County Road 4 (Petrolia Road) and County Road 31 (Kimball Road) Intersection Improvement Study

Schedule B Environmental Assessment Study

Project File Report

Prepared By:

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October 2023

EXECUTIVE SUMMARY

E1 EA STUDY

Lambton County retained BT Engineering Inc. (BTE) to complete a Schedule B Environmental Assessment (EA) for intersection improvements at County Road 4 (Petrolia Line) and County Road 31 (Kimball Road), St Clair Township, Ontario. The study was completed in accordance with the Municipal Class EA Process (2023).

The EA Study developed an intersection design to 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. The intersection configuration minimizes construction and operational/maintenance costs and accommodates oversized vehicles.

All reasonable alternatives for the intersection, driveways, large vehicles and drainage were reviewed. The EA Study also determined the property requirements to implement the project.

E1.1 Study Area

The Study Area is located in St. Clair Township Ontario, illustrated in **Figure E-1.**

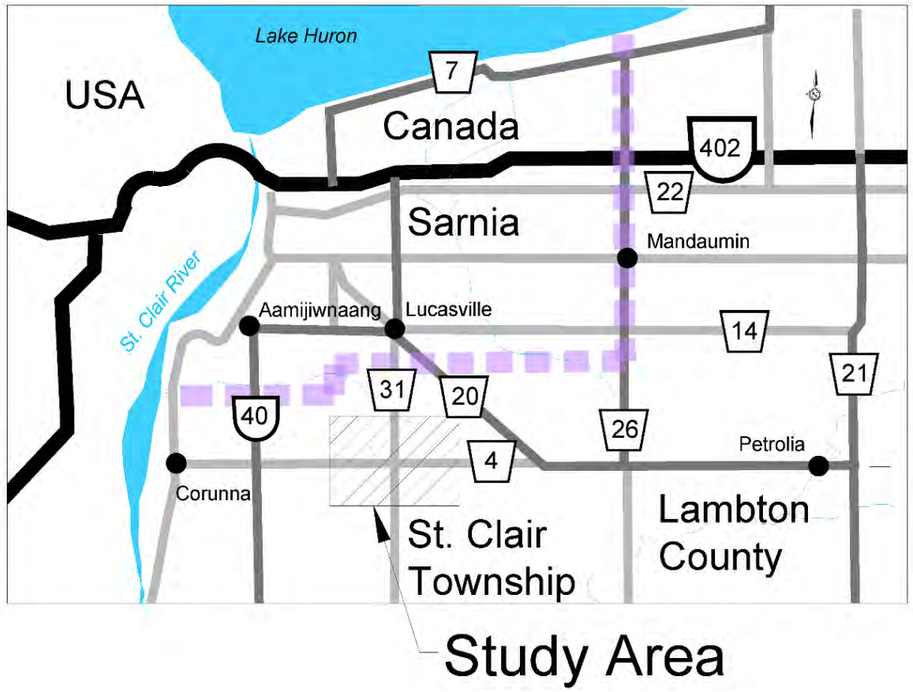

Figure E-1: Study Area

E1.2 Consultation

The study was carried out in consultation with Lambton County staff, external agencies, property owners, and the public. The County Road 4/31 Intersection Improvements EA study consultation included the following:

- One (1) Public Consultation Centre (PCC).
- Liaison with external agencies.
- Consultation with Indigenous Peoples.

Constructive feedback was received to develop the Recommended Plan through this consultation. Changes to the Technically Preferred Alternative were made following the PCC meeting.

The EA report will be available to the public, stakeholders and agencies for a 30-day review period from October 23, 2023 to November 21, 2023.

E2 MUNICIPAL CLASS EA PROCESS

This study followed the Municipal Class EA (2023) process for a Schedule B Study based on the scope and complexity of the project as well as the estimated capital cost of the project[1]. Although roundabouts may be considered exempt under the Class EA, the proponent (County of Lambton) chose to follow the Schedule B process because of the public interest in the project and requirements for property to implement the roundabout.

The Class EA Process was undertaken in a series of phases commencing with problem identification and culminating in the filing of a Project File Report. The Planning and Design Process for the Municipal Class EA is illustrated in **Figure E-2**.

The Class EA process includes an evaluation of all reasonable alternatives and the selection of a preferred alternative(s) with acceptable effects (including avoidance and mitigation of any residual effects) on the natural and social/cultural environments. This project involved three of the five phases of the Municipal Class EA process (as required for a Schedule B project):

Phase 1: Identify the Problem
Phase 2: Alternative Solutions
Phase 3: Alternative Design Concepts for Preferred Solution (not included in a Schedule B EA Study)
Phase 4: Environmental Study Report (not included in a Schedule B EA Study)
Phase 5: Implementation

The project will be approved for design and construction if no written concerns are submitted during the review period.

[1] Municipal Class Environmental Assessment, Municipal Engineers Association, 2023 “Municipal Road Projects”

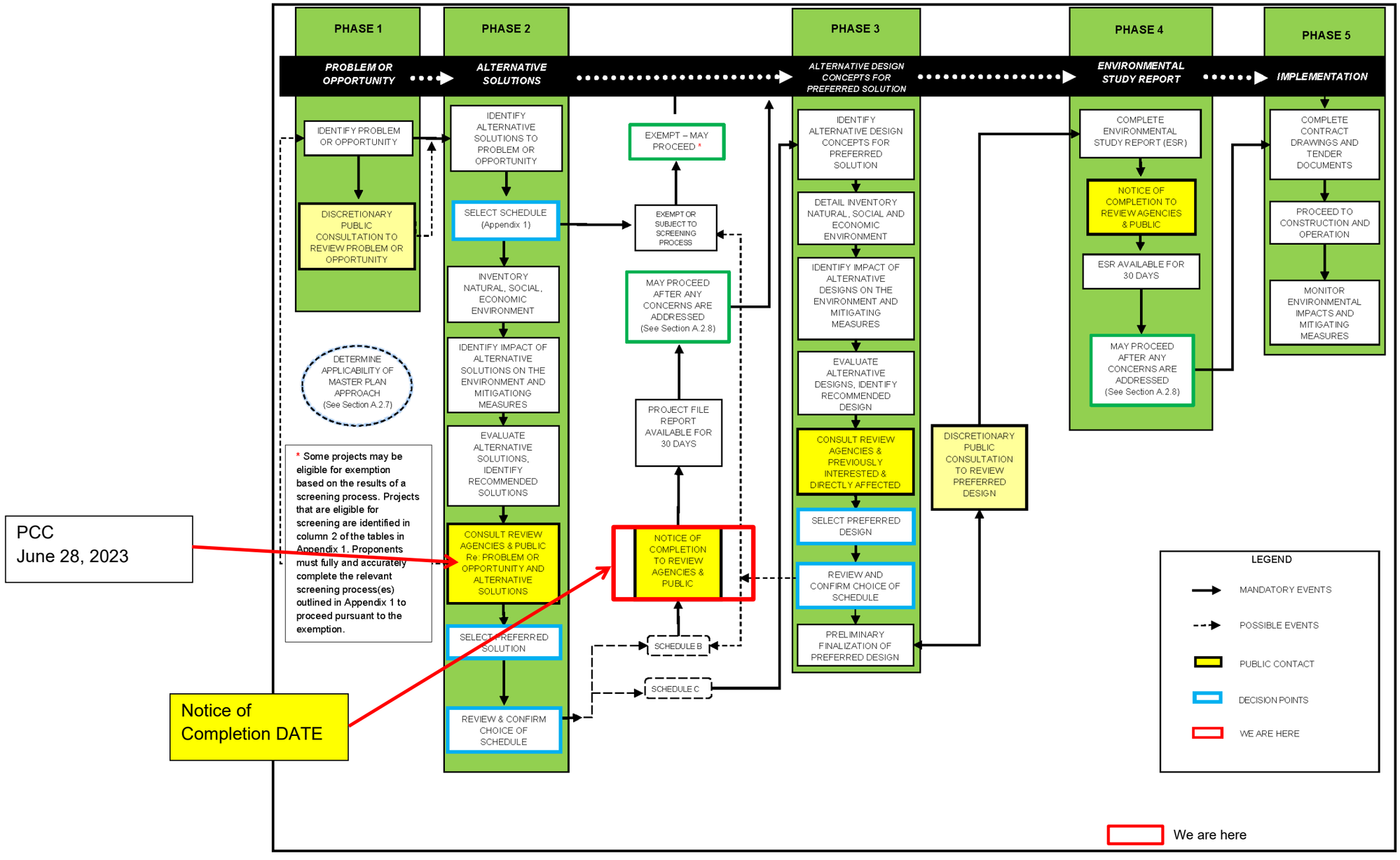

Figure E-2: Municipal Class EA (2023) Planning and Design Process

E3 ANALYSIS AND EVALUATION

E3.1 Alternative Planning Solutions

The analysis and evaluation process involves a 2-step decision-making process. Initially the study documents the analysis and evaluation of Alternative Planning Solutions (alternative project types or alternative strategies to address the problem) followed by the subsequent evaluation of preliminary design alternatives. The Alternative Planning Solutions include:

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

Based on the evaluation of Alternative Planning Solutions, “Roundabout Intersection” was recommended to be carried forward. This alternative will improve County Road 4/31 intersection operations and safety. The advantages of the roundabout intersection include the following:

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

E3.2 Preliminary Design Alternatives

Two (2) preliminary design alternatives were considered for the roundabout intersection:

- Alternative 1: Conventional 4-legged roundabout control, refer to **Figure E-3**.
- Alternative 2: Modified 4-legged roundabout control with splitter island bulb-outs (chicanes), refer to **Figure E-4**.

