

# Lambton County Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA

Public Consultation Centre Presentation

June 28, 2023



# Meeting Overview

---



Project  
Introduction



Study Area Issues  
and Opportunities



Preliminary  
Design



Schedule

A photograph of a residential street intersection. A dark-colored SUV is driving through the intersection. In the background, there is a white house with a grey roof, several trees, and a utility pole with a traffic light. The sky is blue with some light clouds. The text "Project Introduction" is overlaid in large white letters across the center of the image.

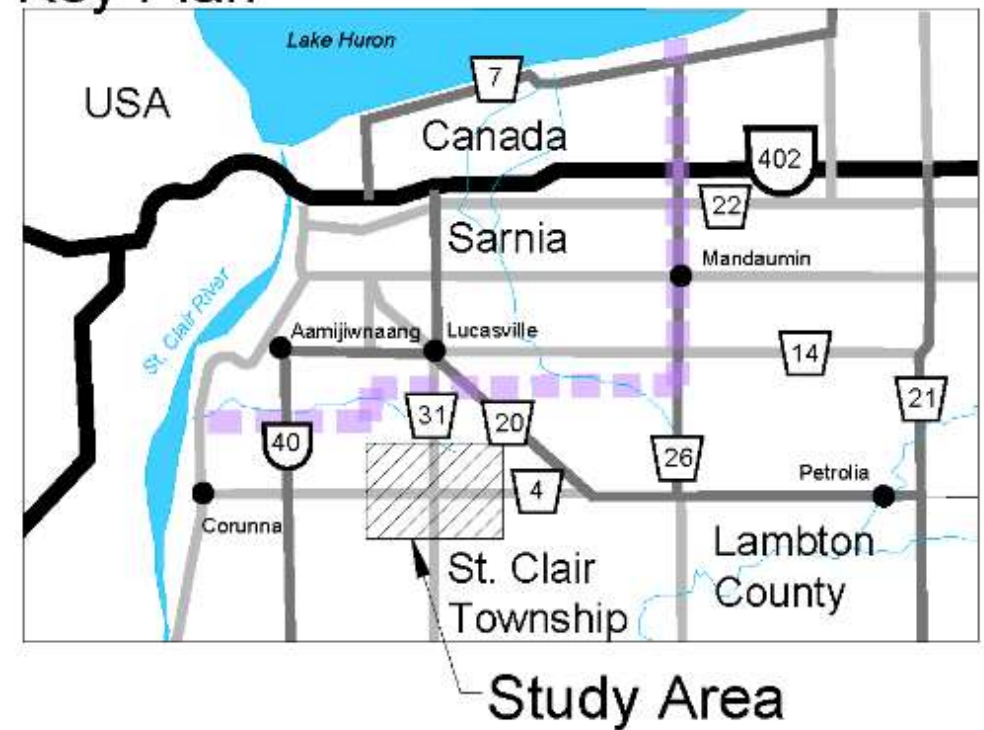
# Project Introduction



# Project Introduction

- The County of Lambton is conducting this Municipal Class Environmental Assessment (EA) for safety improvements to the intersection of County Road 4 (Petrolia Line) and County Road 31 (Kimble Road).
- The Study has developed and evaluated alternatives for the roadway intersection and has determined the property requirements to implement the project.

## Key Plan



# Environmental Assessment

---

- The Study has been initiated as a Schedule B Class EA, based on the range of anticipated effects in accordance with the Municipal Class Environmental Assessment (2023).
- The Study may be reclassified as an Exempt Schedule project, depending on the recommendations.
- The Schedule B EA Study will be documented in a Project File Report, which is a summary of all public consultation, data, recommendations and reports produced for the project.



# Study Area



# Purpose of Public Consultation Centre (PCC)

---

This PCC will present:

- Overview of the Municipal Class Environmental Assessment Process.
- Introduction and Problem and Opportunity Statement for the Study.
- Description of the existing conditions in the area.
- Summary of work completed to date.
- Alternative Planning Solutions, Evaluation and Preliminary Recommendations.
- Next Steps.

