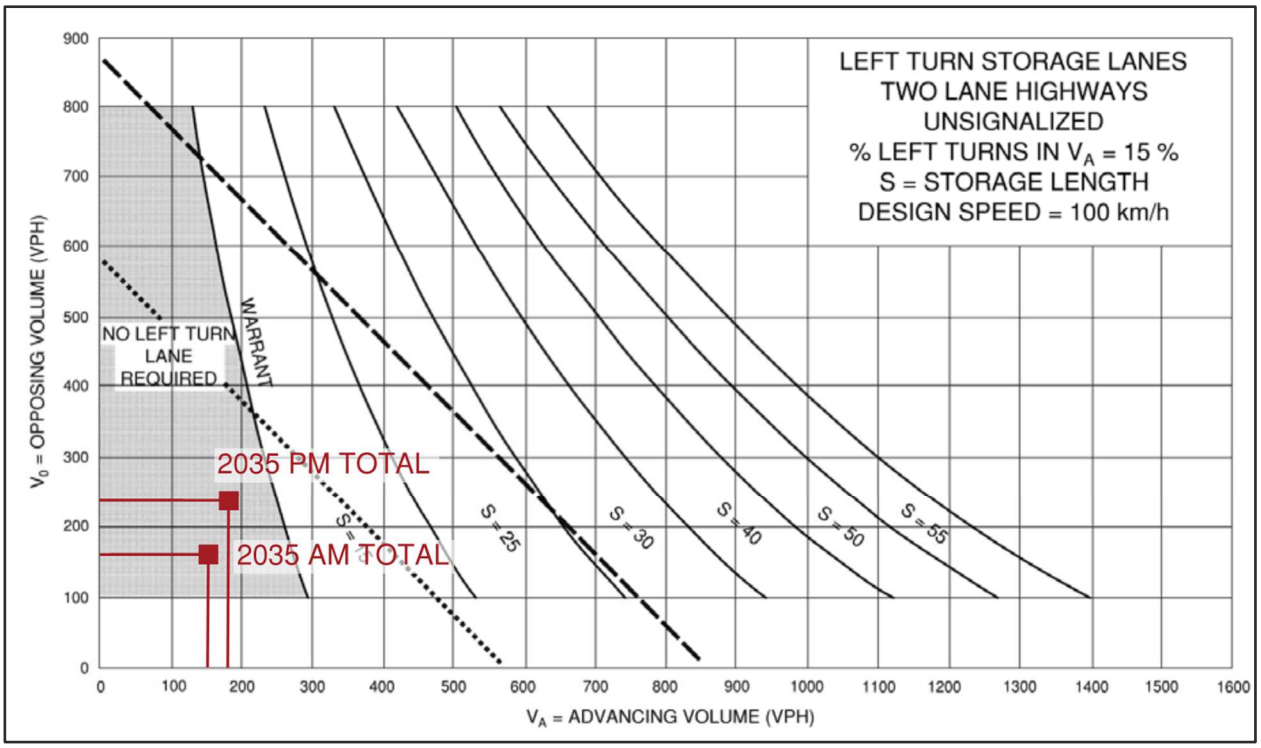
The results in Table 7 indicate that there are no critical queuing concerns at the study area intersections or at the proposed site access on St. John's Road East. While several of the southbound movements

exhibit longer queues, they will not block access to storage lanes or intersections, therefore are not considered problematic.

7 LEFT TURN LANE WARRANT ANALYSIS

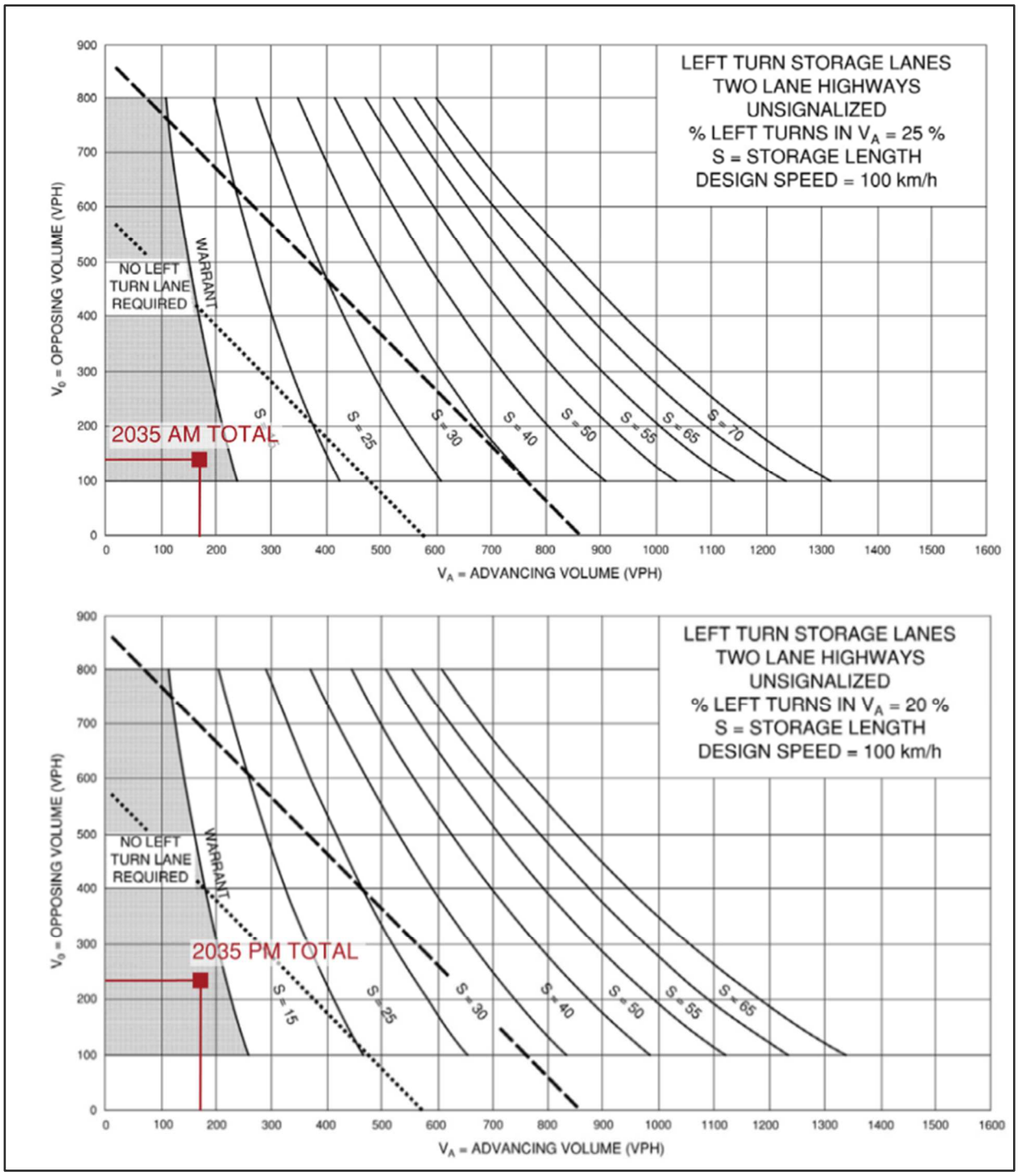
Left turn lane warrants were reviewed for the unsignalized study area intersections based on the left turn lane warrant graphs from the MTO Design Supplement. The warrants were reviewed for the 2035 total traffic conditions for both the AM and PM peak hours at a design speed of 20 km/h over the posted speed, and the results are shown in Figure 14 to Figure 16.

Figure 14: Left Turn Lane Warrant - St. John's Road East and Blueline Road (Eastbound)



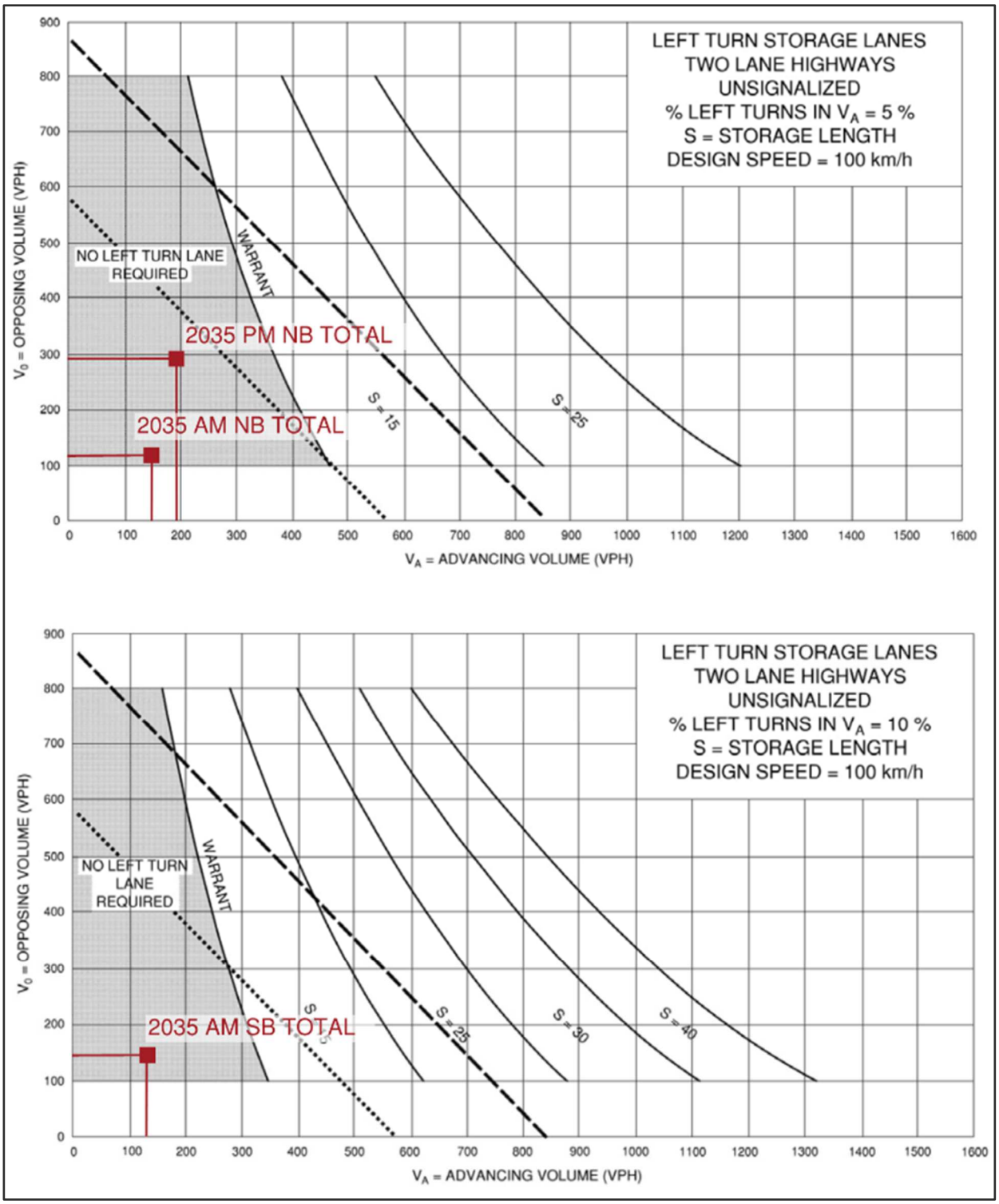
At St. John's Road East at Blueline Road, the westbound hourly percentage of left-turning vehicles is less than 5%, therefore a westbound left-turn lane at the intersection is not warranted. The eastbound left turn was assessed, and as shown in the graph above, an eastbound left turn lane is not warranted.

Figure 15: Left Turn Lane Warrant - St. John's Road East and Cockshutt Road (Eastbound)



At St. John's Road East and Cockshutt Road, the westbound hourly percentage of left-turning vehicles is less than 5%, therefore a westbound left-turn lane at the intersection is not warranted. The eastbound left turn was assessed, and as shown in the graph above, an eastbound left turn lane is not warranted.

Figure 16: Left Turn Lane Warrant - Highway 6 and St. John's Road East



The southbound PM hourly percentage of left-turning vehicles is less than 5%, therefore a southbound left-turn lane on Highway 6 at the intersection of St. John's Road East is not warranted for the PM peak. The southbound left turn was assessed for the AM peak hour and a northbound left turn lane was assessed

for both peak hours, and as shown in the graph, no left turn lanes are warranted on Highway 6 at St. John's Road East.

At Highway 6 and Blueline Road, the hourly percentage of left-turning vehicles is less than 5% for both the eastbound and westbound left turn movements, therefore, left turn lanes are not warranted.

8 TRAFFIC SIGNAL WARRANT ANALYSIS

While operational analysis confirmed that the stop-controlled study area intersections are expected to operate well throughout the horizon periods, traffic signal warrant analysis was performed to confirm warrants will not be met.

The analysis was based on the Ontario Traffic Manual Book 12, Justification 7 for Projected Volumes. Justification 7 uses the AM and PM peak hour traffic volumes, and in the case of forecasted volumes at an existing intersection, it requires that 120% of the warrant threshold be met to satisfy the warrant.

The signal warrant analysis results are summarized in Table 8 and the warrant worksheets are provided in Appendix F.

Table 8: Traffic Signal Warrant Analysis Summary

INTERSECTION	TRAFFIC CONDITION	JUSTIFICATIONS		MINIMUM REQUIREMENT	TRAFFIC SIGNAL WARRANTED?
		MINIMUM VEHICULAR VOLUME	DELAY TO CROSS TRAFFIC		
		PERCENT FULFILLED	PERCENT FULFILLED		
St. John's Road East and Blueline Road	2035 Background	88%	37%	120%	NO
	2035 Total	90%	39%		NO
St. John's Road East and Cockshutt Road	2035 Background	81%	37%		NO
	2035 Total	82%	38%		NO
St. John's Road East and Highway 6	2035 Background	70%	39%		NO
	2035 Total	70%	39%		NO
Blueline Road and Highway 6	2035 Background	88%	64%		NO
	2035 Total	88%	64%		NO

As shown in the summary table, traffic signals are not anticipated to be warranted at any of the assessed intersections throughout the horizon period.

9 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis completed, the following key conclusions and recommendations are made in this TIS:

- It is forecast that the proposed gravel pit will generate an average of 10 truck trips per hour (5 in and 5 out) on an annual basis, with up to 34 trips per hour (17 in and 17 out) generated in a peak hour during the peak season.
- Under existing conditions, all movements at the study area intersections are operating acceptably, with ample reserve capacity and LOS C or better.
- Under 2035 background and total traffic conditions, the study area intersections will continue to operate acceptably with all movements at LOS C or better and reasonable v/c ratios, except for a few movements reaching LOS D or E. The LOS E movement is at the St. John's Road East and Blueline Road intersection, which we understand the County is already monitoring for the need for future improvements.

  Overall, the analysis results show that the operations for 2035 total traffic conditions are very similar to the 2035 background traffic operations, with only minor increases in v/c ratios for certain movements, which indicates that the site traffic should have a minimal impact on intersection operations.
- The location of the site access does not conflict with any intersections or driveways, meets minimum sight distance requirements, and will operate well throughout and beyond the horizon period.
- Left turn lane warrants were checked for the study area intersections, including the site access on St. John's Road East, for future total traffic conditions, and a left turn lane will not be warranted at any location.
- Traffic signal warrants were reviewed for the unsignalized study area intersections and it was found that traffic signals are not expected to be warranted at any of the intersections within the 2035 horizon period.
- Direct access to the County road network, which already serves several existing gravel pits in the area, provides ideal haul routes to and from the site with no significant impact expected from the minor additional truck traffic.
- No road network improvements are required to accommodate the proposed gravel pit.

10 LIMITATIONS

This Report was prepared by Strik, Baldinelli, Moniz Ltd. (the Consultant) for 2690905 Ontario Inc. and the County of Norfolk. Use of this Report by any third party, or any reliance upon its findings, is solely the responsibility of that party. Strik, Baldinelli, Moniz Ltd. accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions undertaken as a result of this Report. Third party use of this Report, without the express written consent of the Consultant, denies any claims, whether in contract, tort, and/or any other cause of action in law, against the Consultant.

All findings and conclusions presented in this Report are based on information as it appeared during the period of the investigation. This Report is not intended to be exhaustive in scope, or to imply a risk-free development. It should be recognized that the passage of time may alter the opinions, conclusions, and/or recommendations provided herein.

The analysis was limited to the documents referenced herein. Strik, Baldinelli, Moniz Ltd. accepts no responsibility for the accuracy of the information provided by others. All opinions, conclusions, and/or recommendations presented in this Report are based on the information available at the time of the review.

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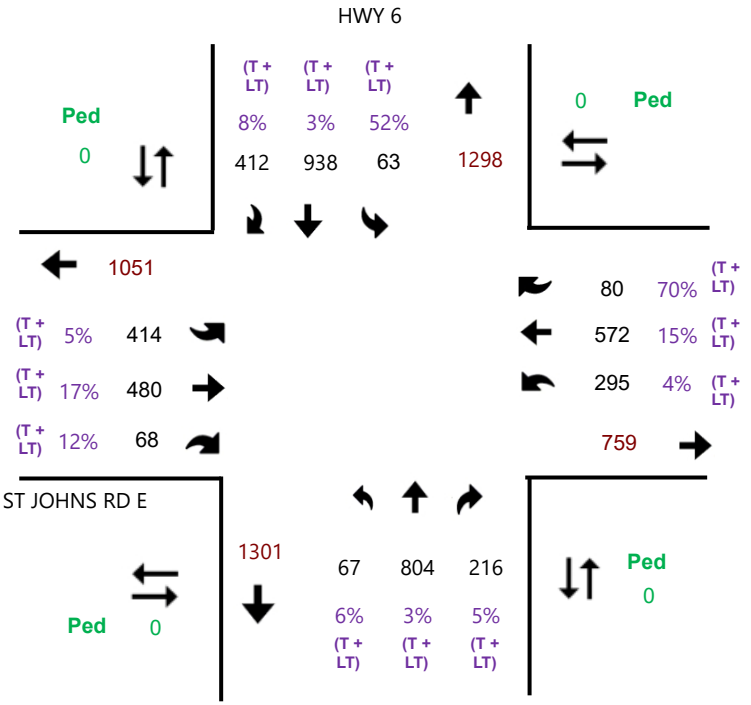
Appendix A – Traffic Data

Ontario

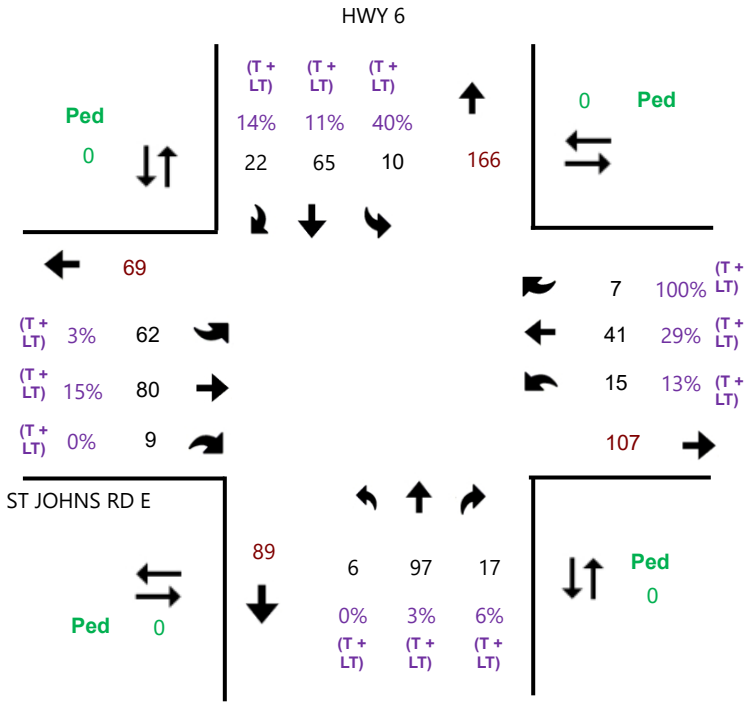
TES - Traffic Engineering System
Turning Movement Total Count and Peak Summary Report

Description: HWY 6 @ ST JOHNS RD E
Region WEST
Hwy #: HWY 6
LHRS_Offset: 13410_0213
Int. Type: Cross
Count Date: Thursday, 24 August, 2023

Full Study Thu, 24 Aug, 2023 07:00 AM - 06:00 PM



AM Period Thu, 24 Aug, 2023 07:30 AM - 08:30 AM

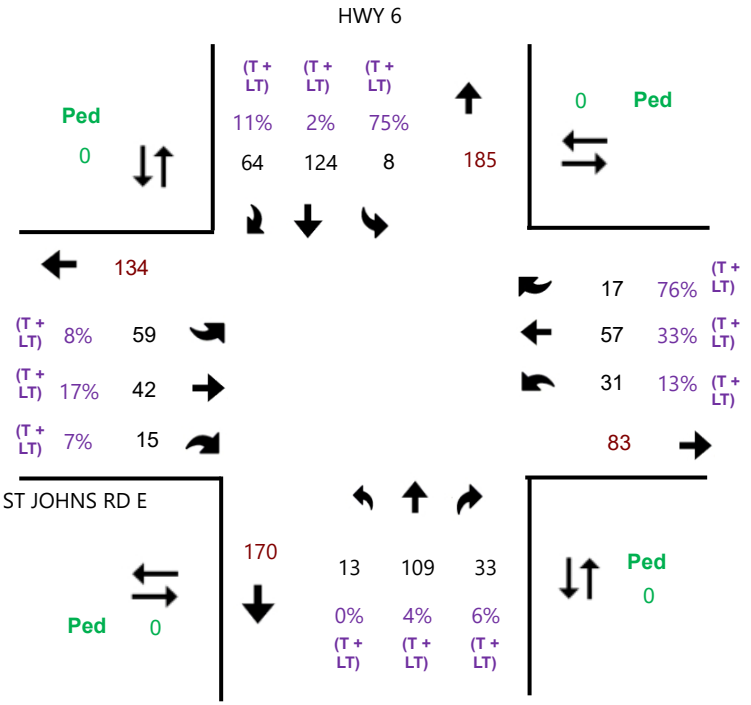


Ontario

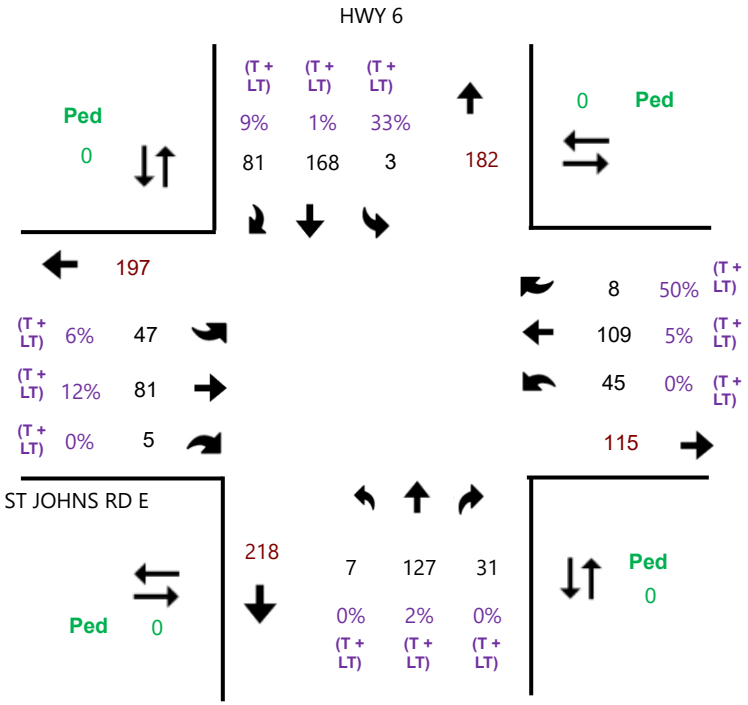
TES - Traffic Engineering System
Turning Movement Total Count and Peak Summary Report