E3.3 Evaluation of Alternatives

The recommendation is to carry forward Alternative 2 as the Technically Preferred Alternative (TPA). The advantages of the TPA include:

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

E4 RECOMMENDED PLAN

The Recommended Plan includes:

- Accommodation of oversized load transport vehicles and farm machinery;
- Minor adjustments to existing driveways; and
- Changes to the McGillvary Municipal Drain, that have been planned under the *Municipal Drainage Act* as per By-Law 34, 2022.

The TPA was shown to the public at the PCC and there was mixed public support for the recommendations. Site-specific modifications were incorporated into the TPA that were requested by adjacent property owners. The Recommended Plan is illustrated in **Figure E-5**. This Recommended Plan was endorsed by Lambton County Council as documented in **Appendix E**.

E5 NEXT STEPS

At the end of the 30-day review period, should there be no objections to the project; Lambton County may proceed with design and construction of the Recommended Plan, subject to availability of funding and competing construction priorities.

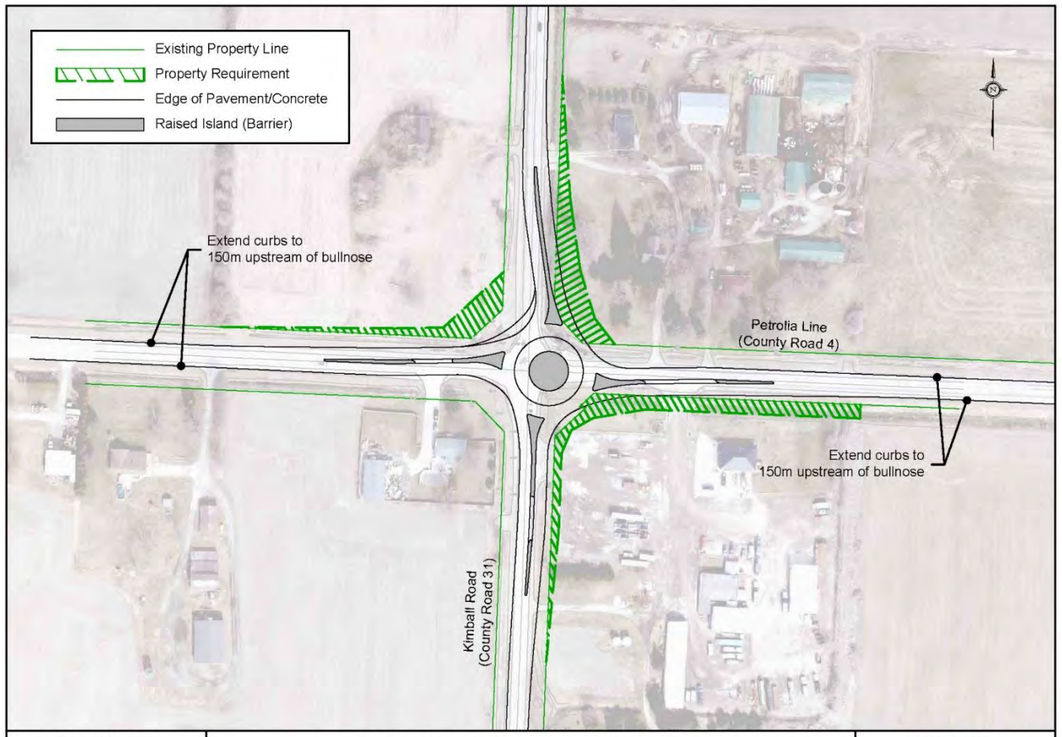

Figure E-3: Roundabout Intersection Alternative 1

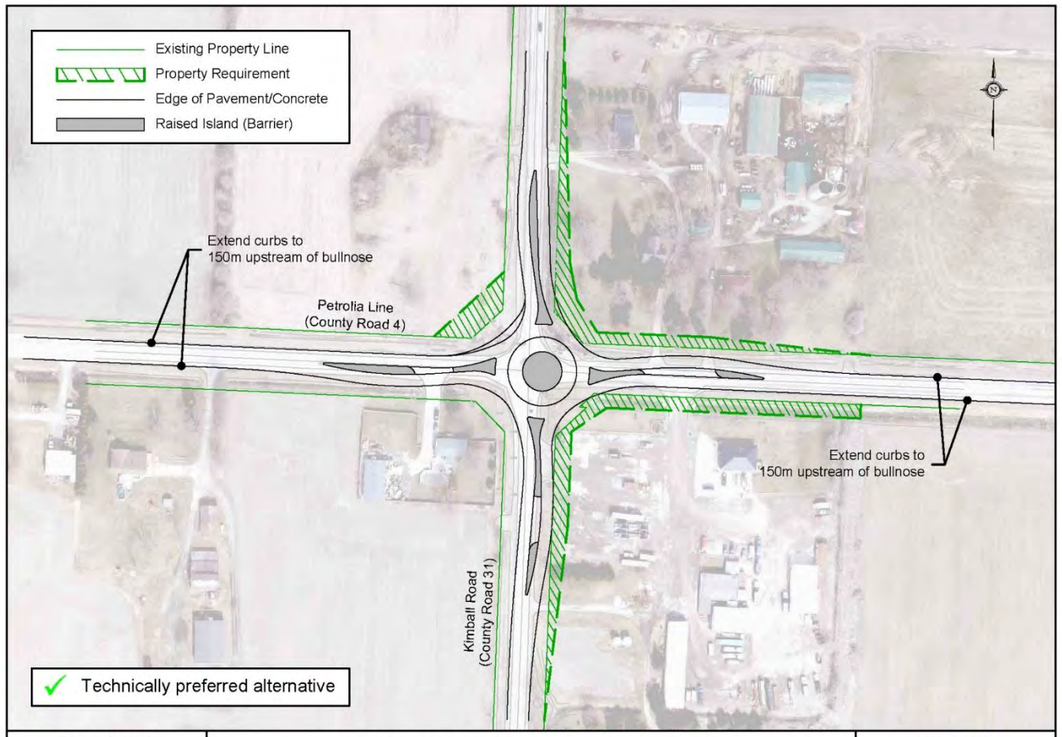

Figure E-4: Roundabout Intersection Alternative 2

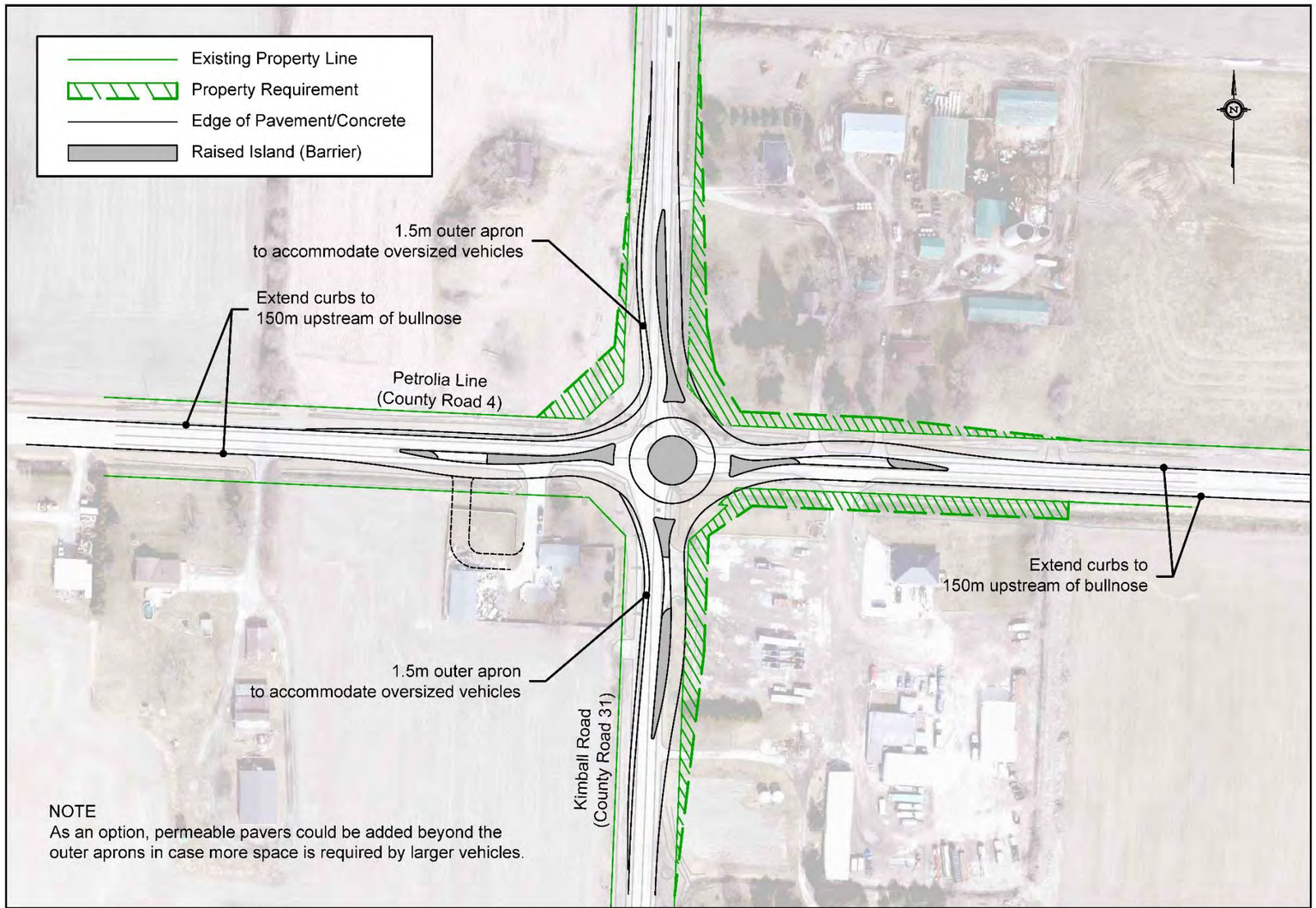

Figure E-5: County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) Recommended Plan

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1.0 INTRODUCTION

The County of Lambton retained BT Engineering Inc. (BTE) to undertake an Environmental Assessment (EA) and Preliminary Design study to evaluate improvements to the County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) intersection in St. Clair Township, Ontario.

The EA Study developed an intersection design to 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. The intersection configuration minimizes construction and operational/maintenance costs and accommodates oversized vehicles.

All reasonable alternatives for the intersection, driveways, large vehicles and drainage were reviewed. The EA Study also considered the property requirements to implement the project.

The technically preferred improvements to the existing County Road 4/31 intersection were presented at a PCC. Following the PCC, the recommendations were finalized including roundabout construction, oversized load road widening, drainage improvements and property acquisition requirements.

The EA followed the Schedule B requirements under the Planning and Design process of the "Municipal Class Environmental Assessment", as amended in 2023. This is a self-assessment process that includes mandatory public consultation.

1.1 Study Area

The Study Area is located at County Road 4/31 intersection in St. Clair Township, County of Lambton, illustrated in **Figure 1.**

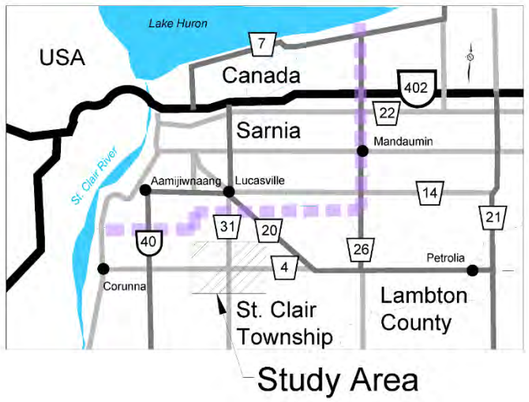

Figure 1: Study Area

1.2 Problem and Opportunity Statement