# Study Area Issues and Opportunities

---



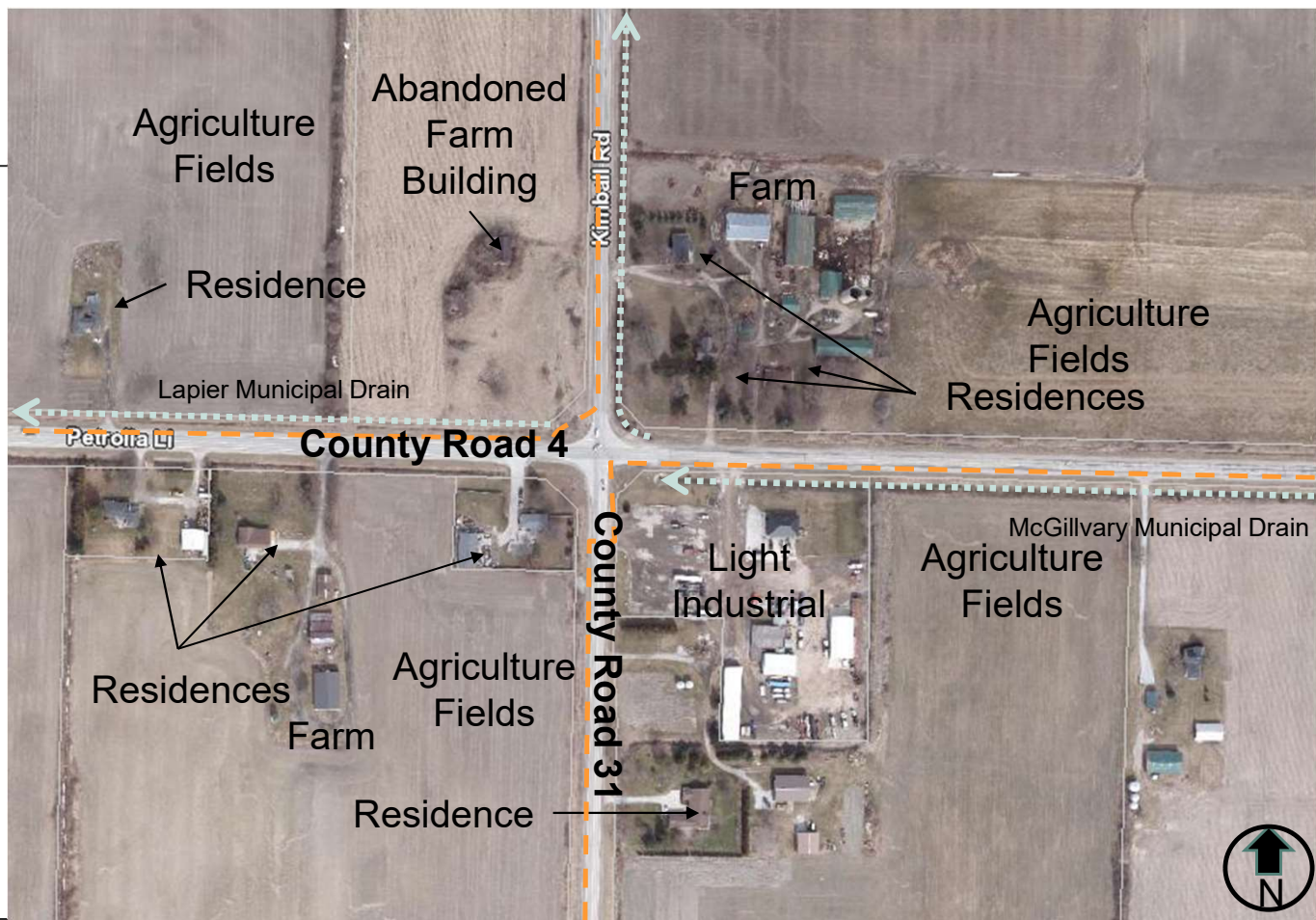
# Problem and Opportunity Statement

---

- Develop an intersection design that will reduce the frequency and severity of vehicular collisions at the County Road 4/31 intersection while minimizing delays to the travelling public and impacts to adjacent landowners.
- Where possible, the intersection configuration should also minimize construction and operational/maintenance costs.
- Can accommodate oversized vehicles.

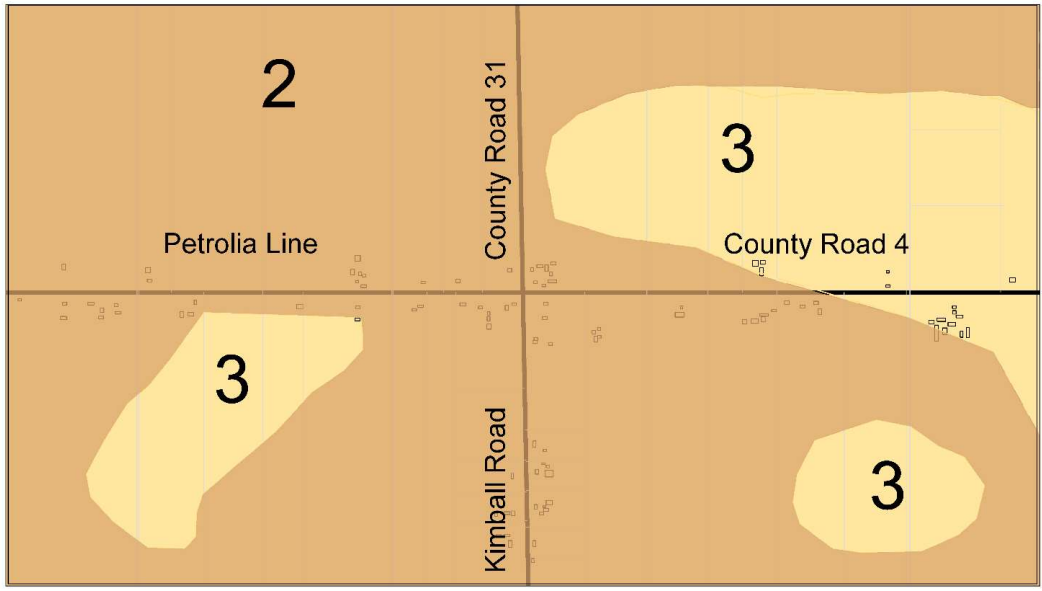


# Existing Land Uses



- Legend
- Enbridge Gas Line
  - Municipal Drains





Legend

- Class 2 - Moderate Limitations
- Class 3 - Moderate Severe Limitations



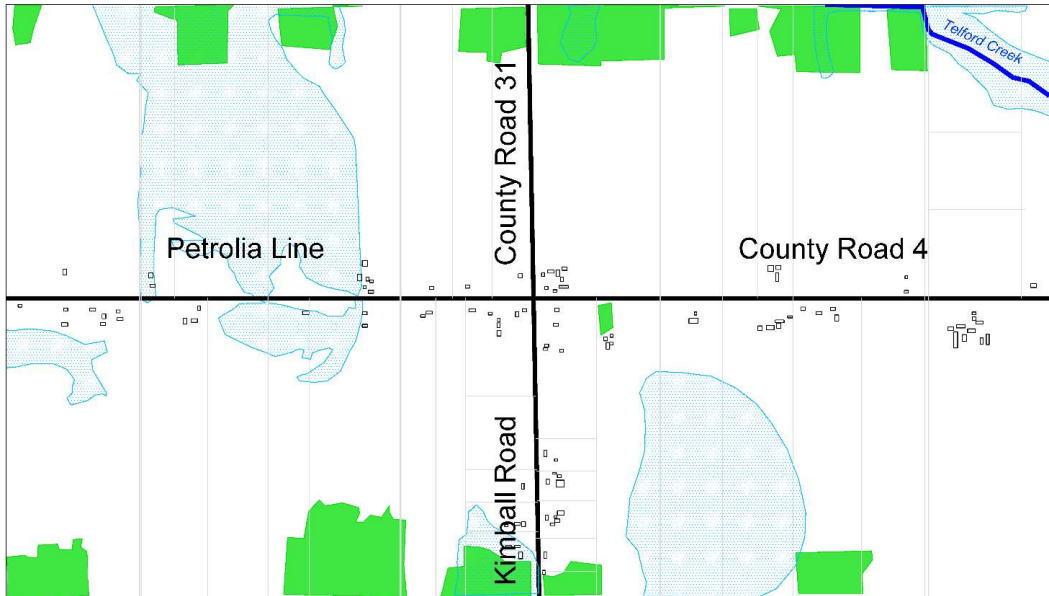
**County of Lambton**  
**Intersection Improvements at**  
**County Road 4 and County**  
**Road 31 Municipal Class EA**

Source:  
 County of Lambton Appendix Map E - CLI Class for Agriculture,  
 January 2018