Description: HWY 6 @ ST JOHNS RD E
Region WEST
Hwy #: HWY 6
LHRS_Offset: 13410_0213
Int. Type: Cross
Count Date: Thursday, 24 August, 2023

MD Period Thu, 24 Aug, 2023 12:45 PM - 01:45 PM



PM Period Thu, 24 Aug, 2023 04:15 PM - 05:15 PM



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Norfolk
Site #: 2513400001
Intersection: Norfolk St S & St.Johns Rd E
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Norfolk St S runs N/S

North Leg Total:	525
North Entering:	197
North Peds:	1
Peds Cross:	⋈

Heavys	1	8	0	9
Trucks	0	1	1	2
Cars	13	143	30	186
Totals	14	152	31	

Heavys	9
Trucks	4
Cars	315
Totals	328

East Leg Total:	267
East Entering:	131
East Peds:	0
Peds Cross:	⧖

Norfolk St S

Heavys	Trucks	Cars	Totals
8	1	90	99

St.Johns Rd W

Heavys	Trucks	Cars	Totals
0	1	27	28
10	1	27	38
1	0	28	29
11	2	82	

Cars	Trucks	Heavys	Totals
44	1	1	46
47	1	5	53
27	0	5	32
118	2	11	

N
W E
S

St.Johns Rd E

Cars	Trucks	Heavys	Totals
115	6	15	136

Norfolk St S

Peds Cross:	⧖
West Peds:	0
West Entering:	95
West Leg Total:	194

Cars	198
Trucks	1
Heavys	14
Totals	213

Cars	30	244	58	332
Trucks	0	2	4	6
Heavys	2	8	5	15
Totals	32	254	67	

Peds Cross:	⋈
South Peds:	0
South Entering:	353
South Leg Total:	566

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

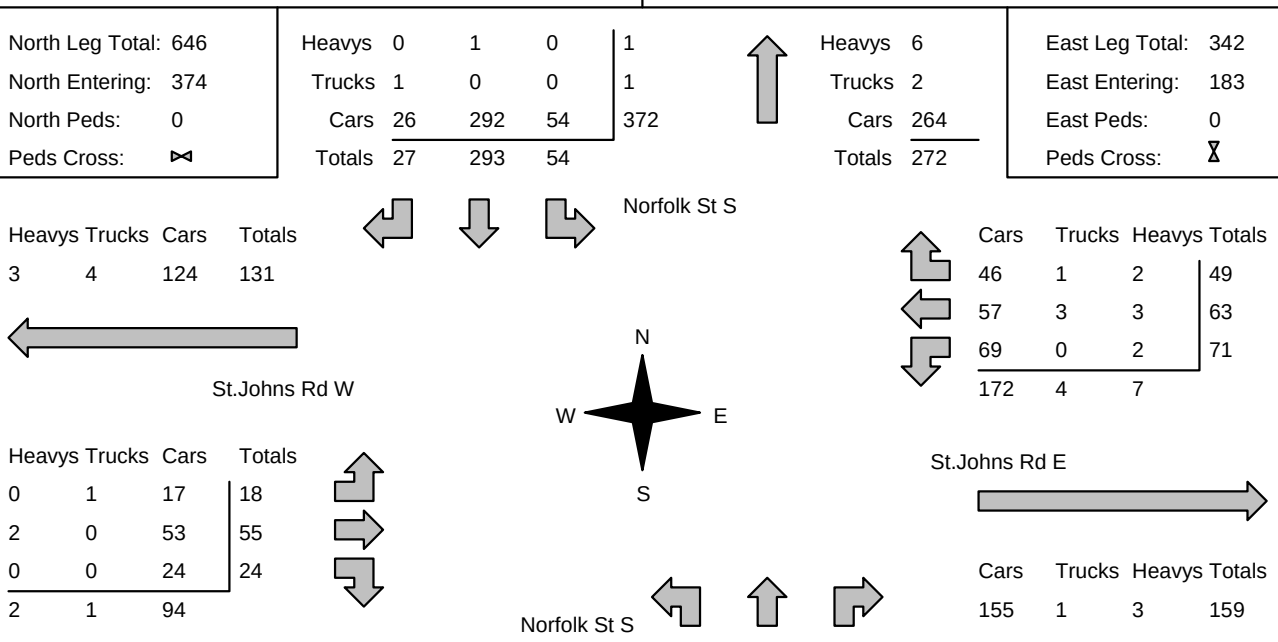
Municipality: Norfolk
Site #: 2513400001
Intersection: Norfolk St S & St.Johns Rd E
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Norfolk St S runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

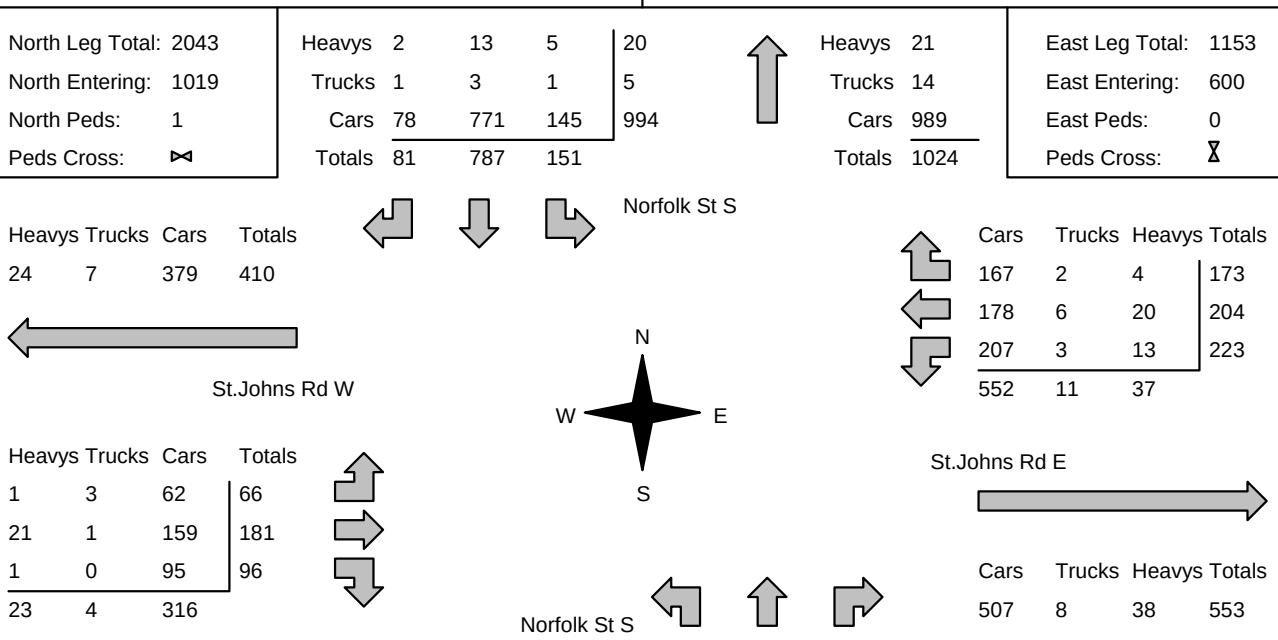
Municipality: Norfolk
Site #: 2513400001
Intersection: Norfolk St S & St.Johns Rd E
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Norfolk St S runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Norfolk St S & St.Johns Rd E | **Count Date:** 4-Sep-25 | **Municipality:** Norfolk

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*23*	*96*	*11*	*130*	*0*
9:00:00	*31*	*152*	*14*	*197*	*1*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*56*	*286*	*26*	*368*	*0*
18:00:00	*41*	*253*	*30*	*324*	*0*
Totals:	151	787	81	1019	1

North/South Total Approaches: *2150*

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*13*	*149*	*62*	*224*	*0*
9:00:00	*32*	*254*	*67*	*353*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*49*	*205*	*38*	*292*	*0*
18:00:00	*31*	*177*	*54*	*262*	*0*
S Totals:	125	785	221	1131	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*44*	*39*	*35*	*118*	*0*
9:00:00	*32*	*53*	*46*	*131*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*69*	*59*	*51*	*179*	*0*
18:00:00	*78*	*53*	*41*	*172*	*0*
Totals:	223	204	173	600	0

East/West Total Approaches: *943*

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*8*	*45*	*7*	*60*	*0*
9:00:00	*28*	*38*	*29*	*95*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*19*	*54*	*30*	*103*	*0*
18:00:00	*11*	*44*	*30*	*85*	*0*
W Totals:	66	181	96	343	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*97*	*114*	*0*	*147*	*142*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	9	9	14	14	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	16	7	42	28	5	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0
7:45:00	17	1	65	23	7	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0
8:00:00	21	4	94	29	11	4	0	0	0	0	0	0	2	0	2	2	0	0	0	0
8:15:00	30	9	116	22	14	3	0	0	1	1	0	0	2	0	3	1	1	1	0	0
8:30:00	38	8	136	20	15	1	1	1	1	0	0	0	2	0	4	1	1	0	0	0
8:45:00	44	6	182	46	18	3	1	0	1	0	0	0	2	0	5	1	1	0	1	1
9:00:00	51	7	237	55	24	6	1	0	1	0	0	0	2	0	10	5	1	0	1	0
9:15:00	51	0	237	0	24	0	1	0	1	0	0	0	2	0	10	0	1	0	1	0
16:00:00	51	0	237	0	24	0	1	0	1	0	0	0	2	0	10	0	1	0	1	0
16:15:00	63	12	312	75	28	4	1	0	3	2	0	0	3	1	11	1	2	1	1	0
16:30:00	78	15	373	61	37	9	1	0	3	0	0	0	3	0	11	0	2	0	1	0
16:45:00	93	15	444	71	40	3	1	0	3	0	0	0	3	0	11	0	2	0	1	0
17:00:00	106	13	519	75	48	8	1	0	3	0	1	1	3	0	12	1	2	0	1	0
17:15:00	117	11	604	85	54	6	1	0	3	0	1	0	3	0	12	0	2	0	1	0
17:30:00	132	15	673	69	65	11	1	0	3	0	1	0	5	2	13	1	2	0	1	0
17:45:00	139	7	717	44	71	6	1	0	3	0	1	0	5	0	13	0	2	0	1	0
18:00:00	145	6	771	54	78	7	1	0	3	0	1	0	5	0	13	0	2	0	1	0
18:15:00	145	0	771	0	78	0	1	0	3	0	1	0	5	0	13	0	2	0	1	0
18:15:15	145	0	771	0	78	0	1	0	3	0	1	0	5	0	13	0	2	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	7	7	7	7	8	8	1	1	0	0	0	0	2	2	1	1	1	1	0	0
7:30:00	19	12	12	5	18	10	1	0	0	0	0	0	4	2	2	1	1	0	0	0
7:45:00	32	13	20	8	23	5	1	0	0	0	0	0	4	0	5	3	1	0	0	0
8:00:00	39	7	30	10	34	11	1	0	0	0	0	0	4	0	9	4	1	0	0	0
8:15:00	45	6	40	10	43	9	1	0	0	0	1	1	5	1	10	1	1	0	0	0
8:30:00	51	6	58	18	55	12	1	0	1	1	1	0	5	0	13	3	1	0	0	0
8:45:00	59	8	69	11	67	12	1	0	1	0	1	0	7	2	14	1	2	1	0	0
9:00:00	66	7	77	8	78	11	1	0	1	0	1	0	9	2	14	0	2	0	0	0
9:15:00	66	0	77	0	78	0	1	0	1	0	1	0	9	0	14	0	2	0	0	0
16:00:00	66	0	77	0	78	0	1	0	1	0	1	0	9	0	14	0	2	0	0	0
16:15:00	82	16	83	6	88	10	1	0	1	0	1	0	9	0	17	3	2	0	0	0
16:30:00	97	15	102	19	102	14	1	0	3	2	1	0	10	1	18	1	3	1	0	0
16:45:00	113	16	118	16	111	9	1	0	4	1	1	0	10	0	19	1	3	0	0	0
17:00:00	134	21	127	9	126	15	1	0	4	0	2	1	10	0	20	1	4	1	0	0
17:15:00	151	17	140	13	134	8	1	0	4	0	2	0	11	1	20	0	4	0	0	0
17:30:00	162	11	154	14	146	12	1	0	6	2	2	0	12	1	20	0	4	0	0	0
17:45:00	187	25	168	14	159	13	3	2	6	0	2	0	12	0	20	0	4	0	0	0
18:00:00	207	20	178	10	167	8	3	0	6	0	2	0	13	1	20	0	4	0	0	0
18:15:00	207	0	178	0	167	0	3	0	6	0	2	0	13	0	20	0	4	0	0	0
18:15:15	207	0	178	0	167	0	3	0	6	0	2	0	13	0	20	0	4	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	29	29	14	14	0	0	1	1	1	1	0	0	0	0	1	1	0	0
7:30:00	4	3	63	34	33	19	0	0	3	2	1	0	0	0	0	0	3	2	0	0
7:45:00	8	4	96	33	47	14	0	0	3	0	1	0	0	0	0	0	3	0	0	0
8:00:00	13	5	142	46	56	9	0	0	5	2	1	0	0	0	2	2	5	2	0	0
8:15:00	20	7	190	48	72	16	0	0	5	0	2	1	0	0	3	1	6	1	0	0
8:30:00	26	6	260	70	89	17	0	0	5	0	2	0	0	0	3	0	9	3	0	0
8:45:00	39	13	330	70	102	13	0	0	7	2	4	2	1	1	9	6	9	0	0	0
9:00:00	43	4	386	56	114	12	0	0	7	0	5	1	2	1	10	1	10	1	0	0
9:15:00	43	0	386	0	114	0	0	0	7	0	5	0	2	0	10	0	10	0	0	0
16:00:00	43	0	386	0	114	0	0	0	7	0	5	0	2	0	10	0	10	0	0	0
16:15:00	58	15	437	51	122	8	0	0	7	0	5	0	2	0	11	1	10	0	0	0
16:30:00	68	10	500	63	131	9	0	0	7	0	5	0	2	0	13	2	10	0	0	0
16:45:00	84	16	551	51	143	12	0	0	7	0	5	0	2	0	15	2	11	1	0	0
17:00:00	92	8	586	35	151	8	0	0	7	0	5	0	2	0	15	0	11	0	0	0
17:15:00	99	7	638	52	170	19	0	0	7	0	6	1	2	0	15	0	11	0	0	0
17:30:00	108	9	680	42	187	17	0	0	8	1	6	0	2	0	15	0	12	1	0	0
17:45:00	117	9	718	38	192	5	0	0	8	0	6	0	2	0	15	0	12	0	0	0
18:00:00	123	6	760	42	203	11	0	0	9	1	6	0	2	0	16	1	12	0	0	0
18:15:00	123	0	760	0	203	0	0	0	9	0	6	0	2	0	16	0	12	0	0	0
18:15:15	123	0	760	0	203	0	0	0	9	0	6	0	2	0	16	0	12	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	10	10	2	2	0	0	0	0	0	0	0	0	4	4	0	0	0	0
7:30:00	4	3	20	10	3	1	0	0	0	0	0	0	0	0	5	1	0	0	0	0
7:45:00	6	2	28	8	5	2	0	0	0	0	0	0	0	0	6	1	0	0	0	0
8:00:00	7	1	38	10	7	2	0	0	0	0	0	0	1	1	7	1	0	0	0	0
8:15:00	10	3	45	7	10	3	0	0	1	1	0	0	1	0	12	5	1	1	0	0
8:30:00	12	2	51	6	16	6	1	1	1	0	0	0	1	0	16	4	1	0	0	0
8:45:00	24	12	56	5	28	12	1	0	1	0	0	0	1	0	16	0	1	0	0	0
9:00:00	34	10	65	9	35	7	1	0	1	0	0	0	1	0	17	1	1	0	0	0
9:15:00	34	0	65	0	35	0	1	0	1	0	0	0	1	0	17	0	1	0	0	0
16:00:00	34	0	65	0	35	0	1	0	1	0	0	0	1	0	17	0	1	0	0	0
16:15:00	38	4	76	11	48	13	2	1	1	0	0	0	1	0	19	2	1	0	0	0
16:30:00	46	8	91	15	54	6	2	0	1	0	0	0	1	0	19	0	1	0	0	0
16:45:00	50	4	105	14	59	5	2	0	1	0	0	0	1	0	19	0	1	0	0	0
17:00:00	52	2	116	11	65	6	2	0	1	0	0	0	1	0	20	1	1	0	0	0
17:15:00	55	3	129	13	72	7	3	1	1	0	0	0	1	0	21	1	1	0	0	0
17:30:00	61	6	143	14	83	11	3	0	1	0	0	0	1	0	21	0	1	0	0	0
17:45:00	62	1	151	8	87	4	3	0	1	0	0	0	1	0	21	0	1	0	0	0
18:00:00	62	0	159	8	95	8	3	0	1	0	0	0	1	0	21	0	1	0	0	0
18:15:00	62	0	159	0	95	0	3	0	1	0	0	0	1	0	21	0	1	0	0	0
18:15:15	62	0	159	0	95	0	3	0	1	0	0	0	1	0	21	0	1	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

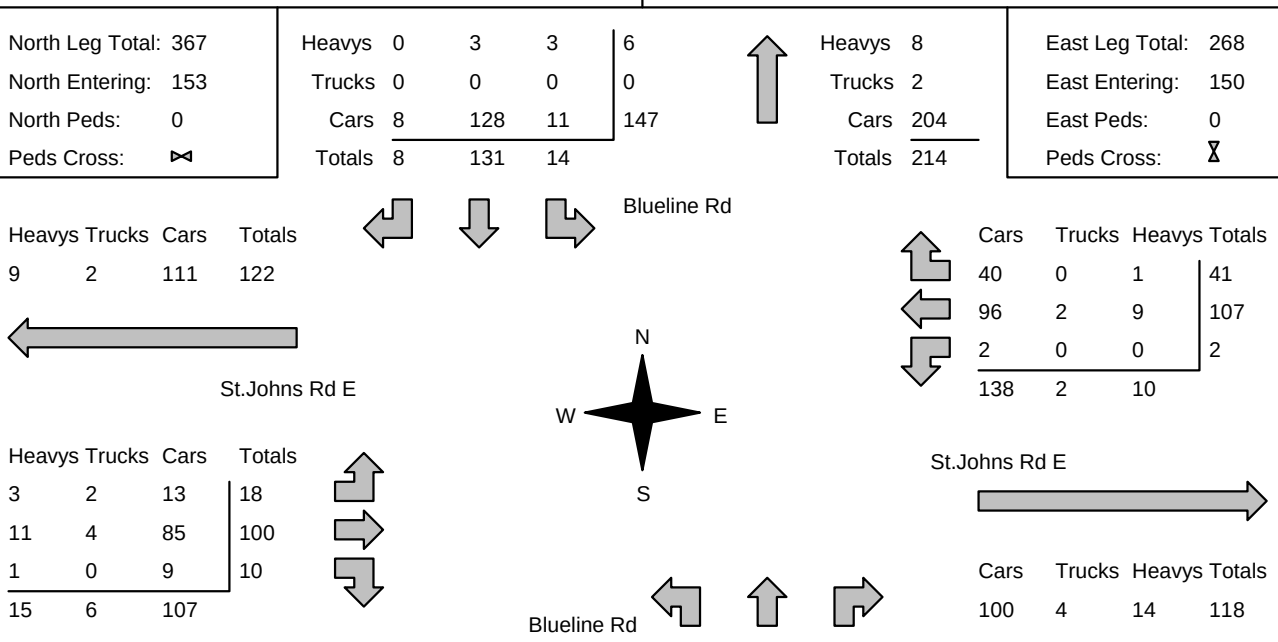
Municipality: Norfolk
Site #: 2513400002
Intersection: St.Johns Rd E & Blueline Rd
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: St.Johns Rd E runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Norfolk
Site #: 2513400002
Intersection: St.Johns Rd E & Blueline Rd
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: St.Johns Rd E runs W/E

North Leg Total:	486
North Entering:	262
North Peds:	0
Peds Cross:	⋈

Heavys	1	2	0	3
Trucks	2	0	0	2
Cars	15	209	33	257
Totals	18	211	33	

Heavys	2
Trucks	0
Cars	222
Totals	224

East Leg Total:	357
East Entering:	203
East Peds:	0
Peds Cross:	⧖

Blueline Rd

Heavys	Trucks	Cars	Totals
7	4	155	166

St.Johns Rd E

Cars	Trucks	Heavys	Totals
54	0	1	55
135	2	6	143
5	0	0	5
194	2	7	

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	25	25
3	1	115	119
0	0	10	10
3	1	150	

St.Johns Rd E

Cars	Trucks	Heavys	Totals
150	1	3	154

Blueline Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	154
West Leg Total:	320

Cars	224
Trucks	0
Heavys	2
Totals	226

Cars	5	143	2	150
Trucks	0	0	0	0
Heavys	0	1	0	1
Totals	5	144	2	

Peds Cross:	⋈
South Peds:	0
South Entering:	151
South Leg Total:	377

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

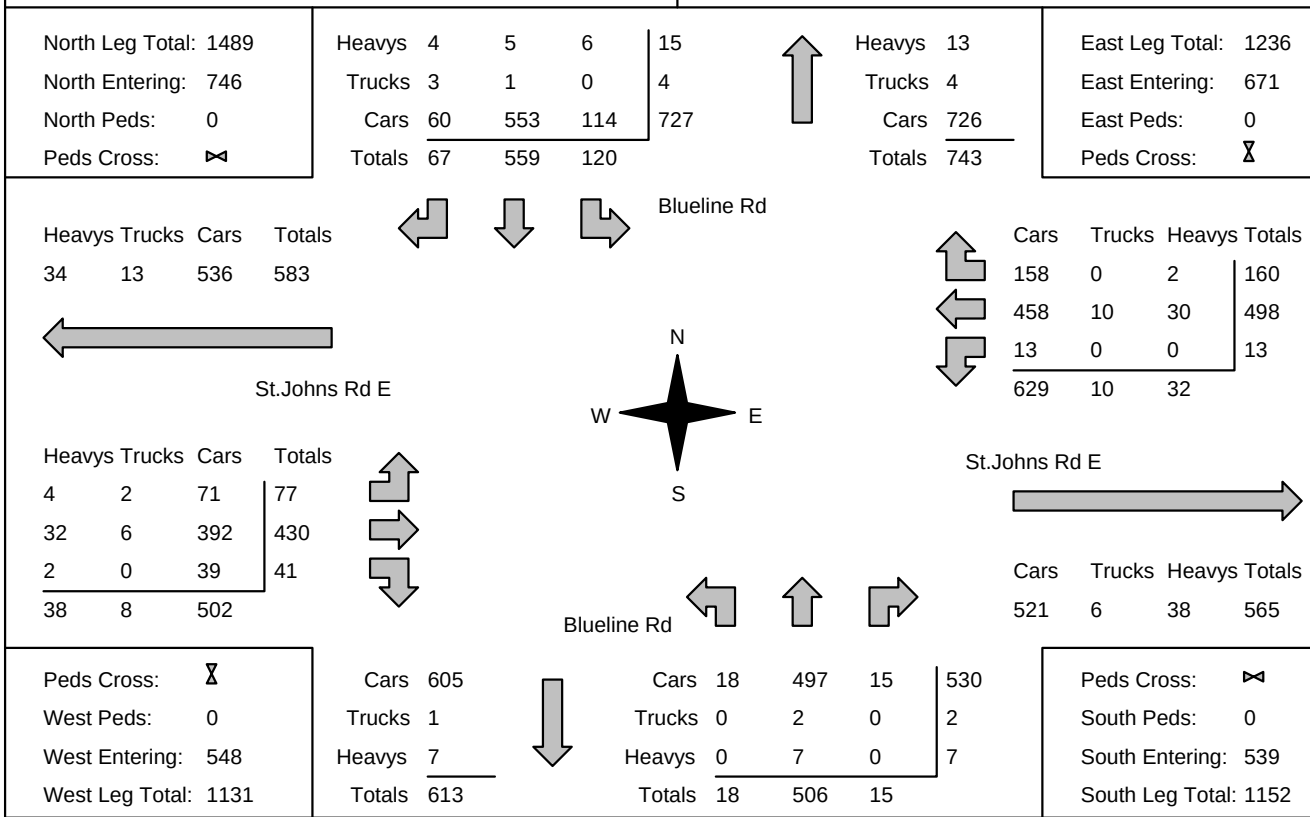
Municipality: Norfolk
Site #: 2513400002
Intersection: St.Johns Rd E & Blueline Rd
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: St.Johns Rd E runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: St.Johns Rd E & Blueline Rd | **Count Date:** 4-Sep-25 | **Municipality:** Norfolk