The County Road 4 / 31 intersection has been experiencing frequent and sever vehicular collisions and is a designated Oversized Load Transporter route in the County. This is an opportunity to develop an intersection design that will reduce the frequency and severity of vehicular collisions while minimizing delays to the travelling public and impacts to adjacent landowners. The intersection configuration will also minimize construction and operational/maintenance costs and accommodate oversized load vehicles.

1.3 Consultation

The study was carried out in consultation with County of Lambton staff, external agencies, property owners, and the public. Notices of the Study Commencement was placed on the County's website and emailed to external agencies and Indigenous Peoples. The letter to the Indigenous Peoples included an offer to meet with the respective communities at a time and location of their choice. The County Road 4/31 intersection Improvements EA study consultation included the following:

- One (1) Public Consultation Centre (PCC).
- Liaison with external agencies.
- Property owner discussions.
- Consultation with Indigenous Peoples.

Constructive feedback was received on the Recommended Plan through this consultation.

Notice of the Study Completion and availability of the EA report have been placed on the County website and emailed to the public, stakeholders and agencies for a 30-day review period from October 23, 2023 to November 21, 2023. The Notice of Study Completion was posted on the County website on October 18, 2023.

2.0 EA PROCESS

This study followed the Municipal Class Environmental Assessment (2023) process for a Schedule B project based on the scope and complexity of the project as well as the estimated capital cost of the project[2]. The Class EA document specifies the procedures required to plan specific transportation projects according to an approved planning process.

The study approach included the Ministry of the Environment, Conservation and Parks (MECP) five guiding principles for EA studies, namely:

- Consider all reasonable alternatives.
- Provide a comprehensive assessment of the environment.
- Utilize a systematic and traceable evaluation of net effects.
- Undertake a comprehensive public consultation program.
- Provide clear and concise documentation of the decision-making process and public consultation program.

The Class EA Process was undertaken in a series of phases commencing with problem identification and culminating in the filing of a Project File Report. The Planning and Design Process for the Municipal Class EA is illustrated in **Figure 2**.

The Class EA process includes an evaluation of all reasonable alternatives and the selection of a preferred alternative(s) with acceptable effects (including avoidance and mitigation of any residual effects) on the natural and social/cultural environments. This project involved three of the five Schedule B EA phases:

Phase 1: Identify the Problem
Phase 2: Alternative Solutions
Phase 3: Alternative Design Concepts for Preferred Solution (not included in a Schedule B EA Study)
Phase 4: Environmental Study Report (not included in a Schedule B EA Study)
Phase 5: Implementation

The project will be approved for design and construction if no written concerns are submitted during the review period.

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[22] Municipal Class Environmental Assessment, Municipal Engineers Association, 2015 “Municipal Road Projects”