NTS



**Canadian Land Inventory Class for Agriculture**



Legend

-  Woodlots
-  Floodplain
-  Watercourse



**County of Lambton**  
**Intersection Improvements at**  
**County Road 4 and County**  
**Road 31 Municipal Class EA**

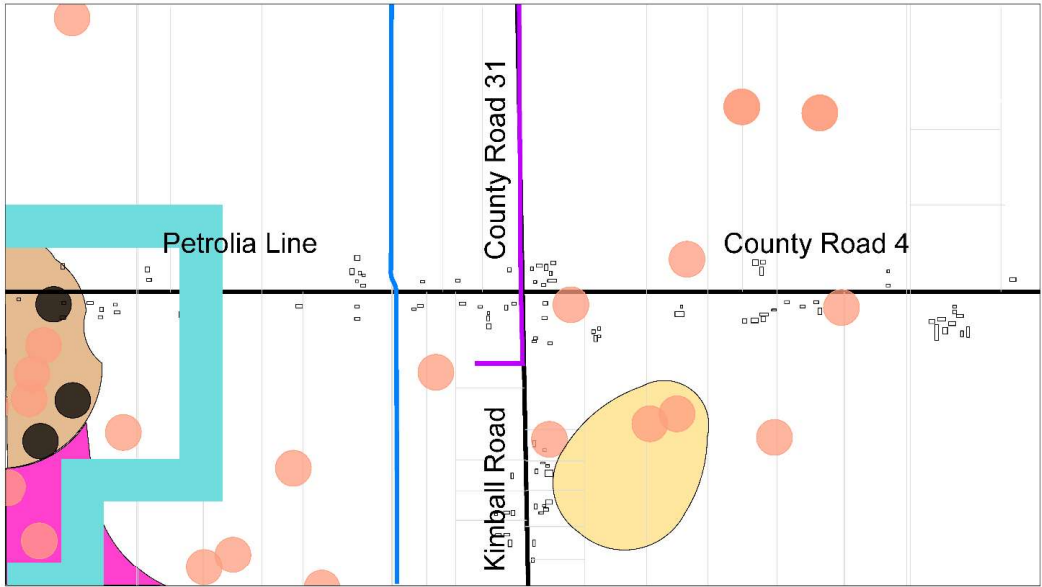
**Natural Environment**

Source:  
 2128997\_Regulations Viewer\_Floodplain St Clair Region CA











NTS





**Legend**

-  Oil Pool
-  Natural Gas Storage Pool
-  Past Producing Natural Gas Pool
-  Designated Hydrocarbon Storage Area
-  Hydrocarbon Well - Active
-  Hydrocarbon Well - In Active
-  Active Pipeline  
Source: Plains Asset Location Map
-  Proposed Pipeline  
Source: Robert E. Dale Ltd

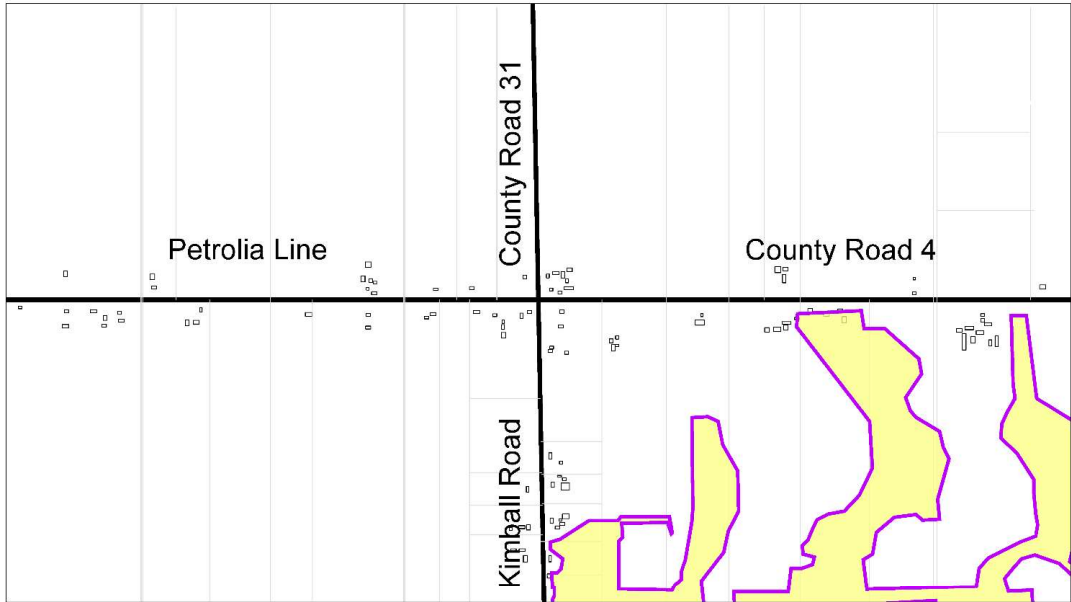
Source:  
County of Lambton Appendix Map C - Oil, Natural Gas and Salt  
Resources January 2018




**County of Lambton  
Intersection Improvements at  
County Road 4 and County  
Road 31 Municipal Class EA**

**Oil Resources**

NTS 



Legend

-  Significant Groundwater Recharge Area



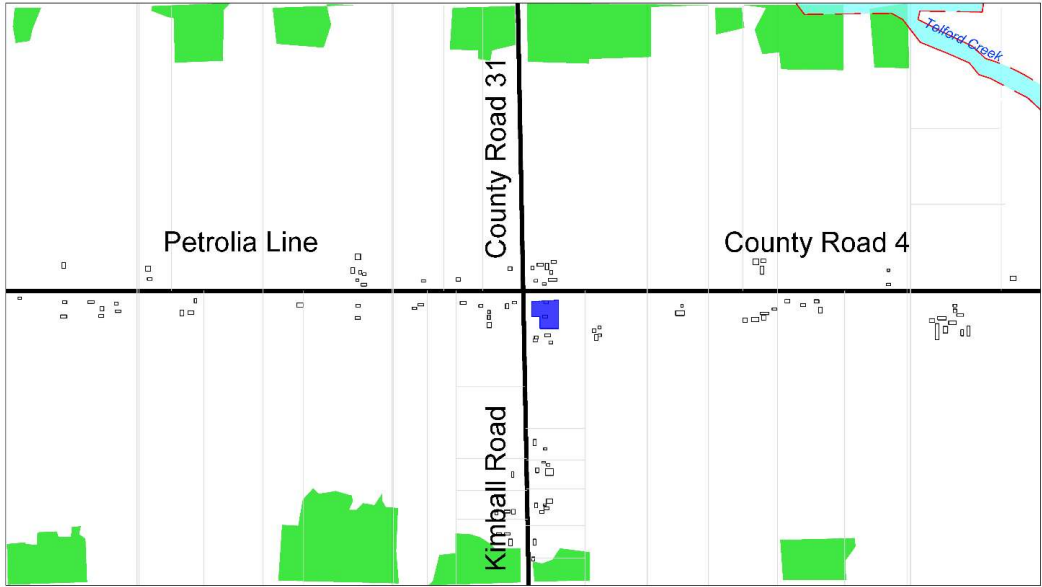
**County of Lambton  
Intersection Improvements at  
County Road 4 and County  
Road 31 Municipal Class EA**

**Source Water Protection**

Source:  
County of Lambton Appendix Map A - Source Protection Plans,  
January 2018

NTS





Legend

- Environmental Protection - Woodlots
- Environmental Protection - Hazard
- Agricultural - 1
- Industrial Type 2