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*39*	*47*	*17*	*103*	*0*	*186*	*8:00:00*	*3*	*76*	*4*	*83*	*0*
9:00:00	*14*	*131*	*8*	*153*	*0*	*319*	*9:00:00*	*7*	*155*	*4*	*166*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*31*	*201*	*22*	*254*	*0*	*409*	*17:00:00*	*3*	*148*	*4*	*155*	*0*
18:00:00	*36*	*180*	*20*	*236*	*0*	*371*	*18:00:00*	*5*	*127*	*3*	*135*	*0*
Totals:	120	559	67	746	0	1285	S Totals:	18	506	15	539	0

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*1*	*99*	*25*	*125*	*0*	*259*	*8:00:00*	*19*	*108*	*7*	*134*	*0*
9:00:00	*2*	*107*	*41*	*150*	*0*	*278*	*9:00:00*	*18*	*100*	*10*	*128*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*4*	*145*	*59*	*208*	*0*	*348*	*17:00:00*	*18*	*112*	*10*	*140*	*0*
18:00:00	*6*	*147*	*35*	*188*	*0*	*334*	*18:00:00*	*22*	*110*	*14*	*146*	*0*
Totals:	13	498	160	671	0	1219	W Totals:	77	430	41	548	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*118*	*176*	*0*	*235*	*221*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	9	9	7	7	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
7:30:00	19	10	18	11	6	5	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:45:00	30	11	27	9	11	5	0	0	1	1	1	0	2	2	0	0	0	0	0	0
8:00:00	36	6	46	19	14	3	0	0	1	0	1	0	3	1	0	0	2	2	0	0
8:15:00	36	0	71	25	18	4	0	0	1	0	1	0	3	0	1	1	2	0	0	0
8:30:00	37	1	110	39	20	2	0	0	1	0	1	0	4	1	1	0	2	0	0	0
8:45:00	41	4	139	29	22	2	0	0	1	0	1	0	4	0	1	0	2	0	0	0
9:00:00	47	6	174	35	22	0	0	0	1	0	1	0	6	2	3	2	2	0	0	0
9:15:00	47	0	174	0	22	0	0	0	1	0	1	0	6	0	3	0	2	0	0	0
16:00:00	47	0	174	0	22	0	0	0	1	0	1	0	6	0	3	0	2	0	0	0
16:15:00	53	6	226	52	27	5	0	0	1	0	1	0	6	0	3	0	3	1	0	0
16:30:00	59	6	273	47	31	4	0	0	1	0	3	2	6	0	4	1	4	1	0	0
16:45:00	67	8	317	44	32	1	0	0	1	0	3	0	6	0	4	0	4	0	0	0
17:00:00	78	11	373	56	40	8	0	0	1	0	3	0	6	0	5	1	4	0	0	0
17:15:00	86	8	435	62	42	2	0	0	1	0	3	0	6	0	5	0	4	0	0	0
17:30:00	97	11	477	42	46	4	0	0	1	0	3	0	6	0	5	0	4	0	0	0
17:45:00	107	10	519	42	58	12	0	0	1	0	3	0	6	0	5	0	4	0	0	0
18:00:00	114	7	553	34	60	2	0	0	1	0	3	0	6	0	5	0	4	0	0	0
18:15:00	114	0	553	0	60	0	0	0	1	0	3	0	6	0	5	0	4	0	0	0
18:15:15	114	0	553	0	60	0	0	0	1	0	3	0	6	0	5	0	4	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	16	16	3	3	0	0	0	0	0	0	0	0	4	4	0	0	0	0
7:30:00	0	0	43	27	6	3	0	0	0	0	0	0	0	0	7	3	0	0	0	0
7:45:00	1	1	66	23	12	6	0	0	0	0	0	0	0	0	10	3	0	0	0	0
8:00:00	1	0	87	21	25	13	0	0	0	0	0	0	0	0	12	2	0	0	0	0
8:15:00	3	2	113	26	37	12	0	0	1	1	0	0	0	0	12	0	1	1	0	0
8:30:00	3	0	139	26	43	6	0	0	2	1	0	0	0	0	15	3	1	0	0	0
8:45:00	3	0	165	26	53	10	0	0	2	0	0	0	0	0	20	5	1	0	0	0
9:00:00	3	0	183	18	65	12	0	0	2	0	0	0	0	0	21	1	1	0	0	0
9:15:00	3	0	183	0	65	0	0	0	2	0	0	0	0	0	21	0	1	0	0	0
16:00:00	3	0	183	0	65	0	0	0	2	0	0	0	0	0	21	0	1	0	0	0
16:15:00	3	0	215	32	80	15	0	0	3	1	0	0	0	0	23	2	1	0	0	0
16:30:00	5	2	254	39	94	14	0	0	4	1	0	0	0	0	26	3	2	1	0	0
16:45:00	7	2	297	43	114	20	0	0	4	0	0	0	0	0	27	1	2	0	0	0
17:00:00	7	0	318	21	123	9	0	0	5	1	0	0	0	0	28	1	2	0	0	0
17:15:00	8	1	350	32	134	11	0	0	5	0	0	0	0	0	29	1	2	0	0	0
17:30:00	8	0	386	36	143	9	0	0	7	2	0	0	0	0	30	1	2	0	0	0
17:45:00	13	5	424	38	153	10	0	0	9	2	0	0	0	0	30	0	2	0	0	0
18:00:00	13	0	458	34	158	5	0	0	10	1	0	0	0	0	30	0	2	0	0	0
18:15:00	13	0	458	0	158	0	0	0	10	0	0	0	0	0	30	0	2	0	0	0
18:15:15	13	0	458	0	158	0	0	0	10	0	0	0	0	0	30	0	2	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	11	11	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	1	0	21	10	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0
7:45:00	2	1	46	25	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
8:00:00	3	1	73	27	4	3	0	0	1	0	0	0	0	0	2	1	0	0	0	0
8:15:00	6	3	93	20	5	1	0	0	1	0	0	0	0	0	2	0	0	0	0	0
8:30:00	7	1	132	39	6	1	0	0	1	0	0	0	0	0	2	0	0	0	0	0
8:45:00	9	2	177	45	6	0	0	0	1	0	0	0	0	0	6	4	0	0	0	0
9:00:00	10	1	224	47	8	2	0	0	1	0	0	0	0	0	6	0	0	0	0	0
9:15:00	10	0	224	0	8	0	0	0	1	0	0	0	0	0	6	0	0	0	0	0
16:00:00	10	0	224	0	8	0	0	0	1	0	0	0	0	0	6	0	0	0	0	0
16:15:00	10	0	268	44	11	3	0	0	2	1	0	0	0	0	6	0	0	0	0	0
16:30:00	11	1	306	38	12	1	0	0	2	0	0	0	0	0	6	0	0	0	0	0
16:45:00	13	2	343	37	12	0	0	0	2	0	0	0	0	0	6	0	0	0	0	0
17:00:00	13	0	371	28	12	0	0	0	2	0	0	0	0	0	6	0	0	0	0	0
17:15:00	15	2	411	40	13	1	0	0	2	0	0	0	0	0	7	1	0	0	0	0
17:30:00	16	1	445	34	14	1	0	0	2	0	0	0	0	0	7	0	0	0	0	0
17:45:00	18	2	474	29	15	1	0	0	2	0	0	0	0	0	7	0	0	0	0	0
18:00:00	18	0	497	23	15	0	0	0	2	0	0	0	0	0	7	0	0	0	0	0
18:15:00	18	0	497	0	15	0	0	0	2	0	0	0	0	0	7	0	0	0	0	0
18:15:15	18	0	497	0	15	0	0	0	2	0	0	0	0	0	7	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	30	30	0	0	0	0	1	1	0	0	0	0	5	5	0	0	0	0
7:30:00	11	8	57	27	2	2	0	0	1	0	0	0	1	1	8	3	0	0	0	0
7:45:00	16	5	75	18	3	1	0	0	1	0	0	0	1	0	9	1	1	1	0	0
8:00:00	18	2	96	21	6	3	0	0	1	0	0	0	1	0	11	2	1	0	0	0
8:15:00	18	0	119	23	7	1	0	0	2	1	0	0	1	0	14	3	1	0	0	0
8:30:00	23	5	137	18	11	4	0	0	5	3	0	0	3	2	19	5	1	0	0	0
8:45:00	27	4	166	29	14	3	1	1	5	0	0	0	3	0	20	1	2	1	0	0
9:00:00	31	4	181	15	15	1	2	1	5	0	0	0	4	1	22	2	2	0	0	0
9:15:00	31	0	181	0	15	0	2	0	5	0	0	0	4	0	22	0	2	0	0	0
16:00:00	31	0	181	0	15	0	2	0	5	0	0	0	4	0	22	0	2	0	0	0
16:15:00	34	3	208	27	18	3	2	0	5	0	0	0	4	0	25	3	2	0	0	0
16:30:00	39	5	236	28	22	4	2	0	5	0	0	0	4	0	25	0	2	0	0	0
16:45:00	45	6	262	26	23	1	2	0	5	0	0	0	4	0	26	1	2	0	0	0
17:00:00	49	4	287	25	25	2	2	0	6	1	0	0	4	0	27	1	2	0	0	0
17:15:00	59	10	323	36	28	3	2	0	6	0	0	0	4	0	28	1	2	0	0	0
17:30:00	67	8	355	32	33	5	2	0	6	0	0	0	4	0	32	4	2	0	0	0
17:45:00	67	0	377	22	35	2	2	0	6	0	0	0	4	0	32	0	2	0	0	0
18:00:00	71	4	392	15	39	4	2	0	6	0	0	0	4	0	32	0	2	0	0	0
18:15:00	71	0	392	0	39	0	2	0	6	0	0	0	4	0	32	0	2	0	0	0
18:15:15	71	0	392	0	39	0	2	0	6	0	0	0	4	0	32	0	2	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Norfolk
Site #: 2513400003
Intersection: St.Johns Rd E & Cockshutt Rd
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: St.Johns Rd E runs W/E

North Leg Total: 183
North Entering: 71
North Peds: 0
Peds Cross: ⋈

Heavys	0	3	0	3
Trucks	0	1	0	1
Cars	19	35	13	67
Totals	19	39	13	

Heavys	3
Trucks	1
Cars	108
Totals	112

East Leg Total: 243
East Entering: 110
East Peds: 0
Peds Cross: ⧗

Cockshutt Rd

Heavys	Trucks	Cars	Totals
12	2	133	147

St.Johns Rd E

Cars	Trucks	Heavys	Totals
12	0	1	13
82	1	11	94
3	0	0	3
97	1	12	

N
W E
S

Heavys	Trucks	Cars	Totals
2	0	33	35
11	4	100	115
0	0	6	6
13	4	139	

St.Johns Rd E

Cars	Trucks	Heavys	Totals
116	4	13	133

Cockshutt Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 156
West Leg Total: 303

Cars	44
Trucks	1
Heavys	3
Totals	48

Cars	32	63	3	98
Trucks	1	1	0	2
Heavys	1	0	2	3
Totals	34	64	5	

Peds Cross: ⋈
South Peds: 0
South Entering: 103
South Leg Total: 151

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

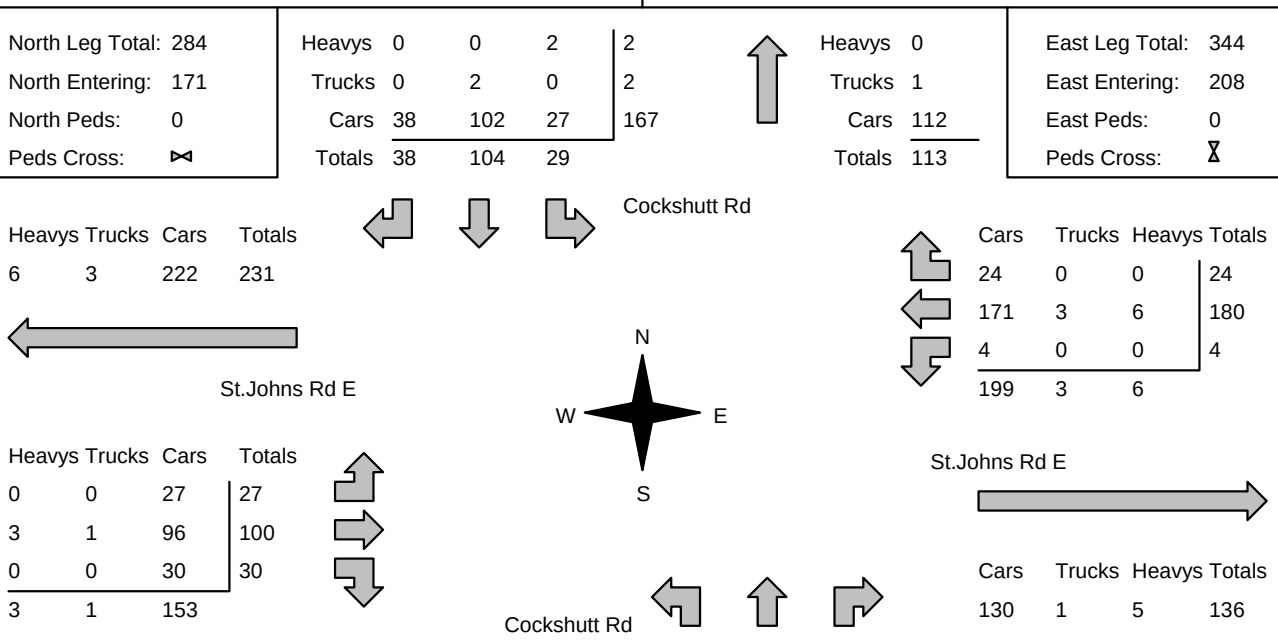
Municipality: Norfolk
Site #: 2513400003
Intersection: St.Johns Rd E & Cockshutt Rd
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: St.Johns Rd E runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

Municipality: Norfolk
Site #: 2513400003
Intersection: St.Johns Rd E & Cockshutt Rd
TFR File #: 1
Count date: 4-Sep-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: St.Johns Rd E runs W/E

North Leg Total: 845
North Entering: 426
North Peds: 0
Peds Cross: ⋈

Heavys	1	4	4	9
Trucks	0	3	1	4
Cars	93	246	74	413
Totals	94	253	79	

Heavys	8
Trucks	2
Cars	409
Totals	419

East Leg Total: 1183
East Entering: 633
East Peds: 0
Peds Cross: ⧖

Cockshutt Rd

Heavys	Trucks	Cars	Totals
33	13	670	716

St.Johns Rd E

Cars	Trucks	Heavys	Totals
69	0	3	72
503	12	31	546
15	0	0	15
587	12	34	

N
W E
S

Heavys	Trucks	Cars	Totals
4	0	128	132
34	7	406	447
0	0	65	65
38	7	599	

St.Johns Rd E

Cars	Trucks	Heavys	Totals
502	8	40	550

Cockshutt Rd

Peds Cross: ⧖
West Peds: 0
West Entering: 644
West Leg Total: 1360

Cars	326
Trucks	3
Heavys	4
Totals	333

Cars	74	212	22	308
Trucks	1	2	0	3
Heavys	1	1	2	4
Totals	76	215	24	

Peds Cross: ⋈
South Peds: 0
South Entering: 315
South Leg Total: 648

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: St.Johns Rd E & Cockshutt Rd | **Count Date:** 4-Sep-25 | **Municipality:** Norfolk

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*26*	*19*	*14*	*59*	*0*
9:00:00	*7*	*46*	*17*	*70*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*24*	*100*	*32*	*156*	*0*
18:00:00	*22*	*88*	*31*	*141*	*0*
Totals:	79	253	94	426	0

North/South Total Approaches: 741

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*18*	*40*	*5*	*63*	*0*
9:00:00	*33*	*64*	*5*	*102*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*14*	*67*	*9*	*90*	*0*
18:00:00	*11*	*44*	*5*	*60*	*0*
S Totals:	76	215	24	315	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*90*	*12*	*102*	*0*
9:00:00	*3*	*96*	*14*	*113*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*5*	*184*	*24*	*213*	*0*
18:00:00	*7*	*176*	*22*	*205*	*0*
Totals:	15	546	72	633	0

East/West Total Approaches: 1277

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*40*	*142*	*7*	*189*	*0*
9:00:00	*28*	*105*	*6*	*139*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*31*	*88*	*27*	*146*	*0*
18:00:00	*33*	*112*	*25*	*170*	*0*
W Totals:	132	447	65	644	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*84*	*104*	*0*	*138*	*121*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	3	3	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0
7:30:00	7	4	7	4	4	4	0	0	0	0	0	0	1	0	1	1	1	0	0	0
7:45:00	14	7	11	4	7	3	1	1	0	0	0	0	1	0	1	0	1	0	0	0
8:00:00	24	10	17	6	13	6	1	0	1	1	0	0	1	0	1	0	1	0	0	0
8:15:00	26	2	22	5	15	2	1	0	1	0	0	0	1	0	3	2	1	0	0	0
8:30:00	27	1	33	11	22	7	1	0	1	0	0	0	1	0	4	1	1	0	0	0
8:45:00	27	0	46	13	26	4	1	0	1	0	0	0	1	0	4	0	1	0	0	0
9:00:00	31	4	60	14	30	4	1	0	1	0	0	0	1	0	4	0	1	0	0	0
9:15:00	31	0	60	0	30	0	1	0	1	0	0	0	1	0	4	0	1	0	0	0
16:00:00	31	0	60	0	30	0	1	0	1	0	0	0	1	0	4	0	1	0	0	0
16:15:00	35	4	85	25	36	6	1	0	1	0	0	0	1	0	4	0	1	0	0	0
16:30:00	43	8	115	30	41	5	1	0	2	1	0	0	1	0	4	0	1	0	0	0
16:45:00	48	5	133	18	56	15	1	0	2	0	0	0	2	1	4	0	1	0	0	0
17:00:00	54	6	158	25	62	6	1	0	3	1	0	0	2	0	4	0	1	0	0	0
17:15:00	62	8	187	29	74	12	1	0	3	0	0	0	3	1	4	0	1	0	0	0
17:30:00	66	4	208	21	80	6	1	0	3	0	0	0	3	0	4	0	1	0	0	0
17:45:00	71	5	225	17	87	7	1	0	3	0	0	0	3	0	4	0	1	0	0	0
18:00:00	74	3	246	21	93	6	1	0	3	0	0	0	4	1	4	0	1	0	0	0
18:15:00	74	0	246	0	93	0	1	0	3	0	0	0	4	0	4	0	1	0	0	0
18:15:15	74	0	246	0	93	0	1	0	3	0	0	0	4	0	4	0	1	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	14	14	2	2	0	0	1	1	0	0	0	0	3	3	1	1	0	0
7:30:00	0	0	37	23	6	4	0	0	1	0	0	0	0	0	7	4	1	0	0	0
7:45:00	0	0	55	18	8	2	0	0	1	0	0	0	0	0	10	3	1	0	0	0
8:00:00	0	0	76	21	11	3	0	0	2	1	0	0	0	0	12	2	1	0	0	0
8:15:00	2	2	100	24	16	5	0	0	2	0	0	0	0	0	13	1	1	0	0	0
8:30:00	3	1	115	15	17	1	0	0	2	0	0	0	0	0	17	4	1	0	0	0
8:45:00	3	0	137	22	20	3	0	0	2	0	0	0	0	0	21	4	2	1	0	0
9:00:00	3	0	162	25	24	4	0	0	2	0	0	0	0	0	22	1	2	0	0	0
9:15:00	3	0	162	0	24	0	0	0	2	0	0	0	0	0	22	0	2	0	0	0
16:00:00	3	0	162	0	24	0	0	0	2	0	0	0	0	0	22	0	2	0	0	0
16:15:00	4	1	209	47	29	5	0	0	3	1	0	0	0	0	24	2	2	0	0	0
16:30:00	5	1	259	50	34	5	0	0	4	1	0	0	0	0	27	3	2	0	0	0
16:45:00	7	2	306	47	41	7	0	0	5	1	0	0	0	0	28	1	2	0	0	0
17:00:00	8	1	336	30	48	7	0	0	5	0	0	0	0	0	29	1	2	0	0	0
17:15:00	8	0	380	44	53	5	0	0	6	1	0	0	0	0	30	1	2	0	0	0
17:30:00	11	3	423	43	58	5	0	0	6	0	0	0	0	0	31	1	2	0	0	0
17:45:00	12	1	474	51	65	7	0	0	10	4	0	0	0	0	31	0	2	0	0	0
18:00:00	15	3	503	29	69	4	0	0	12	2	0	0	0	0	31	0	3	1	0	0
18:15:00	15	0	503	0	69	0	0	0	12	0	0	0	0	0	31	0	3	0	0	0
18:15:15	15	0	503	0	69	0	0	0	12	0	0	0	0	0	31	0	3	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	7	7	8	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	7	0	16	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	11	4	28	12	4	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0
8:00:00	18	7	39	11	4	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0
8:15:00	27	9	61	22	5	1	1	1	0	0	0	0	0	0	1	0	1	0	0	0
8:30:00	34	7	75	14	5	0	1	0	0	0	0	0	1	1	1	0	1	0	0	0
8:45:00	43	9	91	16	7	2	1	0	1	1	0	0	1	0	1	0	2	1	0	0
9:00:00	49	6	102	11	8	1	1	0	1	0	0	0	1	0	1	0	2	0	0	0
9:15:00	49	0	102	0	8	0	1	0	1	0	0	0	1	0	1	0	2	0	0	0
16:00:00	49	0	102	0	8	0	1	0	1	0	0	0	1	0	1	0	2	0	0	0
16:15:00	52	3	119	17	13	5	1	0	1	0	0	0	1	0	1	0	2	0	0	0
16:30:00	55	3	134	15	15	2	1	0	2	1	0	0	1	0	1	0	2	0	0	0
16:45:00	60	5	152	18	17	2	1	0	2	0	0	0	1	0	1	0	2	0	0	0
17:00:00	63	3	168	16	17	0	1	0	2	0	0	0	1	0	1	0	2	0	0	0
17:15:00	65	2	180	12	20	3	1	0	2	0	0	0	1	0	1	0	2	0	0	0
17:30:00	67	2	189	9	21	1	1	0	2	0	0	0	1	0	1	0	2	0	0	0
17:45:00	69	2	200	11	21	0	1	0	2	0	0	0	1	0	1	0	2	0	0	0
18:00:00	74	5	212	12	22	1	1	0	2	0	0	0	1	0	1	0	2	0	0	0
18:15:00	74	0	212	0	22	0	1	0	2	0	0	0	1	0	1	0	2	0	0	0
18:15:15	74	0	212	0	22	0	1	0	2	0	0	0	1	0	1	0	2	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 4-Sep-25 Site #: 2513400003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	6	6	37	37	1	1	0	0	1	1	0	0	0	0	5	5	0	0	0	0
7:30:00	15	9	67	30	2	1	0	0	1	0	0	0	0	0	10	5	0	0	0	0
7:45:00	27	12	97	30	5	3	0	0	1	0	0	0	0	0	12	2	0	0	0	0
8:00:00	39	12	127	30	7	2	0	0	2	1	0	0	1	1	13	1	0	0	0	0
8:15:00	48	9	147	20	10	3	0	0	3	1	0	0	1	0	16	3	0	0	0	0
8:30:00	56	8	168	21	10	0	0	0	5	2	0	0	2	1	21	5	0	0	0	0
8:45:00	60	4	197	29	11	1	0	0	5	0	0	0	2	0	23	2	0	0	0	0
9:00:00	66	6	216	19	13	2	0	0	6	1	0	0	2	0	25	2	0	0	0	0
9:15:00	66	0	216	0	13	0	0	0	6	0	0	0	2	0	25	0	0	0	0	0
16:00:00	66	0	216	0	13	0	0	0	6	0	0	0	2	0	25	0	0	0	0	0
16:15:00	80	14	233	17	19	6	0	0	6	0	0	0	3	1	28	3	0	0	0	0
16:30:00	86	6	258	25	24	5	0	0	6	0	0	0	3	0	28	0	0	0	0	0
16:45:00	91	5	281	23	30	6	0	0	6	0	0	0	3	0	28	0	0	0	0	0
17:00:00	96	5	298	17	40	10	0	0	7	1	0	0	3	0	30	2	0	0	0	0
17:15:00	107	11	329	31	49	9	0	0	7	0	0	0	3	0	31	1	0	0	0	0
17:30:00	115	8	367	38	55	6	0	0	7	0	0	0	4	1	34	3	0	0	0	0
17:45:00	125	10	391	24	61	6	0	0	7	0	0	0	4	0	34	0	0	0	0	0
18:00:00	128	3	406	15	65	4	0	0	7	0	0	0	4	0	34	0	0	0	0	0
18:15:00	128	0	406	0	65	0	0	0	7	0	0	0	4	0	34	0	0	0	0	0
18:15:15	128	0	406	0	65	0	0	0	7	0	0	0	4	0	34	0	0	0	0	0