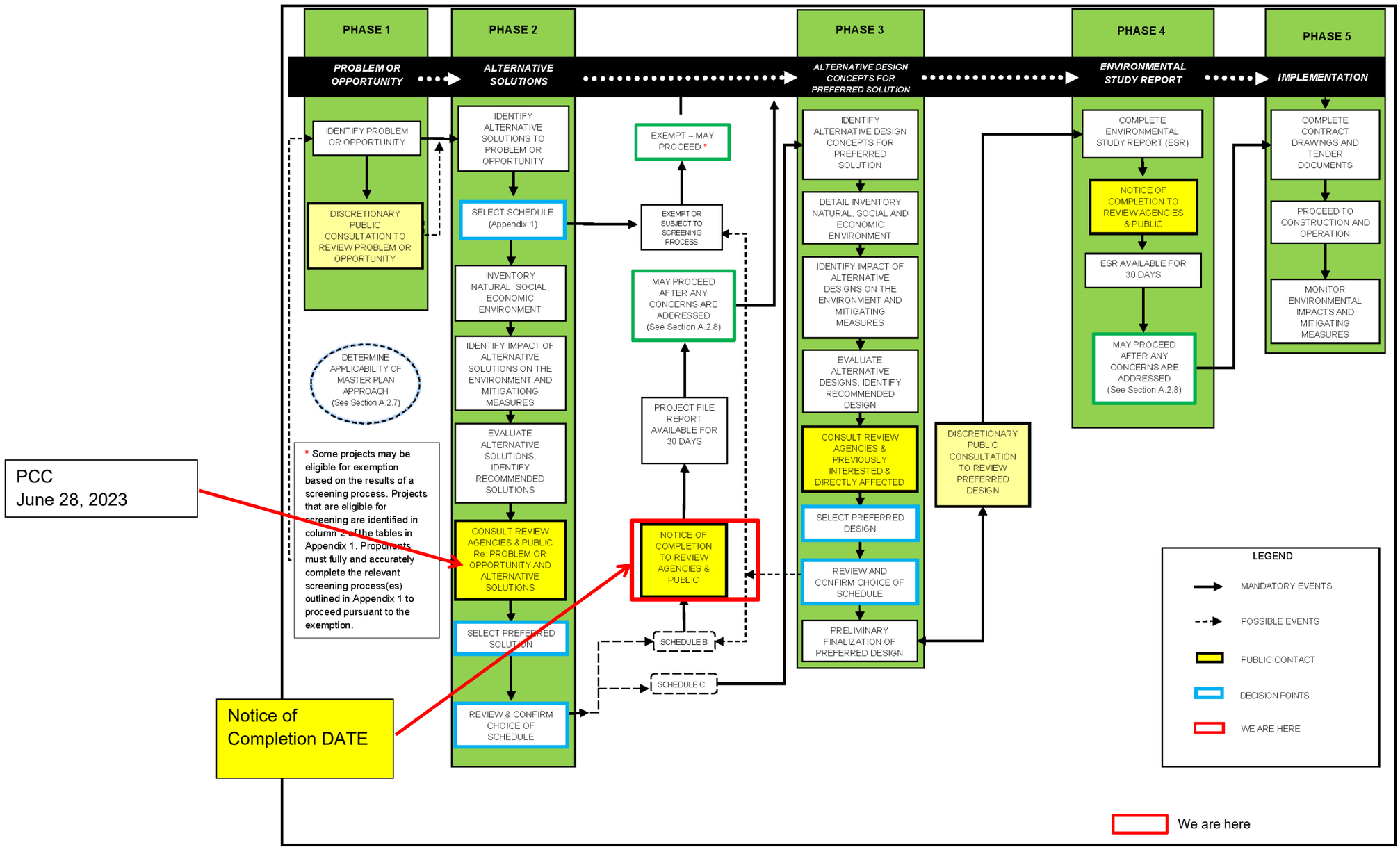


Figure 2: Municipal Class EA (2023) Planning and Design Process

3.0 CONSULTATION PROGRAM

The following sections provide a summary of the consultation activities held during the study.

3.1 Notices

Notices for the Study Commencement, PCC, and Notice of Filing Study Completion were posted on the County of Lambton (CL) website, newspaper, hand delivered, as well as mailed to the contact list, as follows:

- Combined Notice of Study Commencement and PCC No. 1 – Thursday 22 and Saturday 24, June 2023.
- Study Completion Notice – Thursday 19, and Saturday 21, October 2023.
- Filing of Study Completion – October 23, 2023.

See **Appendix A** for the Notice of Study Commencement, PCC Summary Report and Notice of Study Completion.

3.2 Contact List

A mailing list was created at the start of the study which included adjacent property owners located within 1 km of the intersection, as well as agencies, stakeholders, utilities and Indigenous Peoples. The contact list was updated throughout the duration of the study.

An agency contact list was also developed and expanded during the study. See **Section 3.4.2** Interest Groups and Agencies for the list of agencies and contact persons.

3.3 Public Consultation Centre (PCC)

The PCC was held in-person on Wednesday, June 28, 2023 at the Royal Canadian Legion Leslie Sutherland Branch 447 in Corunna, Ontario. Lambton County and consultant staff were available to answer questions. Sixty-one (61) people attended the event.

Notices were mailed to adjacent property owners located within 1 km of the intersection, agencies, stakeholders and utilities. A variable message sign was located at the County Road 4 and 31 intersection advertising the PCC. Refer to **Photo 1**.

Photo 1: PCC Variable Message Sign

The PCC presented the following:

1. Study Introduction and Problem and Opportunity Statement.
2. An overview of the Municipal Class EA Process.
3. A summary of work completed to date.
4. A description of the existing conditions in the area.
5. The Alternative Planning Solutions, Evaluation and Preliminary Recommendations.
6. Next steps.

A total of twenty-four (24) comment sheets were received during the PCC comment period. Refer to **Appendix A** for the PCC Summary Report, including comment sheets (with personal information removed if requested).

3.4 Stakeholder Consultation

3.4.1 Property Owners

The Study recommendations include property acquisition from adjacent property owners. Notices and flyers were sent to the property owners within one kilometre of the intersection to invite them

to the PCC and to review the Project File during the 30-day review period. Site specific changes to the recommendations were made, based on comments from property owners, and included in the Recommended Plan.

3.4.2 Agencies and Stakeholders

The following agencies and stakeholders were contacted as part of the project including:

- St. Clair Region Conservation Authority
- Township of St. Clair
- St. Clair Township Fire Department
- Fisheries and Oceans Canada
- Ministry of Agriculture, Food and Rural Affairs
- Ministry of the Environment, Conservation and Parks
- Ministry of Natural Resources and Forestry
- Ministry of Citizenship and Multiculturalism

Appendix B contains select correspondence received from interested agencies and Indigenous Peoples.

3.4.3 Indigenous Peoples

The following Indigenous Peoples groups were contacted at various milestones during the project, including EA Commencement, PCC and Study Completion based on County of Lambton's past practise of project notification:

- Bkejwanong (Walpole Island) First Nation
- Aamjiwnaang First Nation
- Chippewas of Kettle & Stony Point First Nation
- MNO Windsor-Essex Métis Council

Contacted at Study Completion:
Ministry of the Environment, Conservation and Parks recommended additional Indigenous Peoples contacts received as part of the external agencies consultation.

- Chippewas of the Thames First Nation
- Onida Nation of the Thames
- Caldwell First Nation
- Munsee Delware
- Delware Nation

Appendix B includes select correspondence.

3.4.1 Additional Information

Additional background information for this project resides with the County of Lambton. The County's Project Manager and Consultant Project Manager for this project, noted below, may be contacted at any time to discuss this project.

Steve Taylor
Consultant Project Manager
Email: stevenj.taylor@bteng.ca
Phone: 519-672-2222
Toll Free: 1-855-228-4813

Glen Hamill, C.E.T.
Public Works Department - Engineering
County of Lambton
Email: glen.hamill@county-iambton.on.ca
Phone: 519-845-0809 Ext 5250

4.0 NEED AND JUSTIFICATION

4.1 Existing Traffic Operations

An initial site visit, to review the existing intersection, was completed by BTE on Saturday May 6, 2023. The posted speed limit is 80 km/h on Kimball Road and 90 km/h on Petrolia Line and is reduced to 70 km/h within approximately 300 m of the intersection. The existing intersection has single-lane approaches (left/through/right) on all 4 legs of the intersection, as shown in **Figure 3**. Kimball Road is controlled with stop signs. The adjacent stop locations on Kimball Road are the traffic signals at Plank Road, 5.4 km to the north and 8.1 km to the south at Courtright Line. Sightlines are unrestricted for motorists stopped at the intersection; however, existing trees in the northeast corner of the intersection and trucks parked in the southeast quadrant can limit the visibility of approaching Kimball Road traffic for westbound motorists on Petrolia Line.

Figure 3: Existing Intersection

Oversized Stop signs with red and white tiger tails for extra visibility, Stop Ahead signs and Petrolia Line 300m signs are all in place to identify the intersection for northbound and southbound Kimball Road motorists. To provide additional warning for the stop control, rumble strips have been placed on Kimball Road approaching the intersection and a flashing beacon has been placed overhead in the centre of the intersection visible on all approaches, as shown in **Photo 2**.

Photo 2: Existing Intersection (Looking North)

Kimball Road is signed as No Trucks (Except Local Deliveries); however, Kimball Road (north and south of the intersection) and Petrolia Line (west of the intersection) are designated as Oversized Load Corridors. To avoid constraints for any oversized vehicles, existing hydro transmission lines crossing the roadway transition between aerial and underground in the northeast, northwest and southwest quadrants of the intersection.

The McGillvary Municipal Drain flows westbound on the south side of the intersection crossing Petrolia Line, shown in **Photo 3**, and flows north along the east side of Kimball Road. A plan exists to enclose the drain adjacent to Kimball Road to better accommodate the oversized loads.

Photo 3: Existing McGillvary Municipal Drain

4.1.1 Traffic Demands and Operations

An updated turning movement count, attached in **Appendix C**, was recorded at the intersection on Tuesday May 9, 2023. AM and PM peak hour traffic volumes are presented in **Figure 4**. Kimball Road was observed to carry marginally higher traffic volumes than Petrolia Line. The capacity of the existing intersection was analyzed using Synchro 11 as summarized in **Table 1**. Copies of the analysis reports are attached in **Appendix C**. The intersection currently operates within its capacity with a lower level of service (LOS B/C) during the pm peak hour.