**County of Lambton**  
**Intersection Improvements at**  
**County Road 4 and County**  
**Road 31 Municipal Class EA**

**Zoning**

Source:  
 Township of St. Clair Schedule "A" May 2004

NTS



# Drainage Existing Conditions and Stormwater Management Recommendation

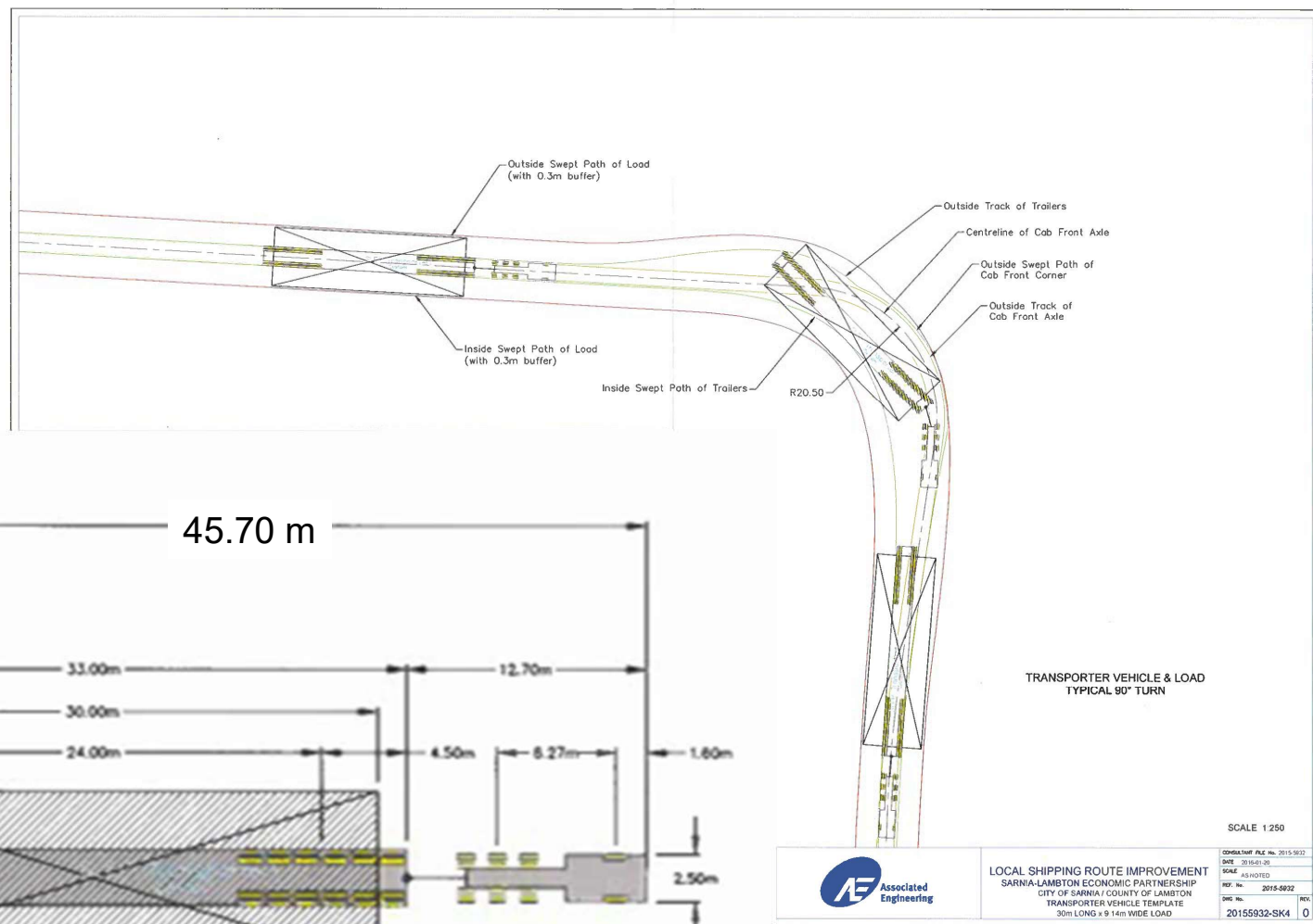
---

- The intersection is located in the St. Clair Region Conservation Authority.
- Existing road drainage is conveyed by roadside ditches.
- The McGillvary Municipal Drain is located in the northeast quadrant of the intersection within the road allowance and will be modified (buried) by the Township of St. Clair (By-Law 34, 2022).
- Changes to the municipal drain are being implemented to accommodate over sized vehicle wheel tracking at the intersection.
- Given that the localized increase in percent imperviousness for the intersection under proposed conditions is small (< 5%), it is recommended that runoff from the Study Area be drained using roadside ditches (grassed swales).