Appendix B – Synchro Output Reports (Existing Traffic)

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	28	38	32	53	32	254	67	31	152	14
Future Volume (vph)	28	38	32	53	32	254	67	31	152	14
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		12.0		12.0	45.0	45.0	45.0	45.0	45.0	45.0
Actuated g/C Ratio		0.17		0.17	0.65	0.65	0.65	0.65	0.65	0.65
v/c Ratio		0.45		0.56	0.05	0.26	0.08	0.05	0.16	0.02
Control Delay		25.5		28.0	5.2	6.1	3.6	5.3	5.5	1.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		25.5		28.0	5.2	6.1	3.6	5.3	5.5	1.1
LOS		C		C	A	A	A	A	A	A
Approach Delay		25.5		28.0		5.5			5.1	
Approach LOS		C		C		A			A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 69.1
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 11.7 Intersection LOS: B
Intersection Capacity Utilization 98.3% ICU Level of Service F
Analysis Period (min) 15

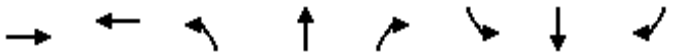
Splits and Phases: 1: Norfolk Street South & St. John's Road West/St. John's Road East

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	33.0	33.0	33.0	33.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)										
Flash Dont Walk (s)										
Pedestrian Calls (#/hr)										
90th %ile Green (s)	16.4	16.4	16.4	16.4	45.0	45.0	45.0	45.0	45.0	45.0
90th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	13.2	13.2	13.2	13.2	45.0	45.0	45.0	45.0	45.0	45.0
70th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	11.0	11.0	11.0	11.0	45.0	45.0	45.0	45.0	45.0	45.0
50th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
30th %ile Term Code	Min	Min	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
10th %ile Term Code	Hold	Hold	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR

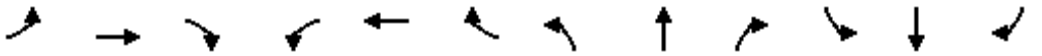
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 69.1
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 73.4
70th %ile Actuated Cycle: 70.2
50th %ile Actuated Cycle: 68
30th %ile Actuated Cycle: 67
10th %ile Actuated Cycle: 67

1: Norfolk Street South & St. John's Road West/St. John's Road East



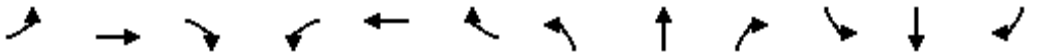
Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	164	40	318	84	39	190	18
v/c Ratio	0.45	0.56	0.05	0.26	0.08	0.05	0.16	0.02
Control Delay	25.5	28.0	5.2	6.1	3.6	5.3	5.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	28.0	5.2	6.1	3.6	5.3	5.5	1.1
Queue Length 50th (m)	10.6	15.2	1.5	13.8	1.8	1.5	7.6	0.0
Queue Length 95th (m)	20.7	27.2	4.6	25.6	5.9	4.6	15.6	0.9
Internal Link Dist (m)	539.7	3623.6		496.1			235.4	
Turn Bay Length (m)			90.0		5.0	85.0		5.0
Base Capacity (vph)	684	746	753	1215	1007	710	1193	1007
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.22	0.05	0.26	0.08	0.05	0.16	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	38	29	32	53	46	32	254	67	31	152	14
Future Volume (vph)	28	38	29	32	53	46	32	254	67	31	152	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.96			0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1630			1670		1722	1865	1526	1825	1830	1526
Flt Permitted		0.85			0.90		0.64	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)		1403			1524		1156	1865	1526	1090	1830	1526
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	35	48	36	40	66	58	40	318	84	39	190	18
RTOR Reduction (vph)	0	22	0	0	29	0	0	0	13	0	0	6
Lane Group Flow (vph)	0	97	0	0	135	0	40	318	71	39	190	12
Heavy Vehicles (%)	0%	26%	3%	16%	9%	2%	6%	3%	7%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		12.1			12.1		45.1	45.1	45.1	45.1	45.1	45.1
Effective Green, g (s)		12.1			12.1		45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.17			0.17		0.65	0.65	0.65	0.65	0.65	0.65
Clearance Time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		245			266		753	1215	994	710	1192	994
v/s Ratio Prot								c0.17			0.10	
v/s Ratio Perm		0.07			c0.09		0.03		0.05	0.04		0.01
v/c Ratio		0.39			0.51		0.05	0.26	0.07	0.05	0.16	0.01
Uniform Delay, d1		25.3			25.9		4.3	5.1	4.4	4.4	4.7	4.2
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.1			1.5		0.1	0.5	0.1	0.1	0.3	0.0
Delay (s)		26.4			27.4		4.5	5.6	4.5	4.5	5.0	4.3
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		26.4			27.4			5.3			4.8	
Approach LOS		C			C			A			A	

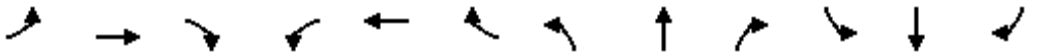
Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	100	10	2	107	41	7	155	4	14	131	8
Future Volume (Veh/h)	18	100	10	2	107	41	7	155	4	14	131	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	21	116	12	2	124	48	8	180	5	16	152	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	172			128			401	340	122	411	322	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	172			128			401	340	122	411	322	148
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.3	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.7	4.0	3.3
p0 queue free %	98			100			98	68	99	96	74	99
cM capacity (veh/h)	1319			1470			440	570	935	385	585	904

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	149	174	193	177
Volume Left	21	2	8	16
Volume Right	12	48	5	9
cSH	1319	1470	569	569
Volume to Capacity	0.02	0.00	0.34	0.31
Queue Length 95th (m)	0.4	0.0	11.3	10.0
Control Delay (s)	1.2	0.1	14.5	14.2
Lane LOS	A	A	B	B
Approach Delay (s)	1.2	0.1	14.5	14.2
Approach LOS			B	B

Intersection Summary				
Average Delay	8.0			
Intersection Capacity Utilization	36.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	115	6	3	94	13	34	64	5	13	39	19
Future Volume (Veh/h)	35	115	6	3	94	13	34	64	5	13	39	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	38	124	6	3	101	14	37	69	5	14	42	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	115			130			358	324	127	356	320	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	115			130			358	324	127	356	320	108
tC, single (s)	4.2			4.1			7.1	6.5	6.6	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.7	3.5	4.1	3.3
p0 queue free %	97			100			93	88	99	97	93	98
cM capacity (veh/h)	1449			1468			538	580	831	533	571	951

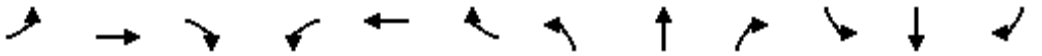
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	168	118	111	76
Volume Left	38	3	37	14
Volume Right	6	14	5	20
cSH	1449	1468	573	629
Volume to Capacity	0.03	0.00	0.19	0.12
Queue Length 95th (m)	0.6	0.0	5.4	3.1
Control Delay (s)	1.9	0.2	12.8	11.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.9	0.2	12.8	11.5
Approach LOS			B	B

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	31.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	84	10	16	43	8	7	101	18	11	68	23
Future Volume (Veh/h)	65	84	10	16	43	8	7	101	18	11	68	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	71	91	11	17	47	9	8	110	20	12	74	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	256	244	74	280	249	110	99			130		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	256	244	74	280	249	110	99			130		
tC, single (s)	7.1	6.6	6.2	7.1	6.7	6.9	4.1			4.4		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.2	3.9	2.2			2.5		
p0 queue free %	89	86	99	97	92	99	99			99		
cM capacity (veh/h)	641	633	993	588	615	785	1507			1300		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	173	73	118	20	86	25
Volume Left	71	17	8	0	12	0
Volume Right	11	9	0	20	0	25
cSH	652	625	1507	1700	1300	1700
Volume to Capacity	0.27	0.12	0.01	0.01	0.01	0.01
Queue Length 95th (m)	8.1	3.0	0.1	0.0	0.2	0.0
Control Delay (s)	12.5	11.5	0.5	0.0	1.2	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.5	11.5	0.5		0.9	
Approach LOS	B	B				

Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	32.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	126	4	5	147	140	6	19	9	82	14	5
Future Volume (Veh/h)	4	126	4	5	147	140	6	19	9	82	14	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	5	159	5	6	186	177	8	24	11	104	18	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	363			164			473	546	162	481	460	274
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363			164			473	546	162	481	460	274
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	95	99	78	96	99
cM capacity (veh/h)	1196			1414			481	441	883	466	493	764

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	169	369	43	128
Volume Left	5	6	8	104
Volume Right	5	177	11	6
cSH	1196	1414	515	478
Volume to Capacity	0.00	0.00	0.08	0.27
Queue Length 95th (m)	0.1	0.1	2.1	8.1
Control Delay (s)	0.3	0.2	12.6	15.3
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	0.2	12.6	15.3
Approach LOS			B	C

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	37.5%	ICU Level of Service	A	
Analysis Period (min)	15			

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	18	55	71	63	41	205	50	54	293	27
Future Volume (vph)	18	55	71	63	41	205	50	54	293	27
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		13.8		13.8	45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.19		0.19	0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.30		0.62	0.06	0.18	0.05	0.08	0.26	0.03
Control Delay		21.9		32.0	6.2	6.4	3.3	6.2	6.9	2.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.9		32.0	6.2	6.4	3.3	6.2	6.9	2.1
LOS		C		C	A	A	A	A	A	A
Approach Delay		21.9		32.0		5.9			6.4	
Approach LOS		C		C		A			A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 70.9
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 12.8 Intersection LOS: B
Intersection Capacity Utilization 100.2% ICU Level of Service G
Analysis Period (min) 15

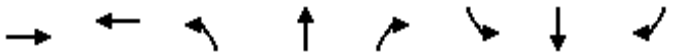
Splits and Phases: 1: Norfolk Street South & St. John's Road West/St. John's Road East

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	33.0	33.0	33.0	33.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)										
Flash Dont Walk (s)										
Pedestrian Calls (#/hr)										
90th %ile Green (s)	19.7	19.7	19.7	19.7	45.0	45.0	45.0	45.0	45.0	45.0
90th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	15.7	15.7	15.7	15.7	45.0	45.0	45.0	45.0	45.0	45.0
70th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	13.3	13.3	13.3	13.3	45.0	45.0	45.0	45.0	45.0	45.0
50th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	11.0	11.0	11.0	11.0	45.0	45.0	45.0	45.0	45.0	45.0
30th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
10th %ile Term Code	Hold	Hold	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR

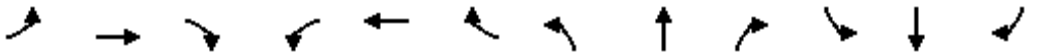
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 70.9
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 76.7
70th %ile Actuated Cycle: 72.7
50th %ile Actuated Cycle: 70.3
30th %ile Actuated Cycle: 68
10th %ile Actuated Cycle: 67

1: Norfolk Street South & St. John's Road West/St. John's Road East



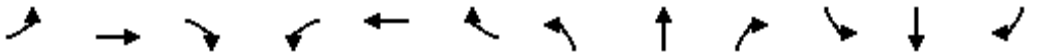
Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	104	195	44	218	53	57	312	29
v/c Ratio	0.30	0.62	0.06	0.18	0.05	0.08	0.26	0.03
Control Delay	21.9	32.0	6.2	6.4	3.3	6.2	6.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	32.0	6.2	6.4	3.3	6.2	6.9	2.1
Queue Length 50th (m)	9.4	20.9	1.9	10.1	0.7	2.4	15.3	0.0
Queue Length 95th (m)	21.2	39.6	6.4	23.1	4.9	7.8	32.8	2.5
Internal Link Dist (m)	539.7	3623.6		496.1			235.4	
Turn Bay Length (m)			90.0		5.0	85.0		5.0
Base Capacity (vph)	794	721	697	1197	1031	759	1221	1051
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.27	0.06	0.18	0.05	0.08	0.26	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	55	24	71	63	49	41	205	50	54	293	27
Future Volume (vph)	18	55	24	71	63	49	41	205	50	54	293	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.97			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799			1747		1825	1883	1601	1825	1921	1633
Flt Permitted		0.93			0.85		0.57	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)		1679			1521		1096	1883	1601	1195	1921	1633
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	19	59	26	76	67	52	44	218	53	57	312	29
RTOR Reduction (vph)	0	17	0	0	19	0	0	0	13	0	0	11
Lane Group Flow (vph)	0	87	0	0	176	0	44	218	40	57	312	18
Heavy Vehicles (%)	0%	4%	0%	3%	5%	4%	0%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		13.8			13.8		45.1	45.1	45.1	45.1	45.1	45.1
Effective Green, g (s)		13.8			13.8		45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.19			0.19		0.64	0.64	0.64	0.64	0.64	0.64
Clearance Time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		326			296		697	1197	1018	760	1221	1038
v/s Ratio Prot								0.12			c0.16	
v/s Ratio Perm		0.05			c0.12		0.04		0.02	0.05		0.01
v/c Ratio		0.27			0.60		0.06	0.18	0.04	0.07	0.26	0.02
Uniform Delay, d1		24.3			26.0		4.9	5.3	4.8	4.9	5.6	4.7
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.4			3.2		0.2	0.3	0.1	0.2	0.5	0.0
Delay (s)		24.7			29.2		5.1	5.6	4.9	5.1	6.1	4.8
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		24.7			29.2			5.4			5.9	
Approach LOS		C			C			A			A	

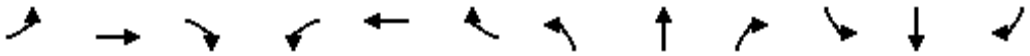
Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	70.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	119	10	5	143	55	5	144	2	33	211	18
Future Volume (Veh/h)	25	119	10	5	143	55	5	144	2	33	211	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	131	11	5	157	60	5	158	2	36	232	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	217			142			524	418	136	468	393	187
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217			142			524	418	136	468	393	187
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			100			98	69	100	91	56	98
cM capacity (veh/h)	1365			1453			296	516	917	380	532	845

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	169	222	165	288
Volume Left	27	5	5	36
Volume Right	11	60	2	20
cSH	1365	1453	507	520
Volume to Capacity	0.02	0.00	0.33	0.55
Queue Length 95th (m)	0.5	0.1	10.7	25.4
Control Delay (s)	1.4	0.2	15.5	20.2
Lane LOS	A	A	C	C
Approach Delay (s)	1.4	0.2	15.5	20.2
Approach LOS			C	C

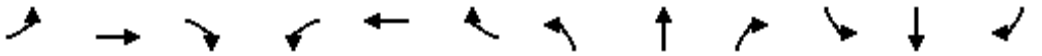
Intersection Summary				
Average Delay	10.2			
Intersection Capacity Utilization	52.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	100	30	4	180	24	13	62	7	29	104	38
Future Volume (Veh/h)	27	100	30	4	180	24	13	62	7	29	104	38
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	29	106	32	4	191	26	14	66	7	31	111	40
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	217			138			488	405	122	432	408	204
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217			138			488	405	122	432	408	204
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	98			100			96	87	99	93	79	95
cM capacity (veh/h)	1365			1458			387	525	935	463	523	842

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	167	221	87	182
Volume Left	29	4	14	31
Volume Right	32	26	7	40
cSH	1365	1458	514	557
Volume to Capacity	0.02	0.00	0.17	0.33
Queue Length 95th (m)	0.5	0.1	4.6	10.7
Control Delay (s)	1.5	0.2	13.4	14.6
Lane LOS	A	A	B	B
Approach Delay (s)	1.5	0.2	13.4	14.6
Approach LOS			B	B

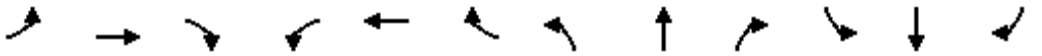
Intersection Summary				
Average Delay	6.2			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	85	6	47	114	9	8	133	33	4	175	85
Future Volume (Veh/h)	49	85	6	47	114	9	8	133	33	4	175	85
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	92	7	51	124	10	9	145	36	4	190	92
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	433	397	190	414	453	145	282			181		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433	397	190	414	453	145	282			181		
tC, single (s)	7.1	6.7	6.2	7.1	6.6	7.0	4.2			4.8		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.1	4.0	2.3			2.8		
p0 queue free %	87	82	99	89	75	99	99			100		
cM capacity (veh/h)	417	515	857	469	491	741	1215			1083		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	152	185	154	36	194	92
Volume Left	53	51	9	0	4	0
Volume Right	7	10	0	36	0	92
cSH	484	494	1215	1700	1083	1700
Volume to Capacity	0.31	0.37	0.01	0.02	0.00	0.05
Queue Length 95th (m)	10.1	13.1	0.2	0.0	0.1	0.0
Control Delay (s)	15.8	16.6	0.5	0.0	0.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	15.8	16.6	0.4		0.1	
Approach LOS	C	C				

Intersection Summary				
Average Delay	6.9			
Intersection Capacity Utilization	31.9%	ICU Level of Service	A	
Analysis Period (min)	15			

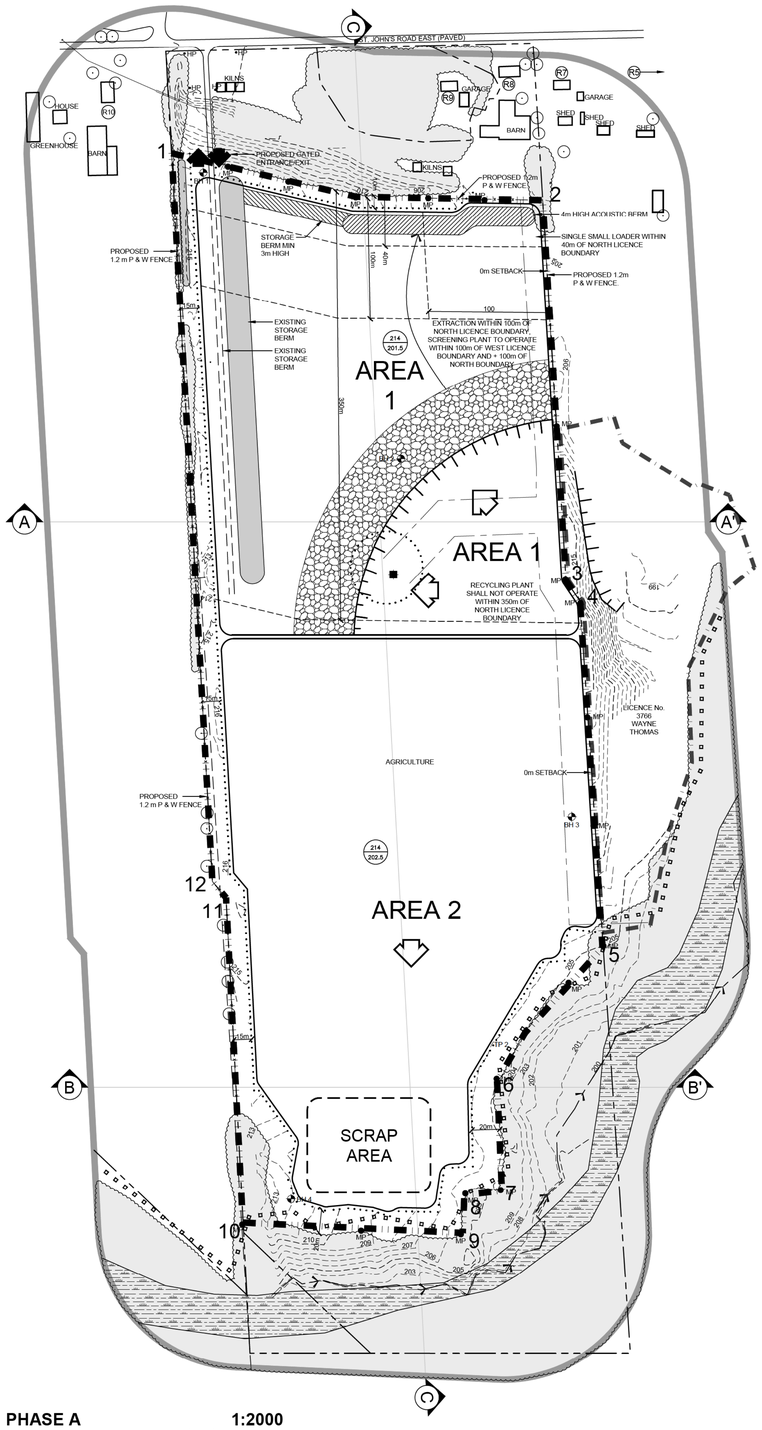


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	142	3	5	140	102	4	26	3	150	34	4
Future Volume (Veh/h)	0	142	3	5	140	102	4	26	3	150	34	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	151	3	5	149	109	4	28	3	160	36	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	258			154			388	420	152	383	368	204
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	258			154			388	420	152	383	368	204
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	95	100	71	94	100
cM capacity (veh/h)	1307			1426			539	522	894	548	559	837