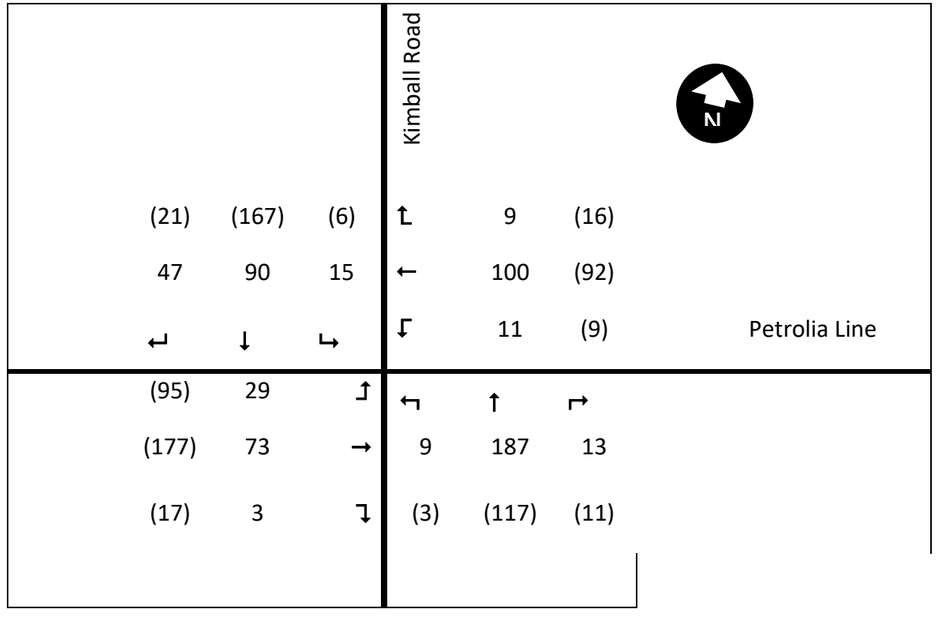


Figure 4: Existing Traffic Demands - AM Peak Hour (PM Peak Hour)

Table 1: Existing Intersection Operations

Intersection	Approach	AM Peak Hour				PM Peak Hour			
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)
CR 4 and CR 31	EB	0.02	2.3	A	0.5	0.07	2.9	A	1.7
	WB	0.01	0.7	A	0.2	0.01	0.7	A	0.2
	NB	0.38	14.7	B	13.5	0.34	18.0	C	11.3
	SB	0.26	9.8	B	8.0	0.49	21.1	C	20.1
	Overall		**9.1**	**A**			**10.1**	**B**	

The historical traffic growth on the adjacent section of Highway 40, presented in **Figure 5,** is representative of area traffic growth. Over the 20-year period from 1999 to 2019, the Average Annual Daily Traffic (AADT) on Highway 40 increased by approximately 0.8% annually. A higher traffic growth (approximately 2% annually) was reported during the summer months.

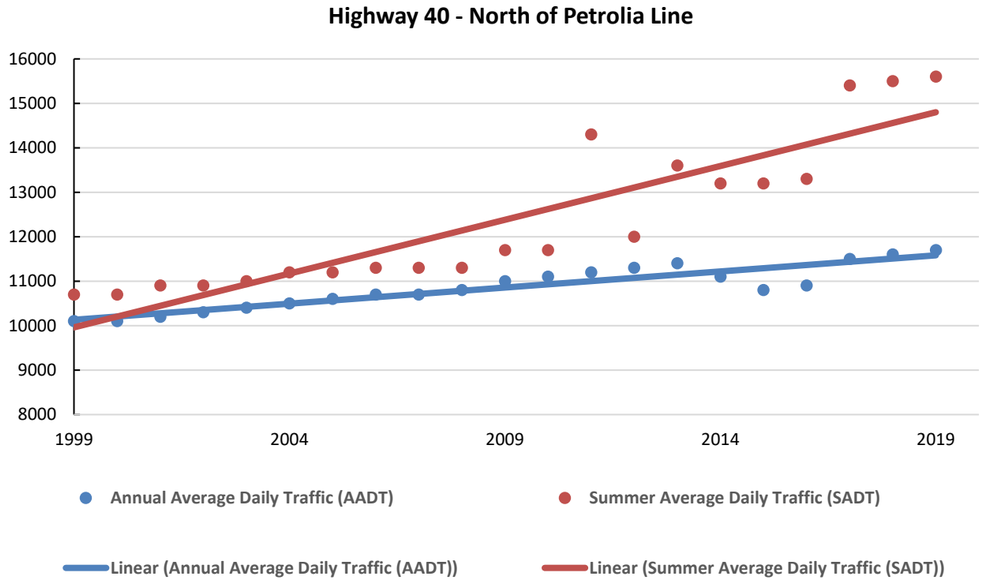


Figure 5: Historical Area Traffic Growth

MTO identifies the traffic pattern on Highway 40 as Commuter/Tourist/Recreation. Petrolia Line and Kimball Road should typically be less likely to attract tourist traffic; therefore, the growth in average annual daily traffic is assumed to be more representative of the traffic at the intersection. On that basis, as a worst-case scenario, a 1% annual growth in traffic at the intersection has been assumed. The resulting 10-year (2033) traffic projection is summarized in **Figure 6.**

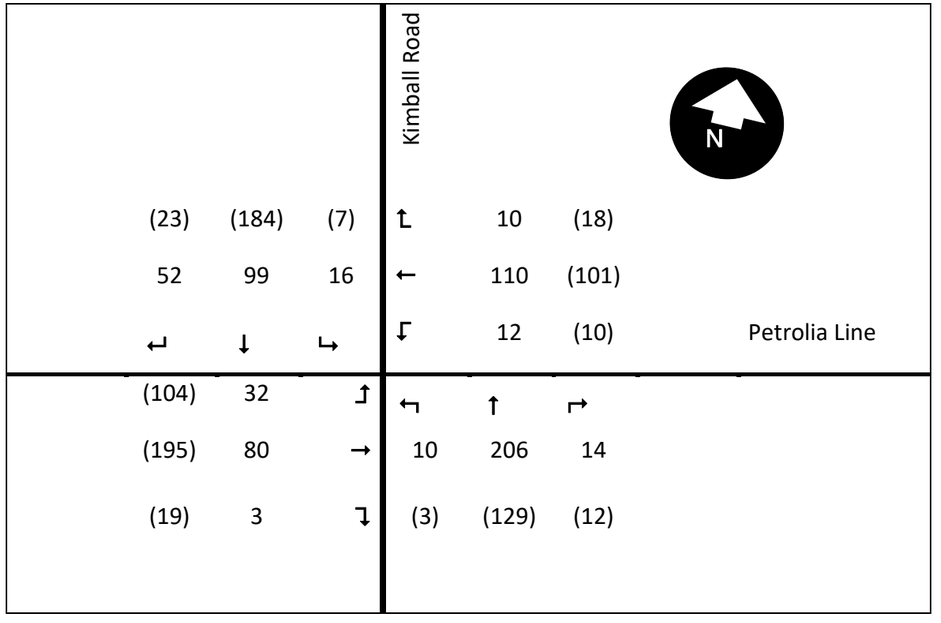


Figure 6: Projected 2033 Traffic Demands – AM Peak Hour (PM Peak Hour)

The projected operation of the intersection in 2033 was analyzed using Synchro 11, as summarized in **Table 2**. Copies of the analysis reports are attached in **Appendix C**. Without improvements, by 2033 traffic operations on Kimball Road are expected to deteriorate to level of service D during the PM peak hour.

Table 2: 2033 Projected Peak Hour Traffic Operations (Existing Geometry)

Intersection	Approach	AM Peak Hour				PM Peak Hour			
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)
CR 4 and CR 31	EB	0.02	2.3	A	0.6	0.08	3.0	A	1.9
	WB	0.01	0.7	A	0.2	0.01	0.7	A	0.2
	NB	0.44	14.7	C	16.9	0.41	21.0	C	15.0
	SB	0.30	9.8	B	9.7	0.58	26.1	D	27.3
	Overall		**9.8**	**A**			**12.0**	**B**	

4.1.2 Conclusions and Recommendations

The collision history at the intersection of Petrolia Line and Kimball Road, which includes 2 fatalities and at least 3 individuals injured over a 5-year period, demonstrates a major safety deficiency. Countermeasures including enhanced signage, the provision of transverse rumble strips on Kimball Road in advance of the intersection and an overhead flashing beacon in the centre of the intersection have been unsuccessful in addressing these concerns.