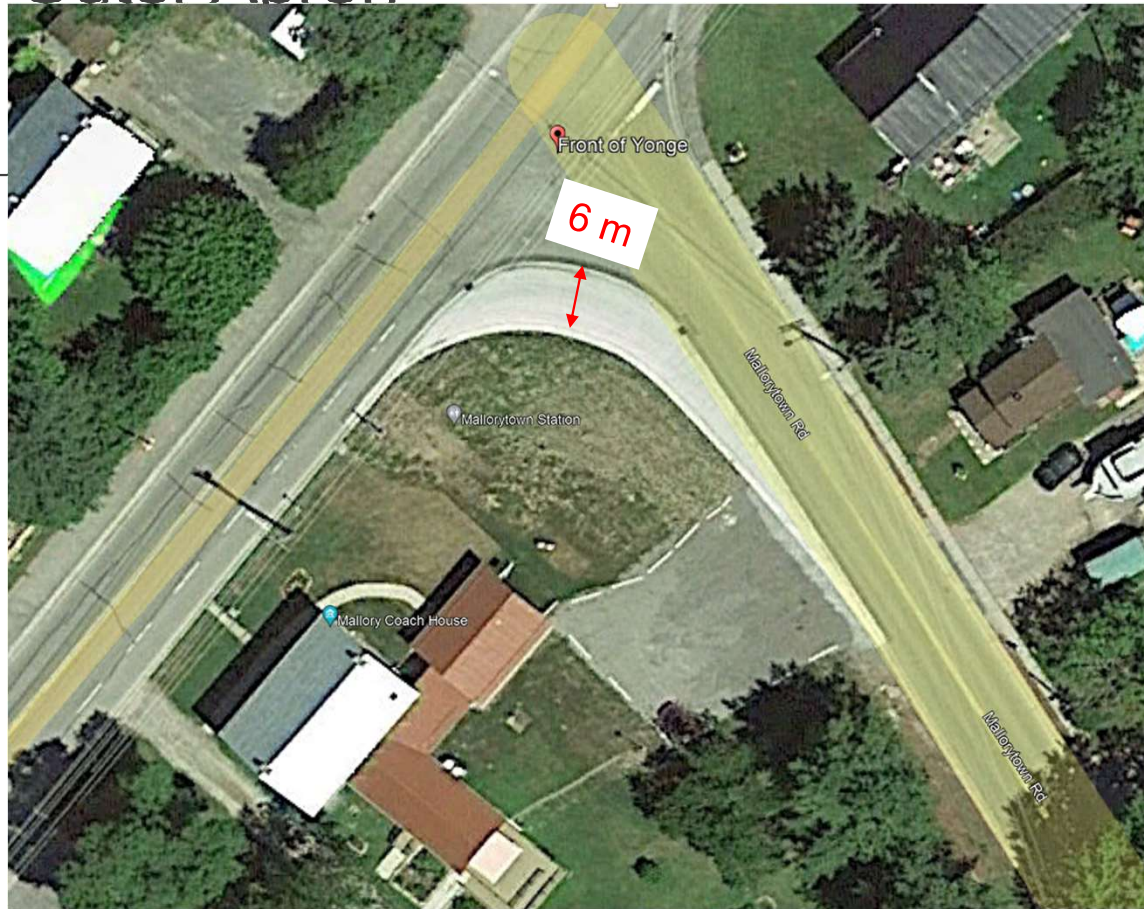




# Oversized Load Transporter Vehicle

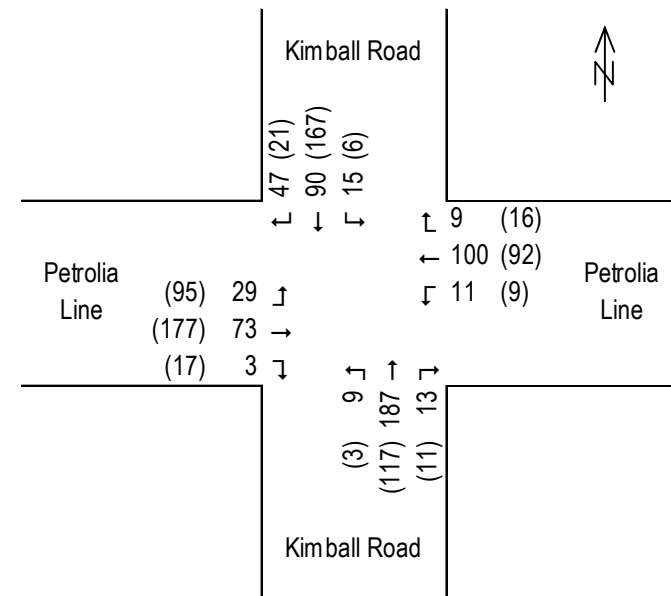


# Sample Outer Apron



# Existing Traffic

- A traffic review was undertaken in May 2023 for the intersection of County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) west of Petrolia.
- Both are 2-lane rural arterial roads. Stop control is in place northbound and southbound on Kimball Road.
- Posted speed limits are 90 km/h on Petrolia Line (reduced to 70 km/h through the intersection) and 80 km/h on Kimball Road.
- There are no auxiliary turning lanes at the intersection, and several access driveways are in the vicinity.
- The traffic demand is shown to the right. The intersection is identified as part of the Oversized Load Corridor.



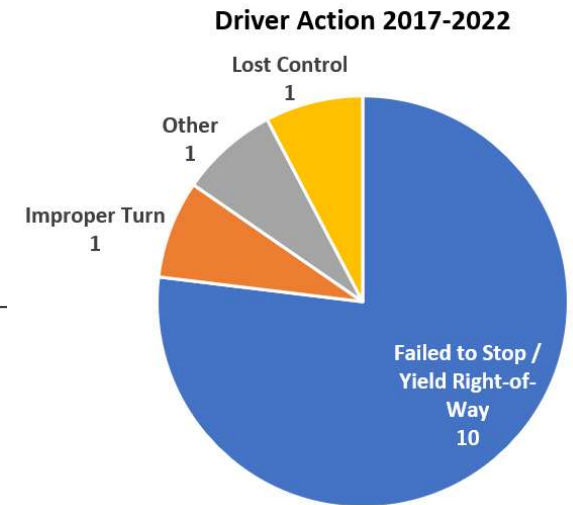
Existing Peak Hour Traffic Volumes (2023)  
AM Peak (PM Peak)

# Road Safety

## 2017-2022

- 2 Fatal Collisions
- 2 Injury Collisions
- 9 Property Damage Collisions, most involving significant vehicle damage
- 13 collisions in total
- 10 angle collisions in the intersection between vehicles from Kimball Road and Petrolia Line, 4 of which resulted in injury or death.
- 10 failures to either stop or yield the right-of-way on Kimball Road
- Estimated cost of 2 fatal, 2 injury and 9 property damage collisions\*:
  - \$3.5 M in direct costs
  - \$27.5 M in societal costs

*\*Actual collision costs differ in every crash due to the specific circumstances related to each collision event—the damage, injuries, response, and lasting effects. Collision costs are used to prioritize road safety improvements and are not intended to represent the value of a human life.*



## Mitigation Measures


Mitigation	Intent	Efficacy
No Changes	Continue to warn drivers with rumble strips and flashing beacons.	Has not prevented angle collisions or eliminated drivers failing to stop on Kimball Road.
Traffic Signals (Not Warranted)	Reduce conflicts in intersection.	Would typically increase rear end collisions. Will reduce but not prevent angle collisions.
Roundabout	Improve safety and traffic operations (reduce delays)	Will reduce vehicle speeds and conflict points resulting in fewer injury and fatal collisions.



# Alternative Planning Solutions

---

The Alternative Planning Solutions for this Study are:

- Do Nothing - The Do Nothing Alternative must be considered, as mandated by the Class EA. It represents a baseline from which other approaches can be compared. The Do Nothing alternative does not address the Problem Statement and is not recommended to be carried forward.
- All-way stop
- Signalized Intersection
- Roundabout Intersection – Recommended to be carried forward 

The Intersection Control Review Memos are available at the Resource Table.

# Advantages/Disadvantages of All-way Stop

## Advantages

- Low capital cost.

## Disadvantages

- 10 years or more (2032) before off-peak traffic volumes increase sufficiently to consider all-way stop control;
- Results in an increase in rear end vehicle collisions; and
- An all-way stop would make the safety of the existing intersection worse; the most common cause of the reported collisions is the failure of northbound and southbound motorists to stop for crossing traffic. It would create a similar condition for east/west traffic by adding an unexpected stop on Petrolia Line.



Recommended not to be carried forward



# Advantages/ Disadvantages of Signals

---

## Advantages

- Design consistency.

## Disadvantages

- Higher maintenance costs;
- Longer delays for most of the traffic especially during off-peak periods;
- Requires left-turn lanes on all four legs of the intersection;
- Increased collisions in comparison to roundabout control; and
- Volumes would not warrant a traffic signal for 20 or more years..

Recommended not to be carried forward.





BTE 23-018  
2023-06-28

**Lambton County CR4 / CR31 Intersection**  
SIGNALIZED INTERSECTION DESIGN





# Advantages and Disadvantages of a Roundabout

---

## Advantages

- Improves safety (reduces frequency and severity of collisions);
- Improves traffic operations (reduces delays);
- Reduces travel speeds; and
- Design accommodates oversized loads and farm equipment.

## Disadvantages

- Moderately higher construction cost;
- Requires property; and
- Drivers are less familiar with roundabouts.



Recommended to be carried forward to Preliminary Design.