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	154	263	35	200
Volume Left	0	5	4	160
Volume Right	3	109	3	4
cSH	1307	1426	544	554
Volume to Capacity	0.00	0.00	0.06	0.36
Queue Length 95th (m)	0.0	0.1	1.6	12.4
Control Delay (s)	0.0	0.2	12.1	15.1
Lane LOS		A	B	C
Approach Delay (s)	0.0	0.2	12.1	15.1
Approach LOS			B	C

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix C – Operation Plan Phases A to C



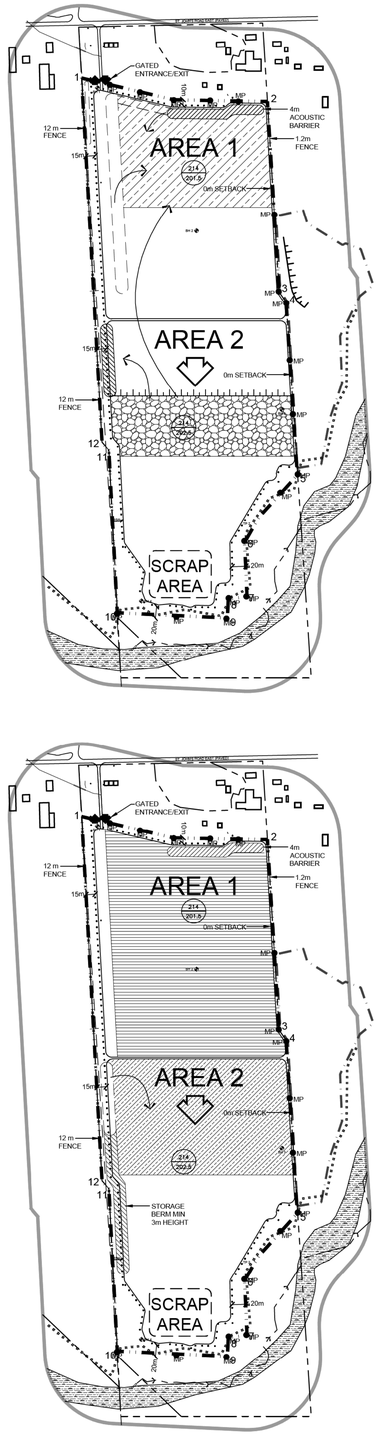
PHASE A

1:2000

0 10 50 80m

PHASE A NOTES

1. UPGRADE ENTRANCE/EXIT ON ST. JOHNS ROAD EAST TO ACCORDING TO THE APPROPRIATE MUNICIPAL STANDARDS. AN ENTRANCE PERMIT IF REQUIRED, SHALL BE OBTAINED.
2. PRIOR TO ANY ON SITE OPERATIONS, INSTALL OR REPAIR 1.2m POST AND WIRE FENCE AND INSTALL MARKER POSTS ON THE LICENCED BOUNDARIES, ACCORDING TO SITE PLAN VARIANCES.
3. CONSTRUCT THE HAUL ROAD THROUGH AREA 1 AND USE STRIPPED MATERIAL TO CONSTRUCT ACOUSTIC BERM AS SHOWN.
4. PRIOR TO EXTRACTION IN AREA 1, DEMARCATE NATURAL FEATURE SETBACKS.
5. STRIP TOPSOIL AND OVERBURDEN SEPARATELY AND COMPLETE CONSTRUCTION OF ACOUSTIC BERM. EXCESS MATERIAL MAY BE STORED IN BERMS AS SHOWN OR IN STOCKPILES ON PIT FLOOR.
6. BEGIN EXTRACTION IN AREA 1 IN DIRECTION SHOWN. STOCKPILING AREA MAY BE TEMPORARILY LOCATED NEAR THE PIT FACE DURING THE INITIAL EXCAVATION OF AGGREGATE.
7. UNDISTURBED PORTIONS OF AREA 2 SHALL REMAIN IN AGRICULTURAL USE.
8. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION



PHASE B

1:4000

0 5 10 15m

PHASE B NOTES

1. BEGIN PROGRESSIVE REHABILITATION OF AREA 1 AS RESOURCES ARE DEPLETED USING MATERIAL STORED IN BERMS AND IMPORTED EXCESS SOIL.
2. STRIP TOPSOIL AND OVERBURDEN SEPARATELY FROM AREA 2 AND USE THE MATERIALS TO COMPLETE REHABILITATION OF 50 % OF AREA 1 PRIOR TO EXTRACTION IN AREA 2. EXCESS OVERBURDEN AND TOPSOIL MAY BE USED TO CONTINUE REHABILITATION OF AREA 1 OR STOCKPILED ON PIT FLOOR.
3. BEGIN EXTRACTION OF AREA 2 IN DIRECTION SHOWN. STOCKPILING AND PROCESSING AREA MAY BE TEMPORARILY LOCATED NEAR THE PIT FACE DURING THE INITIAL EXCAVATION OF AGGREGATE.
4. UNDISTURBED PORTIONS OF AREA 2 REMAIN IN AGRICULTURAL USE.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION

PHASE C

1:4000

0 5 10 15m

PHASE C NOTES

1. COMPLETE REHABILITATION OF AREA 1 USING STOCKPILED MATERIAL AND IMPORTED EXCESS SOIL.
2. BEGIN PROGRESSIVE REHABILITATION OF AREA 2 AS RESOURCES ARE DEPLETED.
3. COMPLETE EXTRACTION IN AREA 2.
4. CONTINUE REHABILITATION OF AREA 2 USING MATERIAL STORED IN BERMS AND IMPORTED EXCESS SOIL.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION

PHASE D (NOT SHOWN)

PHASE D NOTES

1. COMPLETE REHABILITATION OF AREA 2 USING STOCKPILED MATERIAL AND IMPORTED EXCESS SOIL.
2. COMPLETE REHABILITATION OF ALL REMAINING AREAS AND HAUL ROADS USING IMPORTED EXCESS SOIL.
3. REMOVE ALL SCRAP AND EQUIPMENT.
4. SITE IS REHABILITATED TO AGRICULTURE.

OPERATIONS NOTES

GENERAL INFORMATION

1a) THIS PLAN DEPICTS A SCHEMATIC OPERATIONS AND REHABILITATION SEQUENCE FOR THIS PROPERTY BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION. PHASES SHOWN ARE SCHEMATIC AND WILL BE OPERATED ACCORDING TO MATERIAL QUALITY, SITE HYDROLOGY AND HYDROGEOLOGY OR MARKET DEMAND. PHASES DO NOT REPRESENT ANY SPECIFIC OR EQUAL TIME PERIOD.

b) EXTRACTION SHALL FOLLOW THE SEQUENCE SHOWN ON THIS PAGE AND ON THE 'OPERATIONAL PLAN PHASES B-E AND DETAILS' (PAGE 3 OF 4). PROGRESSIVE REHABILITATION SHALL BE CARRIED OUT, AS DEPICTED ON THE 'OPERATIONAL PLAN PHASES B-E AND DETAILS' (PAGE 3 OF 4) AND THE REHABILITATION PLAN (PAGE 5 OF 5)' DEMAND FOR CERTAIN PRODUCTS OR BLENDING OF MATERIALS WILL REQUIRE SOME DEVIATION IN THE EXTRACTION AND REHABILITATION PHASING. ANY DEVIATIONS FROM THE OPERATIONS SEQUENCE SHOWN WILL REQUIRE APPROVAL FROM MNR.

2. SITE PLAN VARIANCES ARE LISTED IN THE SITE PLAN OVERRIDE TABLE SHOWN ON THIS PAGE.

EXTRACTION/PROCESSING/HAULING INFORMATION

3. TOTAL AREA TO BE EXTRACTED IS 22.4 HECTARES.
4. MAXIMUM NUMBER OF TONNES OF AGGREGATE TO BE REMOVED FROM THE SITE IN ANY CALENDAR YEAR IS 325,000 TONNES.

5a) EXTRACTION OF SAND AND GRAVEL ABOVE WATER TABLE WILL TAKE PLACE IN TWO BENCHES, WITH A MAXIMUM HEIGHT OF 5 METRES AND WILL COMPLY WITH OHSA REGULATIONS REGARDING FACE HEIGHTS. FRONT END LOADERS WILL BE USED TO EXTRACT MATERIAL AND HAUL TRUCKS OR CONVEYORS WILL CARRY MATERIAL TO THE PLANT FOR FURTHER PROCESSING. HAUL ROADS WILL BE CONSTRUCTED AS REQUIRED. REFER TO SECTIONS A-A', B-B', C-C' ON DRAWING 3 OF 4 FOR FURTHER DETAILS. HAUL ROADS SHALL BE CONSTRUCTED AS REQUIRED.

b) PORTABLE PROCESSING EQUIPMENT, FOR CRUSHING, SCREENING, AND WASHING WILL BE USED ON SITE AND WILL BE LOCATED ON THE PIT FLOOR CLOSE TO THE FACE. IN ADDITION TO PROCESSING, SITE ACTIVITIES WILL INCLUDE STRIPPING AND REHABILITATION. OPERATIONAL EQUIPMENT MAY INCLUDE TRUCKS, LOADERS, EXCAVATOR, BACKHOES, BULLDOZERS, SCRAPERS, CONVEYORS, AND OTHER RELATED EQUIPMENT. PROCESSING EQUIPMENT, STACKERS AND PRODUCT STOCKPILES WILL NOT EXCEED +15 METRES IN HEIGHT AND WILL BE LOCATED IN THE AREAS SHOWN AND/OR CLOSE TO PIT FACES.

c) A PERMIT TO TAKE WATER SHALL BE APPLIED FOR PRIOR TO WASHING ON SITE.

6. MATERIAL FROM OTHER PROPERTIES MAY BE IMPORTED INTO THE SITE FOR BLENDING, CUSTOM PRODUCTS AND/OR RESALE. THIS MAY INCLUDE AGGREGATE AND/OR PEAT IN AREA 2.

i) EXCESS SOIL SHALL ONLY BE IMPORTED FOR BLENDING, RESALE AND/OR TEMPORARY STORAGE ON-SITE IN ACCORDANCE WITH ONTARIO REGULATION 244/97 UNDER THE AGGREGATE RESOURCES ACT.

ii) LIQUID SOIL, AS DEFINED IN ONTARIO REGULATION 406/19 UNDER THE ENVIRONMENTAL PROTECTION ACT, IS NOT AUTHORIZED FOR IMPORTATION TO THE SITE.

iii) THERE SHALL BE NO FURTHER IMPORTATION OF EXCESS SOIL FOR BLENDING, RESALE, AND/OR TEMPORARY STORAGE ONCE EXCAVATION ON-SITE HAS BEEN COMPLETED.

iv) THE TOTAL AMOUNT OF EXCESS SOIL BROUGHT ONTO THE SITE ANNUALLY AND THE TOTAL AMOUNT STORED ON-SITE AT ANY ONE TIME WILL NOT EXCEED 25,000 M3.

7. TEMPORARY STORAGE BUILDINGS/TRAILERS MAY BE LOCATED ON SITE AS REQUIRED.

HYDROGEOLOGICAL INFORMATION

8. THE MAXIMUM PREDICTED WATER TABLE ELEVATION WITHIN THE KELLY PIT EXTRACTION AREA FROM APPROXIMATELY 200.5 MASL (NEAR BH-03-23) TO 205 MASL (NEAR BH-04-23) (A.S.L.). REFER TO SECTIONS ON SHEET 3 OF 4.

9. SURFACE DRAINAGE WILL BE DIRECTED TO LOW AREAS FOR WATER TO INFILTRATE INTO THE GRANULAR MATERIALS ON THE PIT FLOOR. THERE WILL BE NO OFF-SITE DITCHING/ DISCHARGE.

NOISE MITIGATION INFORMATION

10. HOURS OF OPERATION

SITE PREPARATION AND REHABILITATION:	07:00-19:00 WEEKDAYS; 07:00 - NOON SATURDAYS
EXCAVATION AND PROCESSING:	07:00-19:00 WEEKDAYS; 07:00 - NOON SATURDAYS
SHIPPING:	07:00-19:00 WEEKDAYS; 07:00 - NOON SATURDAYS

AIR QUALITY INFORMATION

11. WATER OR CALCIUM CHLORIDE WILL BE APPLIED TO INTERNAL HAUL ROADS AND PROCESSING AREAS AS OFTEN AS REQUIRED TO MITIGATE DUST.

SITE MANAGEMENT INFORMATION

MAINTENANCE/ PROTECTION OF VEGETATION INFORMATION

12. EXISTING VEGETATION WITHIN THE LICENCED AREA SHALL BE MAINTAINED IN A HEALTHY VIGOROUS GROWING CONDITION UNTIL SEQUENTIAL STRIPPING BEGINS OR UNTIL THE REHABILITATION IS COMPLETE. ANY VEGETATION PLANTED AS PART OF SITE IMPROVEMENTS OR PROGRESSIVE AND FINAL REHABILITATION WILL ALSO BE MAINTAINED IN A HEALTHY, VIGOROUS GROWING CONDITION.

FENCING INFORMATION

13. UNFENCED BOUNDARIES SHALL BE DEMARCATED WITH HIGHLY VISIBLE MARKER POSTS AT INTERVISIBLE INTERVALS. ALL FENCING AND MARKER POSTS SHALL BE MAINTAINED. SILT/EROSION CONTROL FENCING WILL BE CONSTRUCTED ONCE STRIPPING OCCURS WITHIN 50m OF THE SETBACK ADJACENT TO THE HUMPHREY DRAIN AND THE NATURAL FEATURES AND SHALL BE MAINTAINED UNTIL ADJACENT AREA IS STABLE AND VEGETATED. ALL FENCING AND POSTS/STAKES SHALL BE MAINTAINED.

TOPSOIL/SUBSOIL/OVERBURDEN STORAGE INFORMATION

14. TOPSOIL AND OVERBURDEN SHALL BE STRIPPED AND STORED SEPARATELY IN BERMS WHERE SHOWN AND IN STOCKPILES ON THE PIT FLOOR.

BERM INFORMATION

15. BERMS SHALL BE A MINIMUM OF ±2.5 METRES ABOVE THE EXISTING GRADE, OR AS SPECIFIED IN THE NOISE ASSESSMENT REPORT DATED JULY 2025 AND SHOWN ON OPERATIONAL PLAN. BERMS SHALL NOT EXCEED 2:1. REFER TO TYPICAL BERM CROSS SECTION ON DRAWING 3 OF 4 DETAILS AND SECTIONS. ALL BERMS SHALL BE SEEDED (USING GRASS/ LEGUME MIXTURE, SEE REHABILITATION PLAN, NOTE #7) IMMEDIATELY UPON COMPLETION TO MINIMIZE NOISE, DUST AND EROSION.

16. ON COMPLETION OF THE BERMS, EXCESS ON-SITE OVERBURDEN WILL BE USED TO PROGRESSIVELY BACKFILL AND REHABILITATE THE SITE. TOPSOIL CAN BE TEMPORARILY STOCKPILED ON THE PIT FLOOR.

SCRAP STORAGE INFORMATION

17. ALL SCRAP, USED MACHINERY AND STUMPS GENERATED THROUGH THE OPERATIONS WITHIN THIS LICENCE WILL BE STORED IN THE SCRAP AREA AS SHOWN, A MINIMUM OF 30m FROM THE BOUNDARY OF THE SITE AND NOT WITHIN 30m OF ANY BODY OF WATER. SCRAP SHALL BE DISPOSED OF ON AN ONGOING BASIS. UPON COMPLETION OF EXTRACTION, ALL SCRAP EQUIPMENT AND USED MACHINERY SHALL BE REMOVED.

TREE/STUMP REMOVAL

18. STUMPS/ WOODY MATERIAL MAY BE CHIPPED AND USED FOR SOIL ENHANCEMENT DURING PROGRESSIVE REHABILITATION. TREES WILL BE HARVESTED AND SOLD AS LUMBER OR UTILIZED FOR FIREWOOD AND/ OR THEIR BEST USE.

FUEL STORAGE

19. THERE SHALL BE NO FUEL STORAGE ON SITE. REFUELING SHALL BE BY PORTABLE FUEL TANKS.

SPILLS PLAN

20. IN CASE OF AN ACCIDENTAL SPILL OF PETROLEUM PRODUCTS, THE FOLLOWING CONTINGENCY PLAN WILL BE ACTIVATED:

a) THE MINISTRY OF ENVIRONMENT & CLIMATE CHANGE (SEE ADDRESS & PHONE NUMBER BELOW) AND SURROUNDING LANDOWNERS WILL BE NOTIFIED.
b) FOR A LEAKAGE OR SPILL IMMEDIATE ACTION WILL BE TAKEN TO STOP IT. AT THE SAME TIME MEASURES WILL BE TAKEN TO PREVENT SPREADING. THESE MEASURES MAY INCLUDE BUILDING OF A BERM OR CONSTRUCTION OF A DITCH, FOR INSTANCE.
c) THE PIT OPERATOR SHALL COMMENCE RECOVERY PROCEDURES BY THE SPILLED SUBSTANCE INTO CONTAINERS.
d) THE SOIL IN THE AREA AFFECTED BY THE SPILL OR LEAK SHALL BE REMOVED AND DISPOSED OF AT A LOCATION PRESCRIBED BY THE MINISTRY OF THE ENVIRONMENT & CLIMATE CHANGE.

SITE PLAN VARIANCES

THE FOLLOWING CONDITIONS ILLUSTRATED ON THESE PLANS VARY FROM THE OF THE PROVINCIAL STANDARDS MADE UNDER THE AGGREGATE RESOURCES ACT

ITEM		SECTION
1.	THE EAST BOUNDARY REGULATORY SETBACK IS REDUCED TO 0m PER AGREEMENT WITH ADJACENT LICENSEE/LANDOWNER.	0.13(1)1 0
2.	THE NORTH AND SOUTH BOUNDARY REGULATORY SETBACK IS REDUCED TO 0m; ADJACENT LAND IS OWNED BY LICENSEE.	
3.	STOCKPILING AND PROCESSING EQUIPMENT MAY BE LOCATED WITHIN 30m OF THE COMMON EAST BOUNDARY PER AGREEMENT WITH ADJACENT LICENSEE/LANDOWNER AND WITHIN 30m OF THE SOUTH AND NORTH BOUNDARY, LICENSEE OWNS ADJACENT LAND.	0.13(1)3 i
4.	FENCING SHALL BE OMITTED ALONG THE COMMON EAST LICENCE BOUNDARY PER AGREEMENT WITH ADJACENT LICENCEE.	0.13(3)a
5.	FENCING SHALL BE OMITTED ALONG THE SOUTH AND NORTH WOODED BOUNDARY; ADJACENT LAND OWNED BY LICENSEE AND WOODLANDS/RAVINE PREVENT ACCESS.	
6.	AN ENTRANCE/EXIT MAY BE LOCATED ANYWHERE ALONG THE COMMON EAST LICENSED BOUNDARY AND A GATE SHALL BE OMITTED PER AGREEMENT WITH ADJACENT LICENSEE.	0.13(1)1

LEGEND

- BOUNDARY OF PROPOSED LICENCE
- BOUNDARY OF EXISTING LICENCED AREA
- 120m INFORMATION BOUNDARY
- PROPERTY LINES
- LOT LINE
- EXTRACTION LIMIT/SETBACK
- LPRCA REGULATED AREA LINE
- EXISTING WATERWAY
- EXISTING FENCE
- 285 EXISTING 5m ASL CONTOUR LINE
- 284 EXISTING 1m ASL CONTOUR LINE
- EXISTING VEGETATION
- EXISTING WATER
- EXISTING WETLAND
- A LOCATION OF SECTION
- EXTRACTION FACE
- BERM (MIN. HEIGHT AS SHOWN)
- UNDISTURBED AREA
- AREA STRIPPED OF TOPSOIL AND OVERBURDEN
- SILT FENCE
- PROGRESSIVE REHABILITATION
- FINAL REHABILITATION
- 214 201.5 EXISTING ELEVATION / PROPOSED ELEVATION
- EXISTING BUILDING
- HP EXISTING HYDRO POLE
- DIRECTION OF SURFACE WATER DRAINAGE
- EXISTING ENTRANCE/EXIT
- BH 1 BOREHOLE LOCATION AND NUMBER DRILLED AND MONITORING WELL INSTALLED MAY 2023 BY ELEMENTS GEO CORP UNDER THE SUPERVISION OF ENGLOBE
- TP 10 TEST PIT LOCATION AND NUMBER DUG MAY 2023 BY ALLAN'S EXCAVATING UNDER THE SUPERVISION OF ENGLOBE
- GATED FARM ACCESS
- GATED ENTRANCE/EXIT
- DIRECTION OF EXTRACTION
- DIRECTION OF TOPSOIL AND OVERBURDEN MOVEMENT
- R3 LOCATION OF NOISE RECEPTOR
- MP PROPOSED MARKER POST

NO.	DATE	REVISIONS	DRAWN	I.M	MNR

Pre Licence Review

NO.	DATE	REVISIONS	DRAWN	I.M	MNR

Site Plan Amendments

Harrington McAvan Ltd
41 Main Street, Unit 102
Unionville, Ontario L3R 2E5
Tel: 905-294-8282 Fax: 905-294-7623
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Project Name

2690905 ONTARIO INC.

KELLY PIT

LICENCE No.