From a traffic perspective, the provision of a roundabout is recommended to address the existing safety concerns and improve traffic operations at the intersection.

Based on historical area traffic growth, the traffic demands will not warrant the installation of traffic signals for 20 or more years. The provision of unwarranted traffic signals is not recommended. Unwarranted traffic signals will increase delays and will adversely impact the overall safety of the intersection.

The provision of an all-way stop was considered and is not recommended. The types of collisions indicate that some drivers on Kimball Road are not expecting to be required to stop at Petrolia Line. An all-way stop can be expected to exacerbate the existing safety concerns at the intersection by adding an unexpected stop for Petrolia Line traffic.

4.2 Road Safety

Safety at the intersection has been identified as a major concern. From 2017 to 2022, a total of 13 collisions were reported at the intersection, as shown in **Figure 7**, which resulted in 2 fatalities and approximately one third of the collisions involved either an injury or a fatality. Refer to **Appendices C** and **D**.

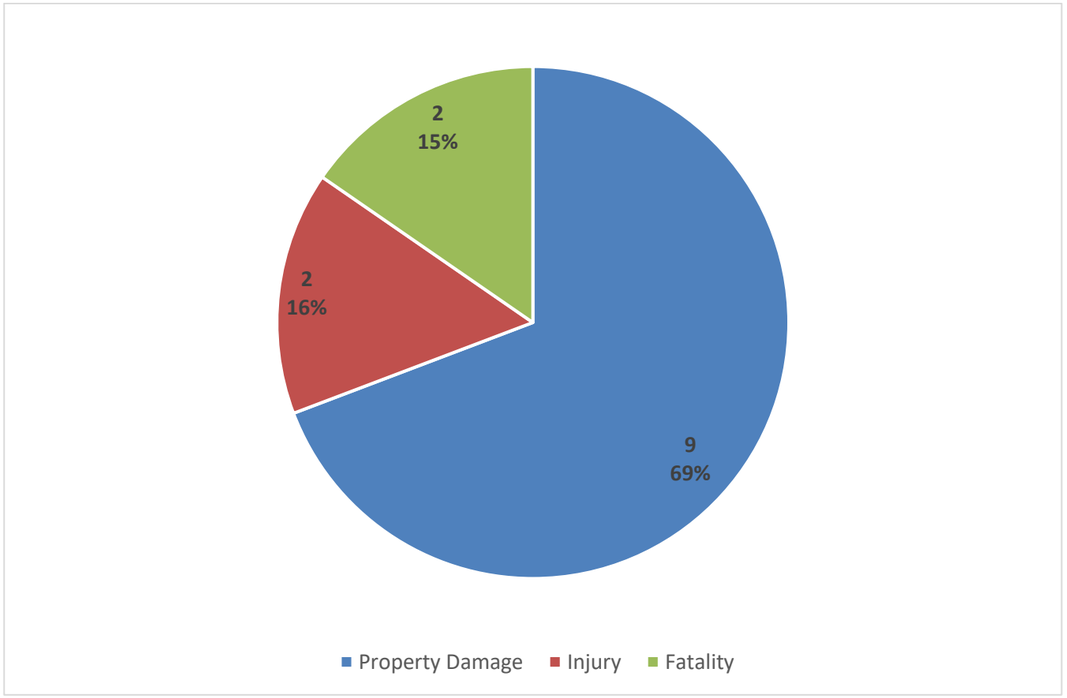


Figure 7: Collision Classification (2017-2022)

The majority of those collisions were right angled crashes, as shown in **Figure 8,** which contributes to the seriousness of the injuries that were sustained. Almost all of the crashes (92%), shown in **Figure 8** and in **Figure 9**, were related to motorists not stopping on Kimball Road by either failing to yield the right-of-way to traffic on Petrolia Line or rear-ending a vehicle that had stopped at the intersection.

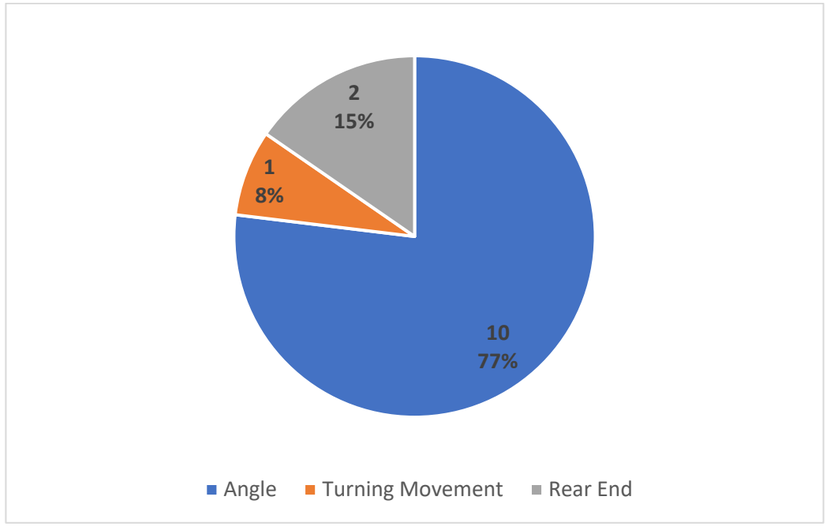


Figure 8: Collision Type (2017-2022)

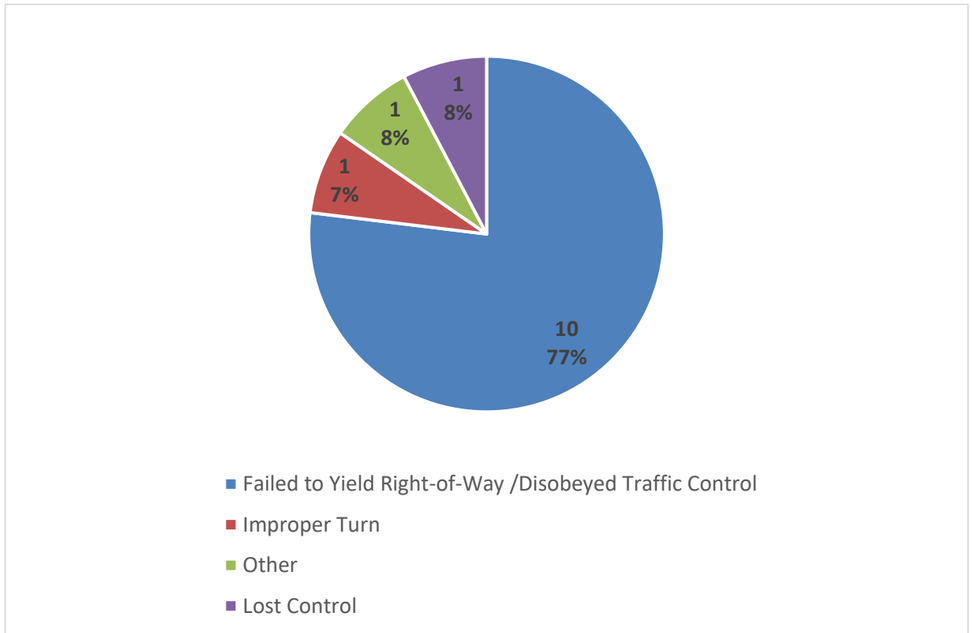


Figure 9: Driver Actions (2017-2022)

The collision data that are available only include reported crashes. There is no record of unreported collisions or near misses at the intersection. During a site visit, some Kimball Road motorists were observed who slowed as they approached the intersection but continued through without stopping. Comments received at the PCC included reports of near misses that individuals had personally experienced or witnessed.

The relative impacts of traffic signals versus a roundabout on crashes are described below:

Traffic Signals:

Unwarranted traffic signals are expected to increase rear-end crashes as drivers do not expect to stop on Petrolia Line. Traffic signals will reduce but not eliminate the probability of right-angle crashes. Isolated rural signalized intersections can also experience failure to stop collisions.

Single-Lane Roundabout:

A single-lane roundabout reduces the probability of an angle collision to near zero but could increase the number of sideswipe crashes. Sideswipe crashes in a roundabout are low speed and have a lower severity than right angle crashes.

A single-lane roundabout is predicted to result in fewer injuries and fatal crashes than would have occurred with the existing road configuration or traffic signals and is the recommended treatment.

4.3 Oversized Load Transporter Vehicles

County Road 4 to the west and County Road 31 to the north are designated routes for Oversized Load Transporter Vehicles in the County. The design requirements for an Oversized Load Transporter Vehicle are shown in **Figure 10**. Oversized loads can be up to 30 m long and 9.14 m wide. The vehicle can be up to approximately 46 m in length and these loads must be accommodated through the intersection, in both directions. Refer to **Photo 4**.