# Roundabout

---

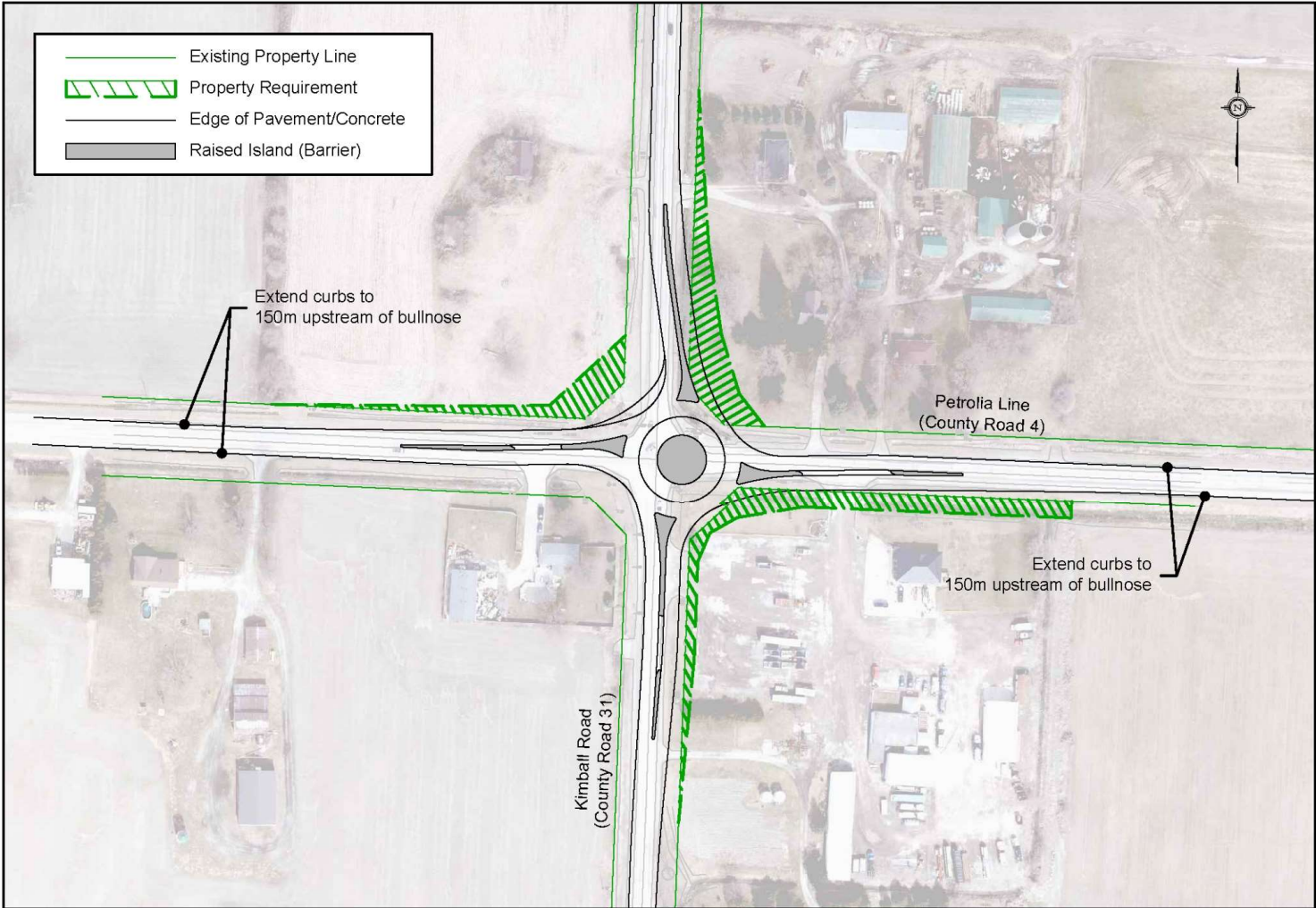


# Preliminary Design Alternatives

---

Two (2) Preliminary Design Alternatives are being considered for the Preferred Planning Solution:

- Alternative 1: Conventional 4-legged roundabout control.
- Alternative 2: Modified 4-legged roundabout control with splitter island bulb-outs (chicanes).