LICENCEE SIGNATURE

LOT 5, CONCESSION 2 WOODHOUSE
(FORMERLY TOWNSHIP OF WOODHOUSE), COUNTY OF NORFOLK

Scale 1:2000 (0 10 50 80m)	North	Stamp: ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS, RICHARD McAVAN, MEMBER
Drawing Status: SUBMITTED FOR LICENCE APPROVAL		
Drawn SB	Checked RM	Issue Date AUG 2025
Drawing Title: OPERATIONAL PLAN PHASES A TO C		Project Number 24-26
		Drawing Number 2 OF 4

FILE NAME: 24-26 COMP 2 A3E -2.DWG
PLOT DATE: AUGUST 19, 2025

Appendix D - Synchro Output Reports (2035 Background Traffic)

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	31	42	36	59	36	281	75	35	168	16
Future Volume (vph)	31	42	36	59	36	281	75	35	168	16
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		12.8		12.8	45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.18		0.18	0.65	0.65	0.65	0.65	0.65	0.65
v/c Ratio		0.49		0.60	0.06	0.29	0.09	0.06	0.18	0.02
Control Delay		26.3		29.9	5.7	6.7	4.0	5.7	6.0	1.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		26.3		29.9	5.7	6.7	4.0	5.7	6.0	1.3
LOS		C		C	A	A	A	A	A	A
Approach Delay		26.3		29.9		6.1			5.6	
Approach LOS		C		C		A			A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 69.9
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 12.5 Intersection LOS: B
Intersection Capacity Utilization 98.3% ICU Level of Service F
Analysis Period (min) 15

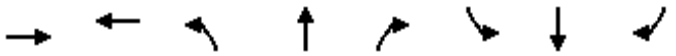
Splits and Phases: 1: Norfolk Street South & St. John's Road West/St. John's Road East

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	33.0	33.0	33.0	33.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)										
Flash Dont Walk (s)										
Pedestrian Calls (#/hr)										
90th %ile Green (s)	18.0	18.0	18.0	18.0	45.0	45.0	45.0	45.0	45.0	45.0
90th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	14.4	14.4	14.4	14.4	45.0	45.0	45.0	45.0	45.0	45.0
70th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	12.1	12.1	12.1	12.1	45.0	45.0	45.0	45.0	45.0	45.0
50th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
30th %ile Term Code	Min	Min	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
10th %ile Term Code	Hold	Hold	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 69.9
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 75
70th %ile Actuated Cycle: 71.4
50th %ile Actuated Cycle: 69.1
30th %ile Actuated Cycle: 67
10th %ile Actuated Cycle: 67

1: Norfolk Street South & St. John's Road West/St. John's Road East

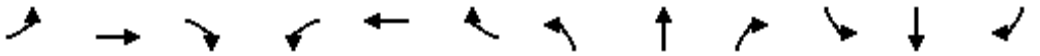


Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	133	183	45	351	94	44	210	20
v/c Ratio	0.49	0.60	0.06	0.29	0.09	0.06	0.18	0.02
Control Delay	26.3	29.9	5.7	6.7	4.0	5.7	6.0	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	29.9	5.7	6.7	4.0	5.7	6.0	1.3
Queue Length 50th (m)	12.3	17.8	1.8	16.6	2.3	1.8	9.1	0.0
Queue Length 95th (m)	22.9	30.4	5.4	30.2	7.0	5.4	18.2	1.1
Internal Link Dist (m)	539.7	3623.6		496.1			235.4	
Turn Bay Length (m)			90.0		5.0	85.0		5.0
Base Capacity (vph)	662	731	732	1202	997	683	1180	997
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.25	0.06	0.29	0.09	0.06	0.18	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	42	33	36	59	51	36	281	75	35	168	16
Future Volume (vph)	31	42	33	36	59	51	36	281	75	35	168	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.96			0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1631			1670		1722	1865	1526	1825	1830	1526
Flt Permitted		0.83			0.89		0.63	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)		1369			1509		1135	1865	1526	1058	1830	1526
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	39	52	41	45	74	64	45	351	94	44	210	20
RTOR Reduction (vph)	0	23	0	0	28	0	0	0	13	0	0	7
Lane Group Flow (vph)	0	110	0	0	155	0	45	351	81	44	210	13
Heavy Vehicles (%)	0%	26%	3%	16%	9%	2%	6%	3%	7%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		12.8			12.8		45.1	45.1	45.1	45.1	45.1	45.1
Effective Green, g (s)		12.8			12.8		45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.18			0.18		0.65	0.65	0.65	0.65	0.65	0.65
Clearance Time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		250			276		732	1203	984	682	1180	984
v/s Ratio Prot								c0.19			0.11	
v/s Ratio Perm		0.08			c0.10		0.04		0.05	0.04		0.01
v/c Ratio		0.44			0.56		0.06	0.29	0.08	0.06	0.18	0.01
Uniform Delay, d1		25.4			26.0		4.6	5.4	4.6	4.6	5.0	4.4
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.2			2.6		0.2	0.6	0.2	0.2	0.3	0.0
Delay (s)		26.6			28.6		4.7	6.0	4.8	4.8	5.3	4.5
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		26.6			28.6			5.7			5.2	
Approach LOS		C			C			A			A	

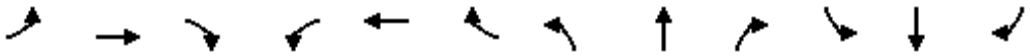
Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	111	12	3	119	46	8	237	5	16	156	9
Future Volume (Veh/h)	20	111	12	3	119	46	8	237	5	16	156	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	23	129	14	3	138	53	9	276	6	19	181	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	191			143			453	379	136	496	360	164
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	191			143			453	379	136	496	360	164
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.3	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.7	4.0	3.3
p0 queue free %	98			100			98	49	99	93	67	99
cM capacity (veh/h)	1298			1452			379	541	918	266	556	885

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	166	194	291	210
Volume Left	23	3	9	19
Volume Right	14	53	6	10
cSH	1298	1452	538	514
Volume to Capacity	0.02	0.00	0.54	0.41
Queue Length 95th (m)	0.4	0.0	24.3	15.0
Control Delay (s)	1.2	0.1	19.3	16.7
Lane LOS	A	A	C	C
Approach Delay (s)	1.2	0.1	19.3	16.7
Approach LOS			C	C

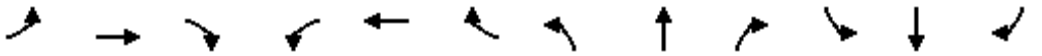
Intersection Summary				
Average Delay	10.9			
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	128	7	4	104	15	38	196	6	15	85	21
Future Volume (Veh/h)	39	128	7	4	104	15	38	196	6	15	85	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	42	138	8	4	112	16	41	211	6	16	91	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	128			146			422	362	142	466	358	120
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			146			422	362	142	466	358	120
tC, single (s)	4.2			4.1			7.1	6.5	6.6	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.7	3.5	4.1	3.3
p0 queue free %	97			100			91	62	99	95	83	98
cM capacity (veh/h)	1434			1448			448	550	814	348	541	937

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	188	132	258	130
Volume Left	42	4	41	16
Volume Right	8	16	6	23
cSH	1434	1448	535	544
Volume to Capacity	0.03	0.00	0.48	0.24
Queue Length 95th (m)	0.7	0.1	19.8	7.0
Control Delay (s)	1.9	0.2	17.8	13.7
Lane LOS	A	A	C	B
Approach Delay (s)	1.9	0.2	17.8	13.7
Approach LOS			C	B

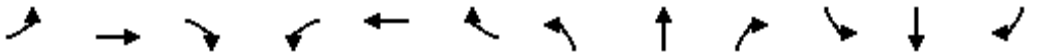
Intersection Summary				
Average Delay	9.6			
Intersection Capacity Utilization	41.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	93	12	18	48	9	8	112	20	13	76	26
Future Volume (Veh/h)	72	93	12	18	48	9	8	112	20	13	76	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	78	101	13	20	52	10	9	122	22	14	83	28
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	287	273	83	314	279	122	111			144		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287	273	83	314	279	122	111			144		
tC, single (s)	7.1	6.6	6.2	7.1	6.7	6.9	4.1			4.4		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.2	3.9	2.2			2.5		
p0 queue free %	87	83	99	96	91	99	99			99		
cM capacity (veh/h)	605	609	982	546	590	772	1492			1284		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	192	82	131	22	97	28
Volume Left	78	20	9	0	14	0
Volume Right	13	10	0	22	0	28
cSH	623	595	1492	1700	1284	1700
Volume to Capacity	0.31	0.14	0.01	0.01	0.01	0.02
Queue Length 95th (m)	9.9	3.6	0.1	0.0	0.3	0.0
Control Delay (s)	13.3	12.0	0.6	0.0	1.2	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	13.3	12.0	0.5		0.9	
Approach LOS	B	B				

Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	35.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	164	5	8	249	220	7	21	11	102	16	6
Future Volume (Veh/h)	5	164	5	8	249	220	7	21	11	102	16	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	208	6	10	315	278	9	27	14	129	20	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	593			214			715	836	211	724	700	454
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593			214			715	836	211	724	700	454
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			97	91	98	58	94	99
cM capacity (veh/h)	983			1356			323	299	829	309	359	606

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	220	603	50	157
Volume Left	6	10	9	129
Volume Right	6	278	14	8
cSH	983	1356	370	322
Volume to Capacity	0.01	0.01	0.13	0.49
Queue Length 95th (m)	0.1	0.2	3.5	19.3
Control Delay (s)	0.3	0.2	16.2	26.3
Lane LOS	A	A	C	D
Approach Delay (s)	0.3	0.2	16.2	26.3
Approach LOS			C	D

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	20	61	79	70	46	227	56	60	324	30
Future Volume (vph)	20	61	79	70	46	227	56	60	324	30
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		14.9		14.9	45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.21		0.21	0.63	0.63	0.63	0.63	0.63	0.63
v/c Ratio		0.32		0.66	0.07	0.20	0.06	0.09	0.29	0.03
Control Delay		21.9		32.9	6.8	7.1	3.8	6.8	7.6	2.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.9		32.9	6.8	7.1	3.8	6.8	7.6	2.5
LOS		C		C	A	A	A	A	A	A
Approach Delay		21.9		32.9		6.5			7.1	
Approach LOS		C		C		A			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 72	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 101.4%	ICU Level of Service G
Analysis Period (min) 15	

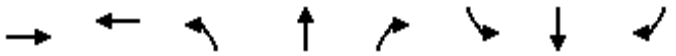
Splits and Phases: 1: Norfolk Street South & St. John's Road West/St. John's Road East

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	33.0	33.0	33.0	33.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)										
Flash Dont Walk (s)										
Pedestrian Calls (#/hr)										
90th %ile Green (s)	21.6	21.6	21.6	21.6	45.0	45.0	45.0	45.0	45.0	45.0
90th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	17.2	17.2	17.2	17.2	45.0	45.0	45.0	45.0	45.0	45.0
70th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	14.5	14.5	14.5	14.5	45.0	45.0	45.0	45.0	45.0	45.0
50th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	11.9	11.9	11.9	11.9	45.0	45.0	45.0	45.0	45.0	45.0
30th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
10th %ile Term Code	Hold	Hold	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR

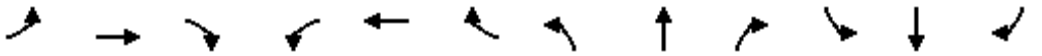
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 72
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 78.6
70th %ile Actuated Cycle: 74.2
50th %ile Actuated Cycle: 71.5
30th %ile Actuated Cycle: 68.9
10th %ile Actuated Cycle: 67

1: Norfolk Street South & St. John's Road West/St. John's Road East



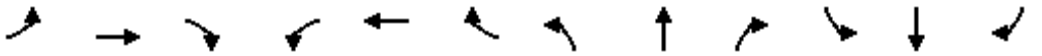
Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	115	217	49	241	60	64	345	32
v/c Ratio	0.32	0.66	0.07	0.20	0.06	0.09	0.29	0.03
Control Delay	21.9	32.9	6.8	7.1	3.8	6.8	7.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	32.9	6.8	7.1	3.8	6.8	7.6	2.5
Queue Length 50th (m)	10.7	23.9	2.2	11.9	1.1	2.9	18.2	0.0
Queue Length 95th (m)	23.1	44.1	7.5	27.1	5.9	9.1	39.1	3.0
Internal Link Dist (m)	539.7	3623.6		496.1			235.4	
Turn Bay Length (m)			90.0		5.0	85.0		5.0
Base Capacity (vph)	778	708	661	1179	1016	733	1203	1036
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.31	0.07	0.20	0.06	0.09	0.29	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	61	27	79	70	55	46	227	56	60	324	30
Future Volume (vph)	20	61	27	79	70	55	46	227	56	60	324	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.97			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798			1746		1825	1883	1601	1825	1921	1633
Flt Permitted		0.92			0.85		0.55	1.00	1.00	0.61	1.00	1.00
Satd. Flow (perm)		1669			1516		1055	1883	1601	1170	1921	1633
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	65	29	84	74	59	49	241	60	64	345	32
RTOR Reduction (vph)	0	17	0	0	19	0	0	0	13	0	0	12
Lane Group Flow (vph)	0	98	0	0	198	0	49	241	47	64	345	20
Heavy Vehicles (%)	0%	4%	0%	3%	5%	4%	0%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		14.9			14.9		45.1	45.1	45.1	45.1	45.1	45.1
Effective Green, g (s)		14.9			14.9		45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.21			0.21		0.63	0.63	0.63	0.63	0.63	0.63
Clearance Time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		345			313		660	1179	1002	732	1203	1022
v/s Ratio Prot								0.13			c0.18	
v/s Ratio Perm		0.06			c0.13		0.05		0.03	0.05		0.01
v/c Ratio		0.29			0.63		0.07	0.20	0.05	0.09	0.29	0.02
Uniform Delay, d1		24.1			26.1		5.3	5.8	5.2	5.3	6.1	5.1
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5			4.1		0.2	0.4	0.1	0.2	0.6	0.0
Delay (s)		24.5			30.2		5.5	6.2	5.3	5.6	6.7	5.1
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		24.5			30.2			5.9			6.4	
Approach LOS		C			C			A			A	

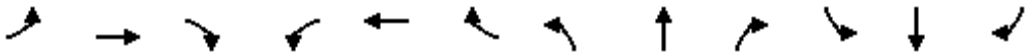
Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	132	12	6	158	61	6	185	3	37	289	20
Future Volume (Veh/h)	28	132	12	6	158	61	6	185	3	37	289	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	31	145	13	7	174	67	7	203	3	41	318	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	241			158			616	468	152	540	442	208
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	241			158			616	468	152	540	442	208
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			100			96	58	100	86	36	97
cM capacity (veh/h)	1337			1434			189	480	900	298	497	823

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	189	248	213	381
Volume Left	31	7	7	41
Volume Right	13	67	3	22
cSH	1337	1434	460	474
Volume to Capacity	0.02	0.00	0.46	0.80
Queue Length 95th (m)	0.5	0.1	18.3	56.8
Control Delay (s)	1.4	0.3	19.4	36.9
Lane LOS	A	A	C	E
Approach Delay (s)	1.4	0.3	19.4	36.9
Approach LOS			C	E

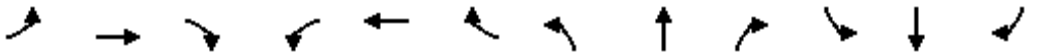
Intersection Summary				
Average Delay	18.0			
Intersection Capacity Utilization	60.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	111	34	5	199	27	15	147	8	33	248	42
Future Volume (Veh/h)	30	111	34	5	199	27	15	147	8	33	248	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	32	118	36	5	212	29	16	156	9	35	264	45
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	241			154			614	451	136	524	454	226
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	241			154			614	451	136	524	454	226
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	98			100			93	68	99	90	46	94
cM capacity (veh/h)	1337			1439			217	493	918	334	491	818

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	186	246	181	344
Volume Left	32	5	16	35
Volume Right	36	29	9	45
cSH	1337	1439	453	493
Volume to Capacity	0.02	0.00	0.40	0.70
Queue Length 95th (m)	0.6	0.1	14.4	40.8
Control Delay (s)	1.5	0.2	18.2	27.5
Lane LOS	A	A	C	D
Approach Delay (s)	1.5	0.2	18.2	27.5
Approach LOS			C	D

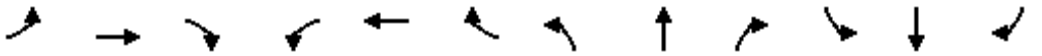
Intersection Summary				
Average Delay	13.6			
Intersection Capacity Utilization	55.5%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	94	7	52	126	10	9	147	37	5	194	94
Future Volume (Veh/h)	55	94	7	52	126	10	9	147	37	5	194	94
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	102	8	57	137	11	10	160	40	5	211	102
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	480	441	211	460	503	160	313			200		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	480	441	211	460	503	160	313			200		
tC, single (s)	7.1	6.7	6.2	7.1	6.6	7.0	4.2			4.8		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.1	4.0	2.3			2.8		
p0 queue free %	84	79	99	87	70	98	99			100		
cM capacity (veh/h)	369	485	834	423	459	725	1182			1064		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	170	205	170	40	216	102
Volume Left	60	57	10	0	5	0
Volume Right	8	11	0	40	0	102
cSH	445	457	1182	1700	1064	1700
Volume to Capacity	0.38	0.45	0.01	0.02	0.00	0.06
Queue Length 95th (m)	13.4	17.3	0.2	0.0	0.1	0.0
Control Delay (s)	18.0	19.1	0.5	0.0	0.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.0	19.1	0.4		0.2	
Approach LOS	C	C				

Intersection Summary				
Average Delay	7.9			
Intersection Capacity Utilization	34.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	225	4	7	195	138	5	29	5	221	38	5
Future Volume (Veh/h)	0	225	4	7	195	138	5	29	5	221	38	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	239	4	7	207	147	5	31	5	235	40	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	354			243			560	609	241	556	538	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	354			243			560	609	241	556	538	280
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	92	99	43	91	99
cM capacity (veh/h)	1205			1323			404	408	798	412	448	758

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	243	361	41	280
Volume Left	0	7	5	235
Volume Right	4	147	5	5
cSH	1205	1323	433	420
Volume to Capacity	0.00	0.01	0.09	0.67
Queue Length 95th (m)	0.0	0.1	2.4	35.9
Control Delay (s)	0.0	0.2	14.2	29.1
Lane LOS		A	B	D
Approach Delay (s)	0.0	0.2	14.2	29.1
Approach LOS			B	D

Intersection Summary				
Average Delay	9.5			
Intersection Capacity Utilization	52.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Appendix E - Synchro Output Reports (2035 Total Traffic)

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	31	45	38	62	36	281	77	37	168	16
Future Volume (vph)	31	45	38	62	36	281	77	37	168	16
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		13.5		13.5	45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.19		0.19	0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.48		0.63	0.06	0.29	0.10	0.07	0.18	0.02
Control Delay		26.1		31.3	6.1	7.1	4.3	6.2	6.3	1.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		26.1		31.3	6.1	7.1	4.3	6.2	6.3	1.3
LOS		C		C	A	A	A	A	A	A
Approach Delay		26.1		31.3		6.4			5.9	
Approach LOS		C		C		A			A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 70.6
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 98.6% ICU Level of Service F
Analysis Period (min) 15

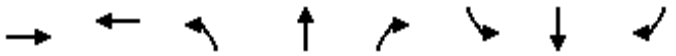
Splits and Phases: 1: Norfolk Street South & St. John's Road West/St. John's Road East

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	33.0	33.0	33.0	33.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)										
Flash Dont Walk (s)										
Pedestrian Calls (#/hr)										
90th %ile Green (s)	19.3	19.3	19.3	19.3	45.0	45.0	45.0	45.0	45.0	45.0
90th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	15.4	15.4	15.4	15.4	45.0	45.0	45.0	45.0	45.0	45.0
70th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	12.9	12.9	12.9	12.9	45.0	45.0	45.0	45.0	45.0	45.0
50th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	10.5	10.5	10.5	10.5	45.0	45.0	45.0	45.0	45.0	45.0
30th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
10th %ile Term Code	Hold	Hold	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 70.6
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 76.3
70th %ile Actuated Cycle: 72.4
50th %ile Actuated Cycle: 69.9
30th %ile Actuated Cycle: 67.5
10th %ile Actuated Cycle: 67

1: Norfolk Street South & St. John's Road West/St. John's Road East

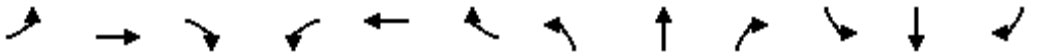


Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	192	45	351	96	46	210	20
v/c Ratio	0.48	0.63	0.06	0.29	0.10	0.07	0.18	0.02
Control Delay	26.1	31.3	6.1	7.1	4.3	6.2	6.3	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	31.3	6.1	7.1	4.3	6.2	6.3	1.3
Queue Length 50th (m)	12.8	19.2	1.9	17.2	2.5	1.9	9.5	0.0
Queue Length 95th (m)	23.5	32.3	5.7	31.7	7.6	5.8	19.1	1.1
Internal Link Dist (m)	539.7	2181.3		496.1			235.4	
Turn Bay Length (m)			90.0		5.0	85.0		5.0
Base Capacity (vph)	650	699	724	1191	969	641	1169	987
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.27	0.06	0.29	0.10	0.07	0.18	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	45	33	38	62	53	36	281	77	37	168	16
Future Volume (vph)	31	45	33	38	62	53	36	281	77	37	168	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.96			0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1610			1618		1722	1865	1498	1738	1830	1526
Flt Permitted		0.83			0.89		0.63	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)		1359			1455		1135	1865	1498	1004	1830	1526
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	39	56	41	48	78	66	45	351	96	46	210	20
RTOR Reduction (vph)	0	22	0	0	27	0	0	0	13	0	0	7
Lane Group Flow (vph)	0	114	0	0	165	0	45	351	83	46	210	13
Heavy Vehicles (%)	0%	29%	3%	18%	13%	6%	6%	3%	9%	5%	5%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		13.5			13.5		45.1	45.1	45.1	45.1	45.1	45.1
Effective Green, g (s)		13.5			13.5		45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio		0.19			0.19		0.64	0.64	0.64	0.64	0.64	0.64
Clearance Time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		259			278		725	1191	956	641	1169	974
v/s Ratio Prot								c0.19			0.11	
v/s Ratio Perm		0.08			c0.11		0.04		0.06	0.05		0.01
v/c Ratio		0.44			0.59		0.06	0.29	0.09	0.07	0.18	0.01
Uniform Delay, d1		25.2			26.1		4.8	5.7	4.9	4.8	5.2	4.6
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.2			3.4		0.2	0.6	0.2	0.2	0.3	0.0
Delay (s)		26.4			29.4		5.0	6.3	5.1	5.0	5.5	4.7
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		26.4			29.4			5.9			5.4	
Approach LOS		C			C			A			A	

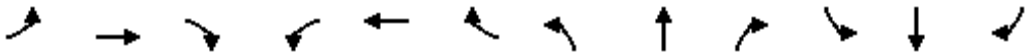
Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	117	14	3	125	46	10	237	5	16	156	11
Future Volume (Veh/h)	22	117	14	3	125	46	10	237	5	16	156	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	26	136	16	3	145	53	12	276	6	19	181	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	198			152			477	400	144	518	382	172
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	198			152			477	400	144	518	382	172
tC, single (s)	4.3			4.1			7.3	6.5	6.2	7.3	6.5	6.4
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.7	4.0	3.3	3.7	4.0	3.5
p0 queue free %	98			100			96	47	99	92	66	98
cM capacity (veh/h)	1258			1441			336	525	909	251	539	832

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	178	201	294	213
Volume Left	26	3	12	19
Volume Right	16	53	6	13
cSH	1258	1441	517	499
Volume to Capacity	0.02	0.00	0.57	0.43
Queue Length 95th (m)	0.5	0.0	26.7	16.1
Control Delay (s)	1.3	0.1	20.7	17.5
Lane LOS	A	A	C	C
Approach Delay (s)	1.3	0.1	20.7	17.5
Approach LOS			C	C

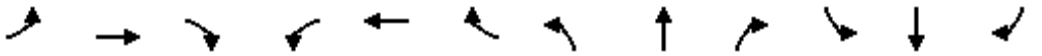
Intersection Summary				
Average Delay	11.4			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	131	8	4	107	15	39	196	6	15	85	23
Future Volume (Veh/h)	41	131	8	4	107	15	39	196	6	15	85	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	44	141	9	4	115	16	42	211	6	16	91	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	131			150			435	372	146	476	369	123
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	131			150			435	372	146	476	369	123
tC, single (s)	4.2			4.1			7.1	6.5	6.6	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.7	3.5	4.1	3.4
p0 queue free %	97			100			90	61	99	95	83	97
cM capacity (veh/h)	1406			1444			433	542	810	339	532	909