Photo 4: Oversized Load

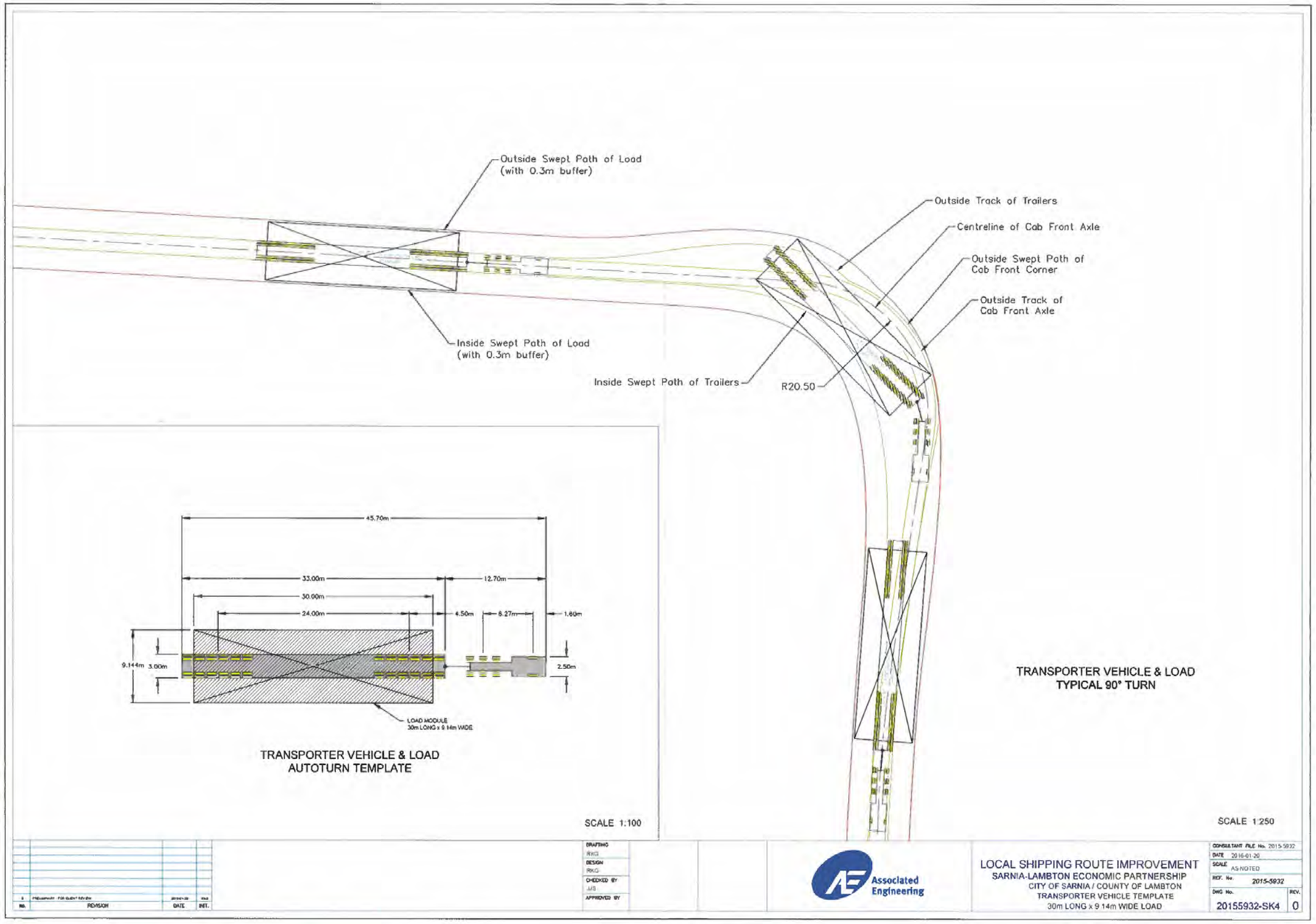


Figure 10: Oversized Load Transporter Vehicle Turning Template

5.0 ENVIRONMENTAL CONDITIONS

An overview of existing conditions within the County Road 31/4 Intersection Study Area is provided in the following sub-sections. Photos of the existing intersection conditions are provided on **Photo 5.**

5.1 Natural Environment

A desktop review of secondary resources was completed to identify aquatic and terrestrial constraints in the Study Area. The following sources of information (databases, online mapping, satellite imagery) were used:

- Natural Heritage Information Centre (NHIC).
- Toporama mapping.
- St. Clair Region Conservation Authority (SCRCA) mapping.
- Department of Fisheries and Oceans (DFO) Species at Risk (SAR) mapping.
- Land Information Ontario (LIO) Aquatic Resource Area (ARA) mapping.

Natural environment features are minimal in the Study Area due to farming, industrial and residential development. Significant natural heritage features are located outside the Study Area as shown on **Figure 11**.

5.1.1 Climate Change and Air Quality

Under the "Considering Climate Change in the Environmental Assessment Process", climate change was considered in the preparation, execution and documentation of the environmental assessment. This Study is required to assess the environmental consequences of an undertaking, including the effect on air quality. However, MECP may not require an air quality and greenhouse gas assessment for certain EA projects under the circumstances described below:

1. No anticipated increase in the number of emission sources (i.e., vehicles and/ or traffic capacity). Improvements to the County Road 4/31 intersection with no additional capacity are proposed; and
2. Commitment to reduce the impacts of climate change through reduced greenhouse gas emissions with a roundabout to reduce the impacts on climate change will be incorporated in all alternatives.
3. Drainage ditches to be sized to accommodate the increased runoff surface created by the roundabout. The sizing of the ditches will accommodate anticipated increased storm events associated with climate change in the future.

The air quality impacts associated with the intersection improvements are expected to be insignificant (there is little or no change in traffic volumes expected). There are no known other major sources of impacts to air quality. However, it is anticipated that reducing vehicle idling times at intersections will have a positive effect on minimizing the air quality and GHG emission impacts. It is not anticipated that there will be impacts to climate change as a result of the improvements at this time.

5.2 Social and Cultural Environmental

5.2.1 Heritage/Cultural

There are no impacts to any heritage resources or major water crossings.

5.2.2 Archaeology

The study recommendations do include excavation beyond the previously disturbed road right-of-way and therefore a Stage 1 Archaeological Assessment is recommended. No cemetery sites or known archaeological sites are within the Study Area.

5.2.3 Noise

The project is not anticipated to increase overall traffic volumes, but rather reduce traffic speed entering the intersection.

5.3 Drainage

The drainage for County Road 4 and County Road 31 is described below. Refer to **Figure 12**.

- The intersection is within the jurisdiction of the St. Clair Region Conservation Authority (SCRCA). The SCRCA is part of the Great Lakes - St. Lawrence River watershed.
- Existing road drainage is conveyed by roadside ditches.
- There is a municipal drain/ditch in the northeast quadrant of the intersection within the road allowance that will be modified by the Township of St. Clair. Changes to the municipal drain are being implemented to accommodate oversized vehicle wheel tracking at the intersection. These movements currently occur on the north and west legs of the intersection.
- Given that the localized increase in percent imperviousness for the intersection under proposed conditions will be small (< 5%), it is recommended that runoff from the Study Area be drained using roadside ditches (grassed swales).

The McGillvary Municipal Drain flows west along the south side of County Road 4, east of County Road 31, then crosses to the east side of County Road 4 at the intersection and flows north. This municipal drain is being enclosed at the intersection, as described above. Permits for this change have been planned under the *Municipal Drainage Act* under By-Law 34, 2022.

The Lapier Municipal Drain is located on the north side of County Road 4 and flows to the west.

5.4 Source Water Protection

The Study Area is not within a significant groundwater recharge area. refer to **Figure 13**. Industry best practices will be used to prevent spills and / or the release of contaminated material during construction.

5.5 Land Use

5.5.1 Provincial Policy Statement

The Provincial Policy Statement, 2020, provides policy direction on matters of provincial interest related to land use planning and development, including transportation and infrastructure corridors. As a key part of Ontario's policy-led planning system, the Provincial Policy Statement sets the policy foundation for regulating the development and use of land. It also supports the provincial goal to enhance the quality of life for all Ontarians.

As per Sections 1.6.8.1 and 1.6.8.2 of the Provincial Policy Statement, the planning and protection of corridors and rights-of-ways for transportation to meet current and projected needs, including major goods movement facilities and corridors, such as the County Road 4/31 intersection, for the long-term requirement to accommodate oversized loads and oversized agricultural equipment.