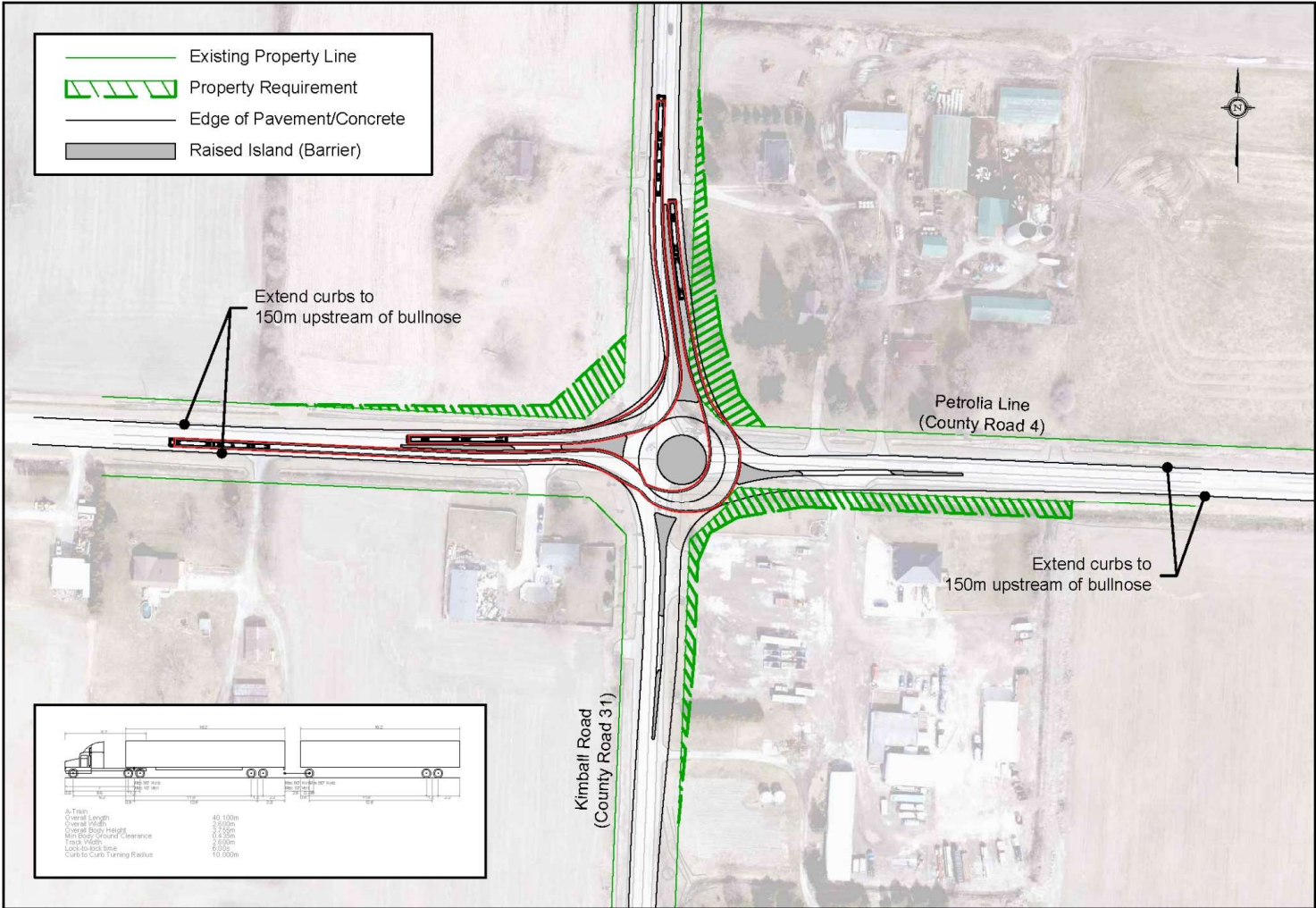


**BTE 23-018**  
 2023-06-20  
 Scale 1:2000

**Lambton County CR4 / CR31 Intersection**  
 Roundabout Design Alternative 1





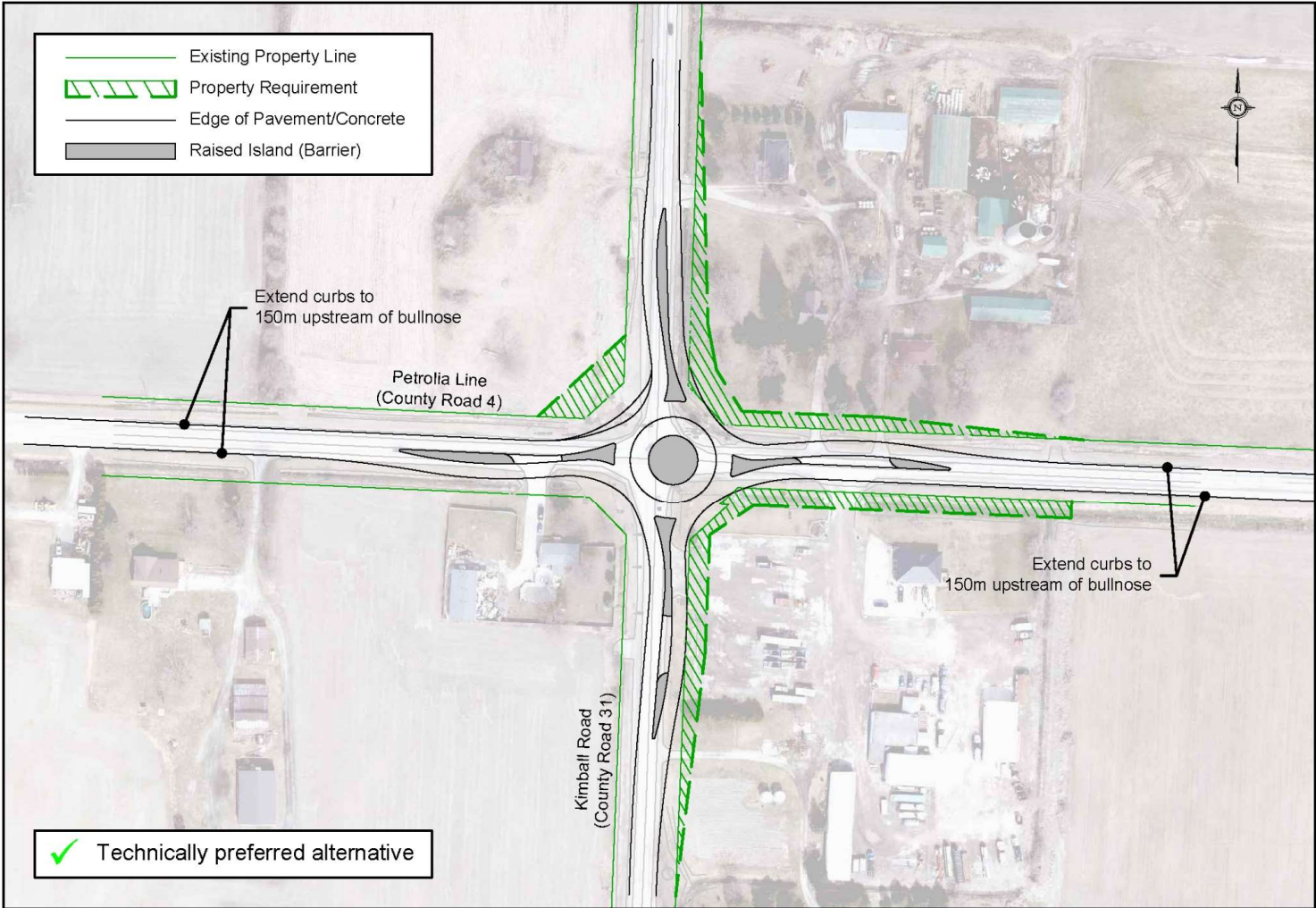


**BTE 23-018**  
 2023-06-20  
 Scale 1:2000

**Lambton County CR4 / CR31 Intersection**  
 Roundabout Design Alternative 1



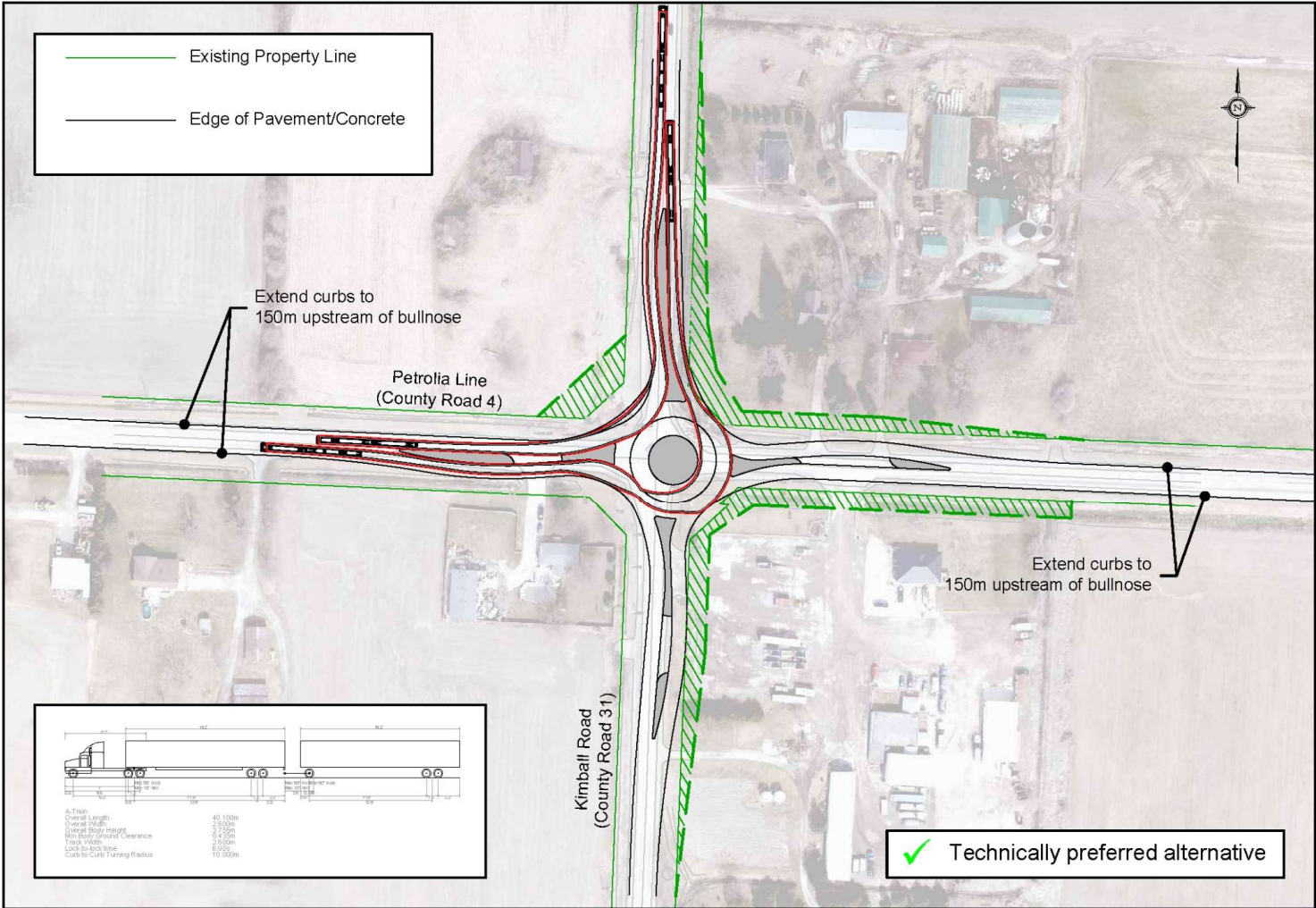




**BTE 23-018**  
 2023-06-20  
 Scale 1:2000

**Lambton County CR4 / CR31 Intersection**  
 Roundabout Design Alternative 2





**BTE 23-018**  
 2023-06-20  
 Scale 1:2000

**Lambton County CR4 / CR31 Intersection**  
 Roundabout Design Alternative 2



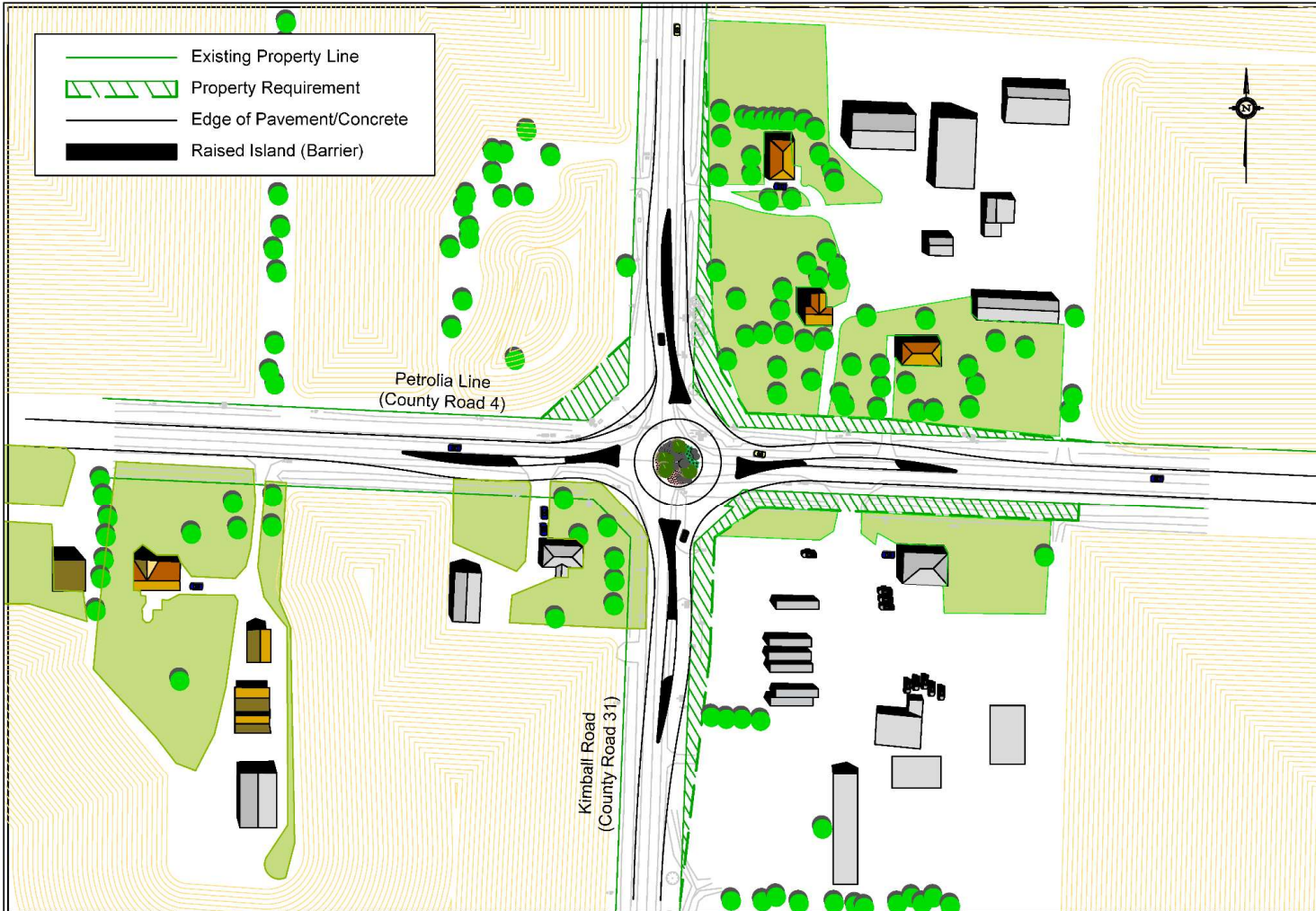
# Evaluation of Preliminary Design Alternatives

---

The preliminary recommendation is to carry forward Alternative 2 as the Technically Preferred Alternative (TPA). The benefits and effects of this TPA include:

- Minor property impacts.
- Controls speeds to approaching the intersection.
- Improves safety.
- Reduced impacts to existing residence in southwest quadrant.





**BTE 23-018**  
 2023-06-20  
 Scale 1:2000

**Lambton County CR4 / CR31 Intersection**  
 Roundabout Design Technically Preferred Alternative



# Vissim Model

---



# Schedule and Next Steps

---

# Study Schedule

---

Task	Date
Public Consultation Centre	June 2023
Review all PCC comments and ideas and prepare a Summary Report	Summer 2023
Finalize the Recommended Plan	Summer 2023
Project File Report 30-day Public Review Period	Fall 2023
Property Acquisition	2023/2024
Construction	2024

# Questions

---