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	194	135	259	132
Volume Left	44	4	42	16
Volume Right	9	16	6	25
cSH	1406	1444	525	537
Volume to Capacity	0.03	0.00	0.49	0.25
Queue Length 95th (m)	0.7	0.1	20.6	7.3
Control Delay (s)	1.9	0.2	18.4	13.9
Lane LOS	A	A	C	B
Approach Delay (s)	1.9	0.2	18.4	13.9
Approach LOS			C	B

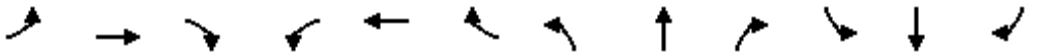
Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	94	12	18	49	9	8	112	20	13	76	28
Future Volume (Veh/h)	74	94	12	18	49	9	8	112	20	13	76	28
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	80	102	13	20	53	10	9	122	22	14	83	30
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	288	273	83	315	281	122	113			144		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	288	273	83	315	281	122	113			144		
tC, single (s)	7.1	6.6	6.2	7.1	6.7	6.9	4.1			4.4		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.2	3.9	2.2			2.5		
p0 queue free %	87	83	99	96	91	99	99			99		
cM capacity (veh/h)	599	609	982	545	587	772	1489			1284		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	195	83	131	22	97	30
Volume Left	80	20	9	0	14	0
Volume Right	13	10	0	22	0	30
cSH	620	593	1489	1700	1284	1700
Volume to Capacity	0.31	0.14	0.01	0.01	0.01	0.02
Queue Length 95th (m)	10.2	3.7	0.1	0.0	0.3	0.0
Control Delay (s)	13.4	12.1	0.6	0.0	1.2	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	13.4	12.1	0.5		0.9	
Approach LOS	B	B				

Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	35.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	164	5	8	249	222	7	21	11	104	16	6
Future Volume (Veh/h)	5	164	5	8	249	222	7	21	11	104	16	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	208	6	10	315	281	9	27	14	132	20	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	596			214			716	839	211	726	702	456
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	596			214			716	839	211	726	702	456
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			97	91	98	57	94	99
cM capacity (veh/h)	980			1356			323	298	829	306	358	605

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	220	606	50	160
Volume Left	6	10	9	132
Volume Right	6	281	14	8
cSH	980	1356	369	319
Volume to Capacity	0.01	0.01	0.14	0.50
Queue Length 95th (m)	0.1	0.2	3.5	20.2
Control Delay (s)	0.3	0.2	16.3	27.1
Lane LOS	A	A	C	D
Approach Delay (s)	0.3	0.2	16.3	27.1
Approach LOS			C	D

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	152	7	10	146	7	10
Future Volume (Veh/h)	152	7	10	146	7	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	8	11	159	8	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			173		350	169
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			173		350	169
tC, single (s)			5.1		7.4	7.2
tC, 2 stage (s)						
tF (s)			3.1		4.4	4.2
p0 queue free %			99		98	98
cM capacity (veh/h)			978		484	674

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	173	170	19
Volume Left	0	11	8
Volume Right	8	0	11
cSH	1700	978	578
Volume to Capacity	0.10	0.01	0.03
Queue Length 95th (m)	0.0	0.3	0.8
Control Delay (s)	0.0	0.7	11.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.7	11.4
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	20	64	81	73	46	227	58	62	324	30
Future Volume (vph)	20	64	81	73	46	227	58	62	324	30
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		15.6		15.6	45.2	45.2	45.2	45.2	45.2	45.2
Actuated g/C Ratio		0.21		0.21	0.62	0.62	0.62	0.62	0.62	0.62
v/c Ratio		0.32		0.68	0.08	0.21	0.06	0.09	0.29	0.03
Control Delay		21.7		33.9	7.2	7.4	4.1	7.2	8.0	2.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.7		33.9	7.2	7.4	4.1	7.2	8.0	2.6
LOS		C		C	A	A	A	A	A	A
Approach Delay		21.7		33.9		6.8			7.5	
Approach LOS		C		C		A			A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 72.8
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 101.8% ICU Level of Service G
Analysis Period (min) 15

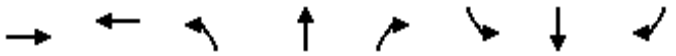
Splits and Phases: 1: Norfolk Street South & St. John's Road West/St. John's Road East

1: Norfolk Street South & St. John's Road West/St. John's Road East

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	24.0	24.0	24.0	24.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (s)	39.0	39.0	39.0	39.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	33.0	33.0	33.0	33.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)										
Flash Dont Walk (s)										
Pedestrian Calls (#/hr)										
90th %ile Green (s)	22.9	22.9	22.9	22.9	45.0	45.0	45.0	45.0	45.0	45.0
90th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	18.2	18.2	18.2	18.2	45.0	45.0	45.0	45.0	45.0	45.0
70th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	15.3	15.3	15.3	15.3	45.0	45.0	45.0	45.0	45.0	45.0
50th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	12.5	12.5	12.5	12.5	45.0	45.0	45.0	45.0	45.0	45.0
30th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	10.0	10.0	10.0	10.0	45.0	45.0	45.0	45.0	45.0	45.0
10th %ile Term Code	Hold	Hold	Min	Min	MaxR	MaxR	MaxR	MaxR	MaxR	MaxR

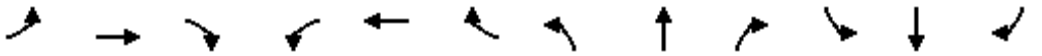
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 72.8
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 79.9
70th %ile Actuated Cycle: 75.2
50th %ile Actuated Cycle: 72.3
30th %ile Actuated Cycle: 69.5
10th %ile Actuated Cycle: 67

1: Norfolk Street South & St. John's Road West/St. John's Road East



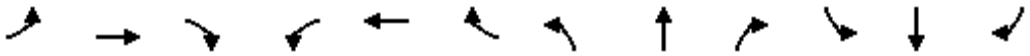
Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	118	225	49	241	62	66	345	32
v/c Ratio	0.32	0.68	0.08	0.21	0.06	0.09	0.29	0.03
Control Delay	21.7	33.9	7.2	7.4	4.1	7.2	8.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	33.9	7.2	7.4	4.1	7.2	8.0	2.6
Queue Length 50th (m)	11.1	25.3	2.3	12.4	1.2	3.2	18.9	0.0
Queue Length 95th (m)	23.6	46.1	7.7	28.2	6.4	9.8	40.7	3.1
Internal Link Dist (m)	539.7	2204.0		496.1			235.4	
Turn Bay Length (m)			90.0		5.0	85.0		5.0
Base Capacity (vph)	756	683	652	1168	978	704	1192	1027
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.33	0.08	0.21	0.06	0.09	0.29	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	64	27	81	73	57	46	227	58	62	324	30
Future Volume (vph)	20	64	27	81	73	57	46	227	58	62	324	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.97			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1760			1704		1825	1883	1555	1772	1921	1633
Flt Permitted		0.92			0.85		0.55	1.00	1.00	0.61	1.00	1.00
Satd. Flow (perm)		1637			1477		1051	1883	1555	1136	1921	1633
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	68	29	86	78	61	49	241	62	66	345	32
RTOR Reduction (vph)	0	17	0	0	18	0	0	0	14	0	0	12
Lane Group Flow (vph)	0	102	0	0	207	0	49	241	48	66	345	20
Heavy Vehicles (%)	0%	8%	0%	5%	8%	7%	0%	2%	5%	3%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		15.6			15.6		45.2	45.2	45.2	45.2	45.2	45.2
Effective Green, g (s)		15.6			15.6		45.2	45.2	45.2	45.2	45.2	45.2
Actuated g/C Ratio		0.21			0.21		0.62	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)		6.0			6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		350			316		652	1169	965	705	1192	1013
v/s Ratio Prot								0.13			c0.18	
v/s Ratio Perm		0.06			c0.14		0.05		0.03	0.06		0.01
v/c Ratio		0.29			0.65		0.08	0.21	0.05	0.09	0.29	0.02
Uniform Delay, d1		24.0			26.1		5.5	6.0	5.4	5.6	6.4	5.3
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5			4.8		0.2	0.4	0.1	0.3	0.6	0.0
Delay (s)		24.4			31.0		5.7	6.4	5.5	5.8	7.0	5.3
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		24.4			31.0			6.1			6.7	
Approach LOS		C			C			A			A	

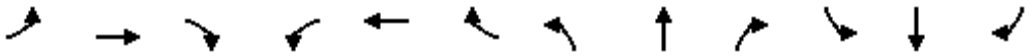
Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	138	14	6	164	61	8	185	3	37	289	22
Future Volume (Veh/h)	30	138	14	6	164	61	8	185	3	37	289	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	33	152	15	7	180	67	9	203	3	41	318	24
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	247			167			636	486	160	558	460	214
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	247			167			636	486	160	558	460	214
tC, single (s)	4.2			4.1			7.3	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.7	4.0	3.3	3.5	4.0	3.4
p0 queue free %	97			100			94	57	100	86	34	97
cM capacity (veh/h)	1290			1423			161	468	891	286	484	797

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	200	254	215	383
Volume Left	33	7	9	41
Volume Right	15	67	3	24
cSH	1290	1423	436	461
Volume to Capacity	0.03	0.00	0.49	0.83
Queue Length 95th (m)	0.6	0.1	20.2	61.2
Control Delay (s)	1.5	0.3	21.0	40.8
Lane LOS	A	A	C	E
Approach Delay (s)	1.5	0.3	21.0	40.8
Approach LOS			C	E

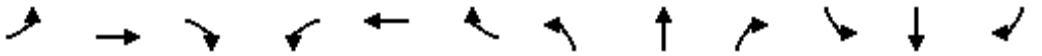
Intersection Summary				
Average Delay	19.5			
Intersection Capacity Utilization	61.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	114	35	5	202	27	16	147	8	33	248	44
Future Volume (Veh/h)	32	114	35	5	202	27	16	147	8	33	248	44
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	34	121	37	5	215	29	17	156	9	35	264	47
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	244			158			626	462	140	534	466	230
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244			158			626	462	140	534	466	230
tC, single (s)	4.2			4.1			7.2	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.0	3.3	3.6	4.0	3.3
p0 queue free %	97			100			92	68	99	89	45	94
cM capacity (veh/h)	1299			1434			205	485	914	327	483	815

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	192	249	182	346
Volume Left	34	5	17	35
Volume Right	37	29	9	47
cSH	1299	1434	439	486
Volume to Capacity	0.03	0.00	0.41	0.71
Queue Length 95th (m)	0.6	0.1	15.2	42.6
Control Delay (s)	1.6	0.2	18.9	28.7
Lane LOS	A	A	C	D
Approach Delay (s)	1.6	0.2	18.9	28.7
Approach LOS			C	D

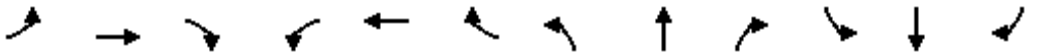
Intersection Summary				
Average Delay	14.1			
Intersection Capacity Utilization	56.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	95	7	52	127	10	9	147	37	5	194	96
Future Volume (Veh/h)	57	95	7	52	127	10	9	147	37	5	194	96
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	103	8	57	138	11	10	160	40	5	211	104
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	481	441	211	460	505	160	315			200		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	481	441	211	460	505	160	315			200		
tC, single (s)	7.2	6.7	6.2	7.1	6.6	7.0	4.2			4.8		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.5	4.1	4.0	2.3			2.8		
p0 queue free %	83	79	99	86	70	98	99			100		
cM capacity (veh/h)	364	485	834	422	456	725	1180			1064		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	173	206	170	40	216	104
Volume Left	62	57	10	0	5	0
Volume Right	8	11	0	40	0	104
cSH	441	455	1180	1700	1064	1700
Volume to Capacity	0.39	0.45	0.01	0.02	0.00	0.06
Queue Length 95th (m)	14.0	17.5	0.2	0.0	0.1	0.0
Control Delay (s)	18.3	19.3	0.5	0.0	0.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.3	19.3	0.4		0.2	
Approach LOS	C	C				

Intersection Summary				
Average Delay	8.0			
Intersection Capacity Utilization	34.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	225	4	7	195	140	5	29	5	223	38	5
Future Volume (Veh/h)	0	225	4	7	195	140	5	29	5	223	38	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	239	4	7	207	149	5	31	5	237	40	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	356			243			562	611	241	557	538	282
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	356			243			562	611	241	557	538	282
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	92	99	42	91	99
cM capacity (veh/h)	1203			1323			404	407	798	410	447	757

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	243	363	41	282
Volume Left	0	7	5	237
Volume Right	4	149	5	5
cSH	1203	1323	432	418
Volume to Capacity	0.00	0.01	0.09	0.67
Queue Length 95th (m)	0.0	0.1	2.4	36.8
Control Delay (s)	0.0	0.2	14.2	29.7
Lane LOS		A	B	D
Approach Delay (s)	0.0	0.2	14.2	29.7
Approach LOS			B	D

Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	52.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	177	7	10	204	7	10
Future Volume (Veh/h)	177	7	10	204	7	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	192	8	11	222	8	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			200		440	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			200		440	196
tC, single (s)			5.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			3.1		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			952		568	845

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	200	233	19
Volume Left	0	11	8
Volume Right	8	0	11
cSH	1700	952	701
Volume to Capacity	0.12	0.01	0.03
Queue Length 95th (m)	0.0	0.3	0.6
Control Delay (s)	0.0	0.5	10.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	10.3
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

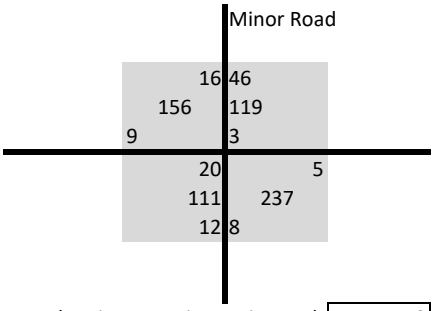
Appendix F – Traffic Signal Warrants

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Background
Location: St. John's Road East/Blueline Road

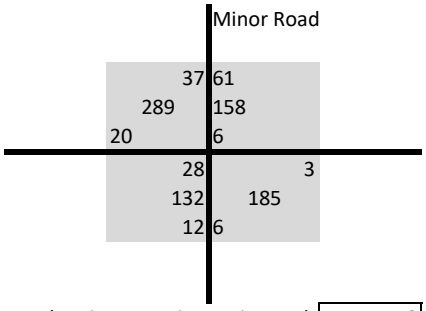
Scenario: Existing Intersection with Future Traffic
Main Road Direction: East / West
Number of Lanes on Main Road: 1
Tee Intersection?: No
Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	88%	120%	NO
			x						
		Average Hourly Volume	420						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	203%	120%	
			x						
		Average Hourly Volume	243						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	37%	120%	NO
			x						
		Average Hourly Volume	177						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	296%	120%	
			x						
		Average Hourly Volume	148						

Results
Traffic signals are not warranted.

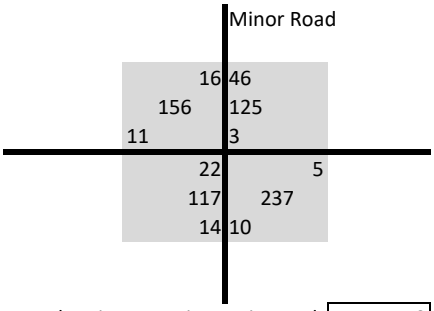
Project: SBM-24-2024

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Total
Location: St. John's Road East/Blueline Road

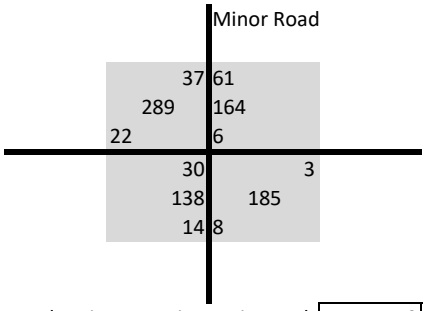
Scenario: Existing Intersection with Future Traffic
Main Road Direction: East / West
Number of Lanes on Main Road: 1
Tee Intersection?: No
Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	90%	120%	NO
			x						
		Average Hourly Volume	430						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	204%	120%	
			x						
		Average Hourly Volume	245						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	39%	120%	NO
			x						
		Average Hourly Volume	185						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	298%	120%	
			x						
		Average Hourly Volume	149						

Results
Traffic signals are not warranted.

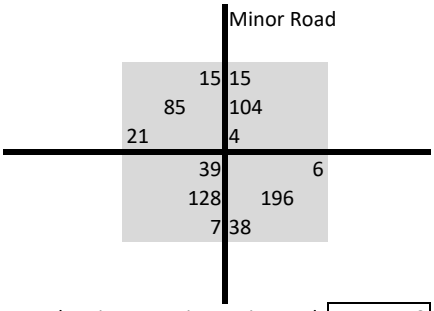
Project: SBM-24-2024

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Background
Location: St. John's Road East/Cockshutt Road

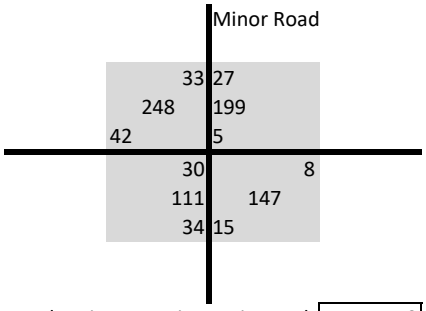
Scenario: Existing Intersection with Future Traffic
Main Road Direction: East / West
Number of Lanes on Main Road: 1
Tee Intersection?: No
Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	81%	120%	NO
			x						
		Average Hourly Volume	389						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	178%	120%	
			x						
		Average Hourly Volume	214						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	37%	120%	NO
			x						
		Average Hourly Volume	176						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	272%	120%	
			x						
		Average Hourly Volume	136						

Results
Traffic signals are not warranted.

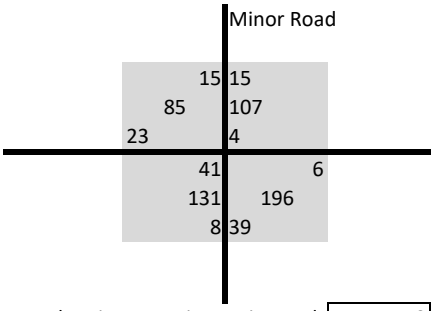
Project: SBM-24-2024

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Total
Location: St. John's Road East/Cockshutt Road

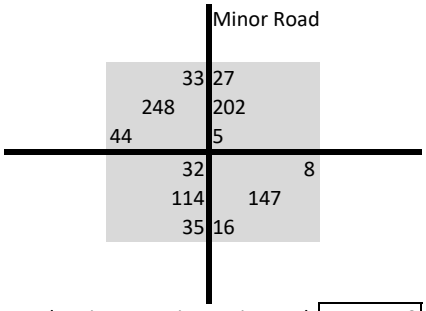
Scenario: Existing Intersection with Future Traffic
Main Road Direction: East / West
Number of Lanes on Main Road: 1
Tee Intersection?: No
Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	82%	120%	NO
			x						
		Average Hourly Volume	395						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	179%	120%	
			x						
		Average Hourly Volume	215						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	38%	120%	NO
			x						
		Average Hourly Volume	180						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	274%	120%	
			x						
		Average Hourly Volume	137						

Results
Traffic signals are not warranted.

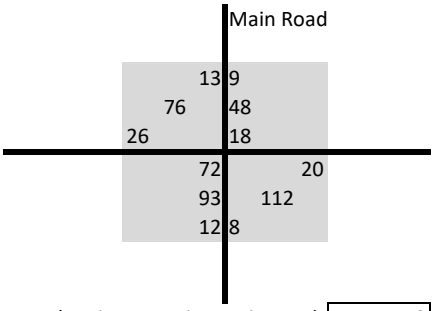
Project: SBM-24-2024

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Background Location: Highway 6/ St.John's Road East

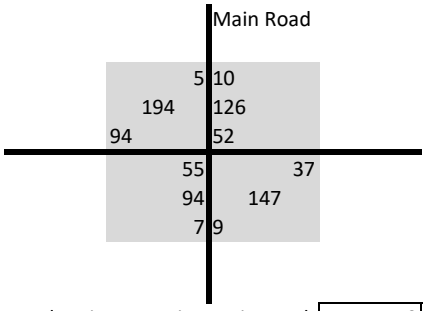
Scenario: Existing Intersection with Future Traffic
Main Road Direction: North / South Number of Lanes on Main Road: 1
Tee Intersection?: No Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	70%	120%	NO
			x						
		Average Hourly Volume	334						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	124%	120%	
			x						
		Average Hourly Volume	149						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	39%	120%	NO
			x						
		Average Hourly Volume	185						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	208%	120%	
			x						
		Average Hourly Volume	104						

Results
Traffic signals are not warranted.

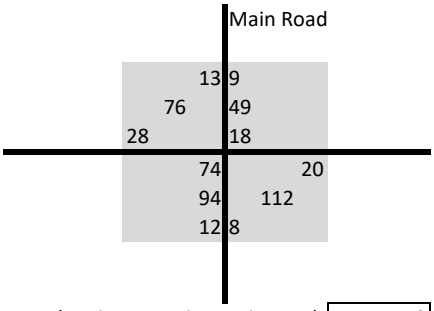
Project: SBM-24-2024

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Total Location: Highway 6/ St.John's Road East

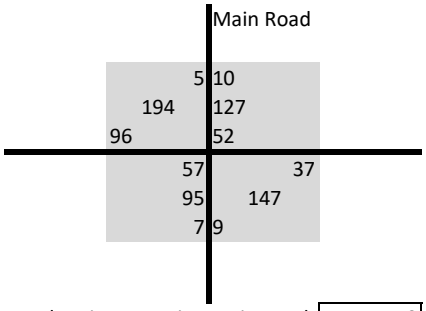
Scenario: Existing Intersection with Future Traffic
Main Road Direction: North / South Number of Lanes on Main Road: 1
Tee Intersection?: No Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	70%	120%	NO
			x						
		Average Hourly Volume	337						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	126%	120%	
			x						
		Average Hourly Volume	151						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	39%	120%	NO
			x						
		Average Hourly Volume	186						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	212%	120%	
			x						
		Average Hourly Volume	106						

Results
Traffic signals are not warranted.

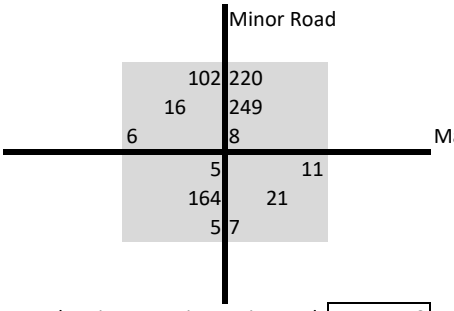
Project: SBM-24-2024

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Total
Location: Highway 6/ Blueline Road

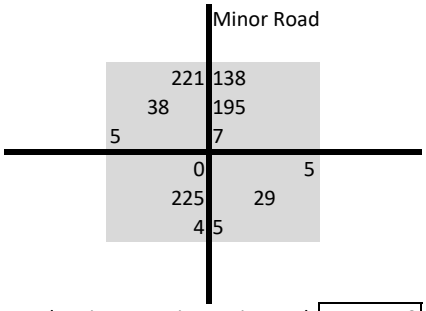
Scenario: Existing Intersection with Future Traffic
Main Road Direction: East / West
Number of Lanes on Main Road: 1
Tee Intersection?: No
Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	88%	120%	NO
			x						
		Average Hourly Volume	422						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	98%	120%	
			x						
		Average Hourly Volume	117						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	64%	120%	NO
			x						
		Average Hourly Volume	305						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	198%	120%	
			x						
		Average Hourly Volume	99						

Results
Traffic signals are not warranted.

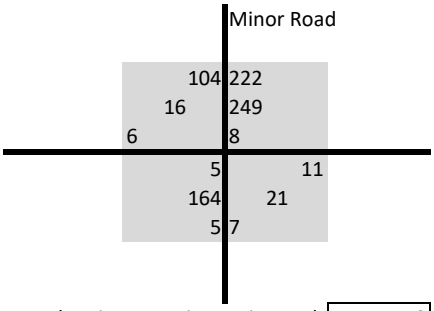
Project: SBM-24-2024

TRAFFIC SIGNAL WARRANT ANALYSIS - PROJECTED VOLUMES

Analysis Year/Condition: 2035 Total
Location: Highway 6/ Blueline Road

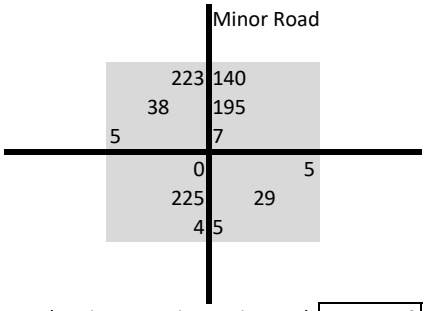
Scenario: Existing Intersection with Future Traffic
Main Road Direction: East / West
Number of Lanes on Main Road: 1
Tee Intersection?: No
Flow Condition: Free Flow (Rural)

AM Peak Hour Volumes



Pedestrians crossing Main Road: 0

PM Peak Hour Volumes



Pedestrians crossing Main Road: 0

Ontario Traffic Manual Book 12 - Justification 7 - Projected Volumes:

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 1: Minimum Vehicular Volume	1A (All Approaches)	Volume Requirement	480	720	600	900	88%	120%	NO
			x						
		Average Hourly Volume	424						
	1B (Minor Street Approaches)	Volume Requirement	120	170	120	170	98%	120%	
			x						
		Average Hourly Volume	118						

		Lane Condition	1 Lanes		2 or More Lanes		Percent Fullfilled	Minimum Requirement	Signals Warranted?
		Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW			
Justification 2: Delay to Cross Traffic	2A (Main Road Approaches)	Volume Requirement	480	720	600	900	64%	120%	NO
			x						
		Average Hourly Volume	306						
	2B (Traffic Crossing Main Road)	Volume Requirement	50	75	50	75	200%	120%	
			x						
		Average Hourly Volume	100						

Results
Traffic signals are not warranted.

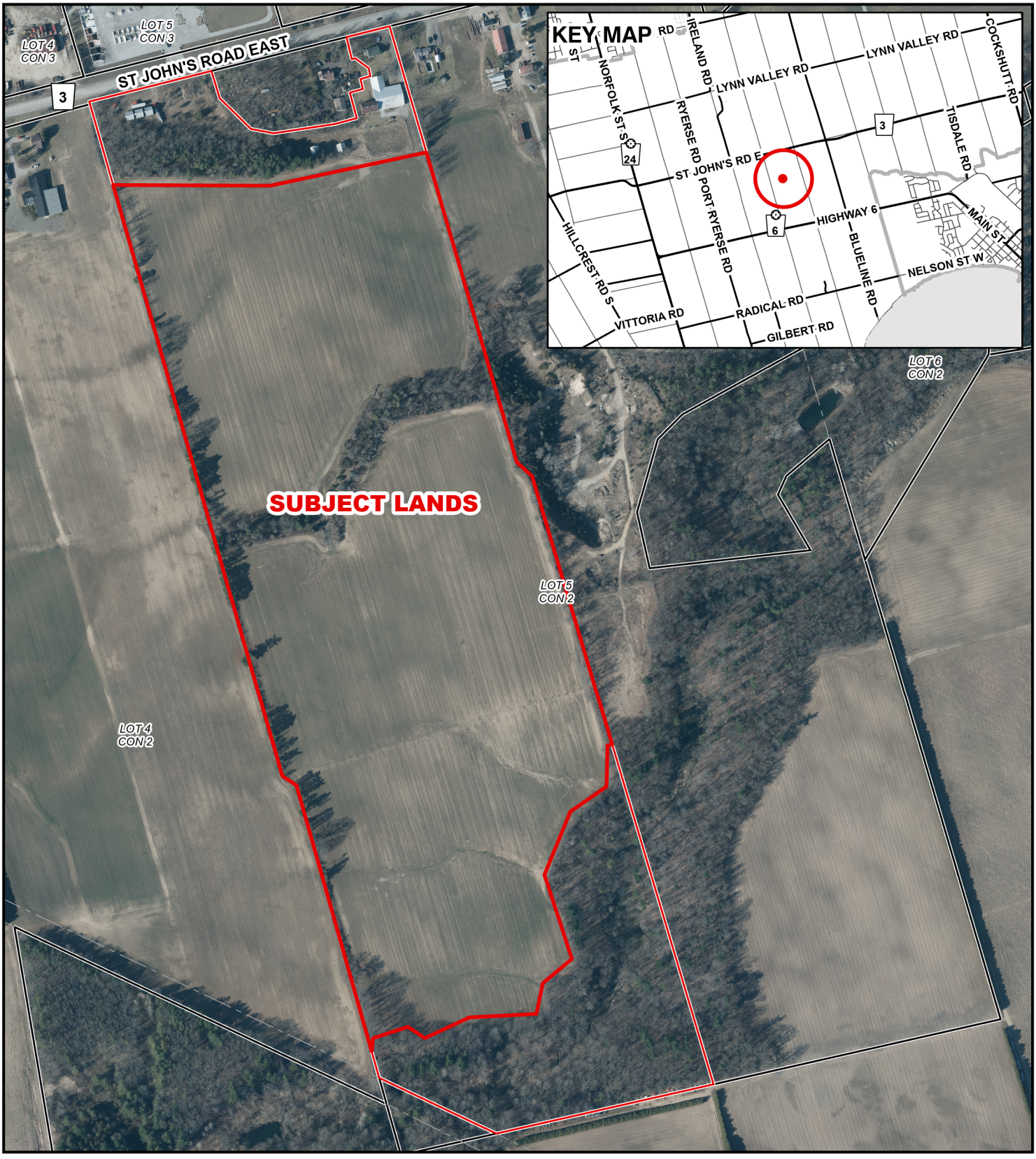
Project: SBM-24-2024

MAP A

ZNPL2025359

CONTEXT MAP

Geographic Township of WOODHOUSE



1/21/2026

Legend

- Subject Lands
- Lands Owned

2020 Air Photo

N

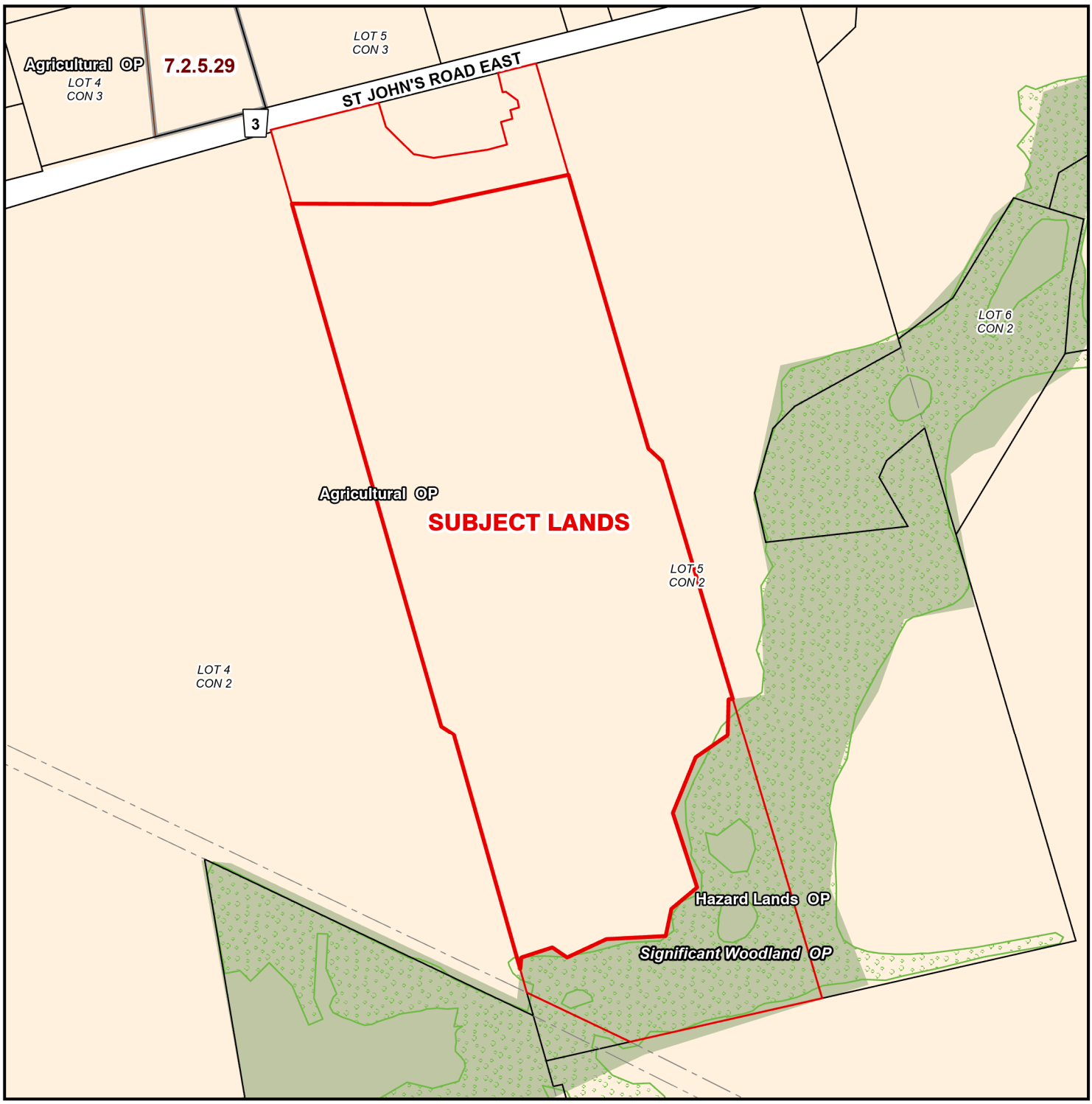
40 20 0 40 80 120 160 Meters

MAP B

ZNPL2025359

OFFICIAL PLAN MAP

Geographic Township of WOODHOUSE



Legend

- Subject Lands
- Lands Owned

Official Plan Designations

- Agricultural
- Hazard Lands
- Significant Woodland

1/21/2026

N

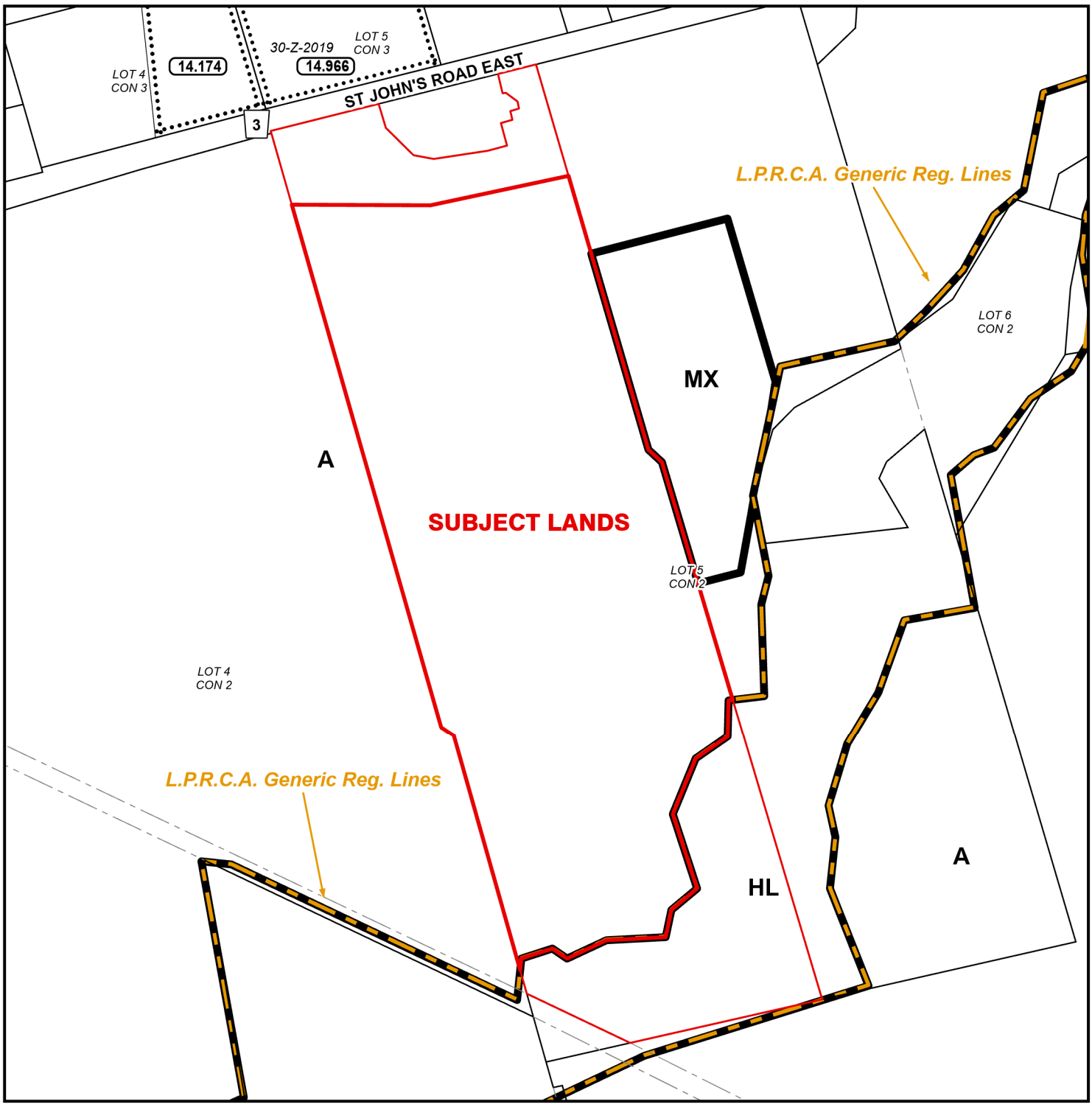
40 20 0 40 80 120 160 Meters

MAP C

ZNPL2025359

PROPOSED ZONING BY-LAW AMENDMENT MAP

Geographic Township of WOODHOUSE



ZONING BY-LAW 1-Z-2014

1/21/2026

LEGEND

- Subject Lands
- Lands Owned
- LPRCA Generic RegLines

(H) - Holding

A - Agricultural Zone

MX - Extractive Industrial Zone

HL - Hazard Land Zone

N

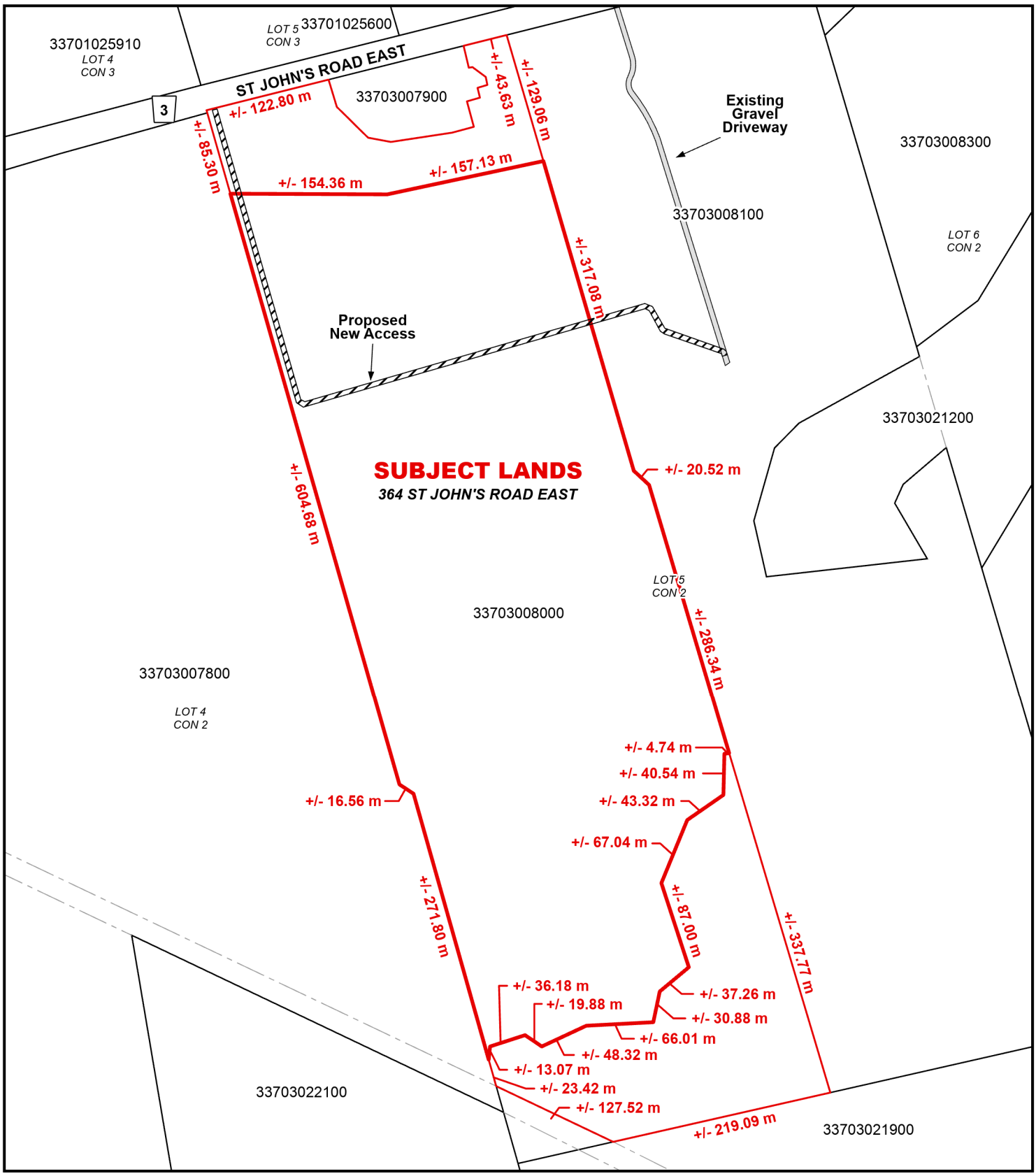
40 20 0 40 80 120 160 Meters

MAP D

ZNPL2025359

CONCEPTUAL PLAN

Geographic Township of WOODHOUSE



Legend

- Subject Lands
- Lands Owned

1/21/2026

N

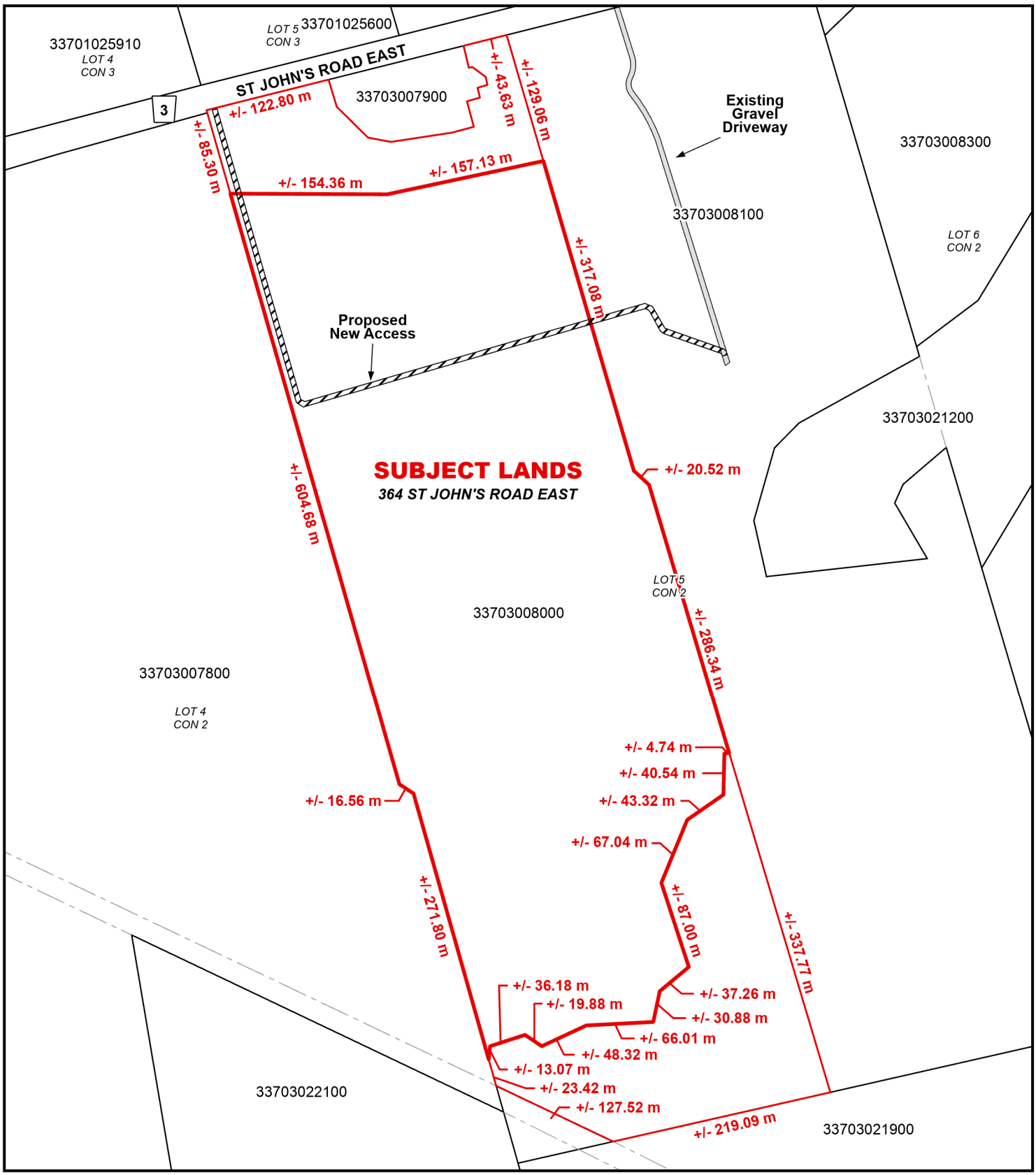
40 20 0 40 80 120 160 Meters

LOCATION OF LANDS AFFECTED

ZNPL2025359

CONCEPTUAL PLAN

Geographic Township of WOODHOUSE



Legend

- Subject Lands
- Lands Owned

1/21/2026

N

40 20 0 40 80 120 160 Meters