In addition, Section 3.0 Protecting Public Health and Safety includes mitigating potential risk to public health or safety or of property damage form natural hazards including the risks that may be associated with the impacts or a changing climate. Also, it stipulates that this protection will require the cooperation of the province, planning authorities and conservation authorities to work together.

5.5.2 Zoning

St. Clair Township Zoning (2004) indicates the approved land uses within the Study Area. Schedule A, as shown in **Figure 14**, illustrates that the Study Area is within the Agricultural – 1 zone with an Industrial Type 2 use in the southeast quadrant.

The lands adjacent to the intersection are considered Provincially Significant Agricultural Resource Areas with a level 2 capability for agricultural production. Refer to **Figure 15**.

5.5.3 Oil Resources

The Lambton County Official Plan, Map C, Oil Resources, refer to **Figure 16,** indicates that oil resources are not located in the vicinity of the intersection. However, there are two (2) pipelines, one crossing the intersection on the west side ("proposed" is indicated on plans but assumed to be constructed) and a second further west which may not be impacted by intersection improvements.

Photo 5: Existing Conditions Photos of the County Road 4/31 Intersection

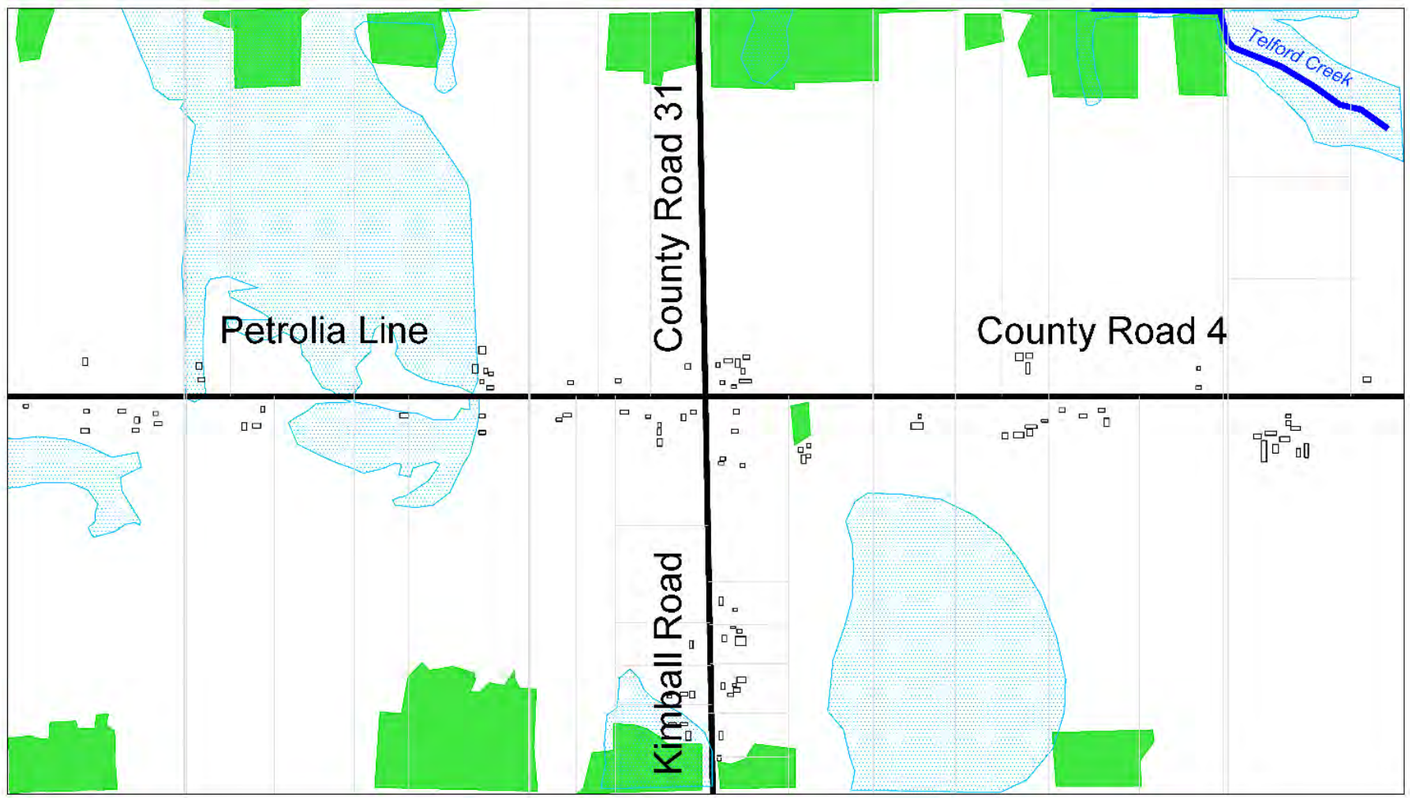


Figure 11: Natural Environment Features

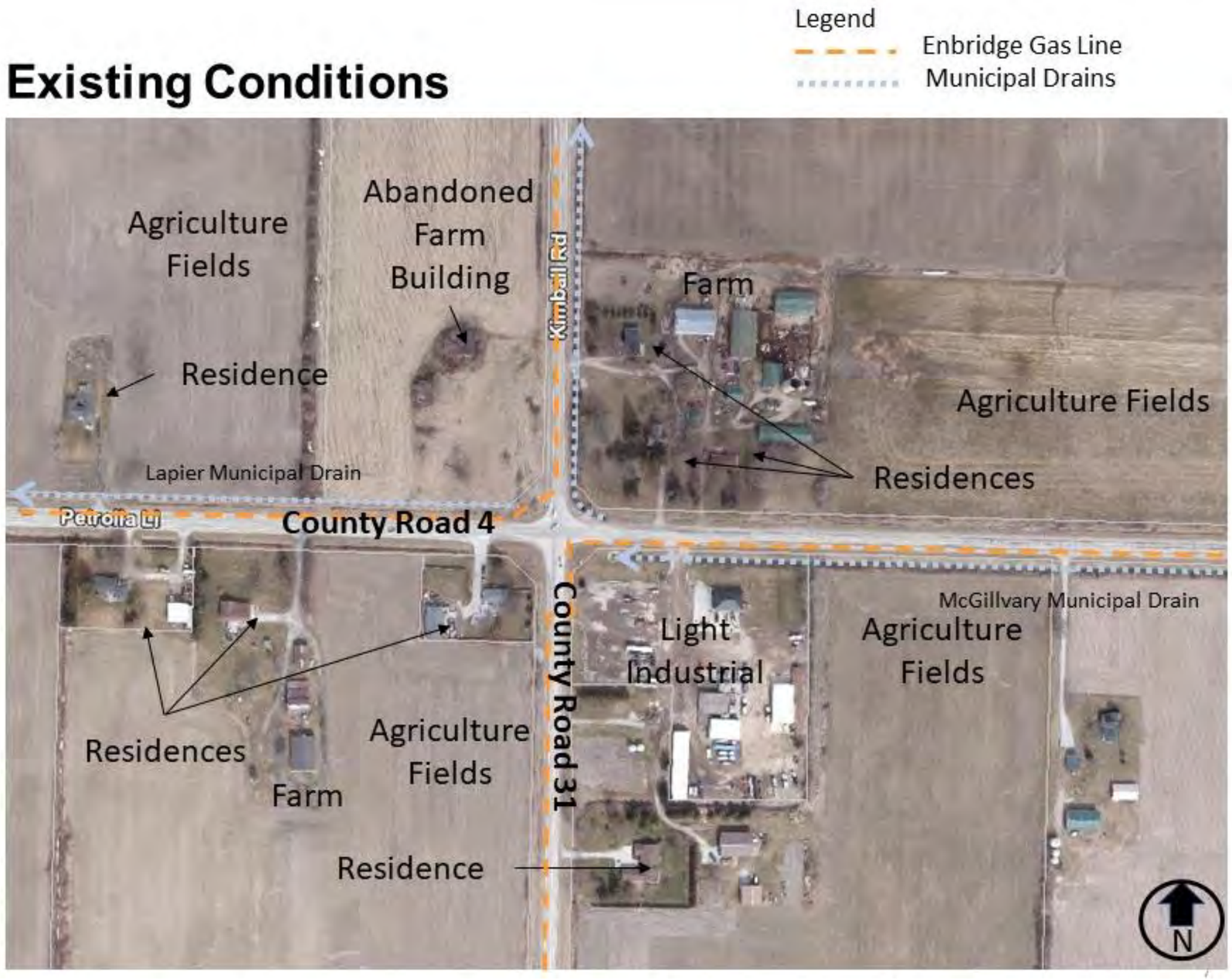


Figure 12: Existing Conditions

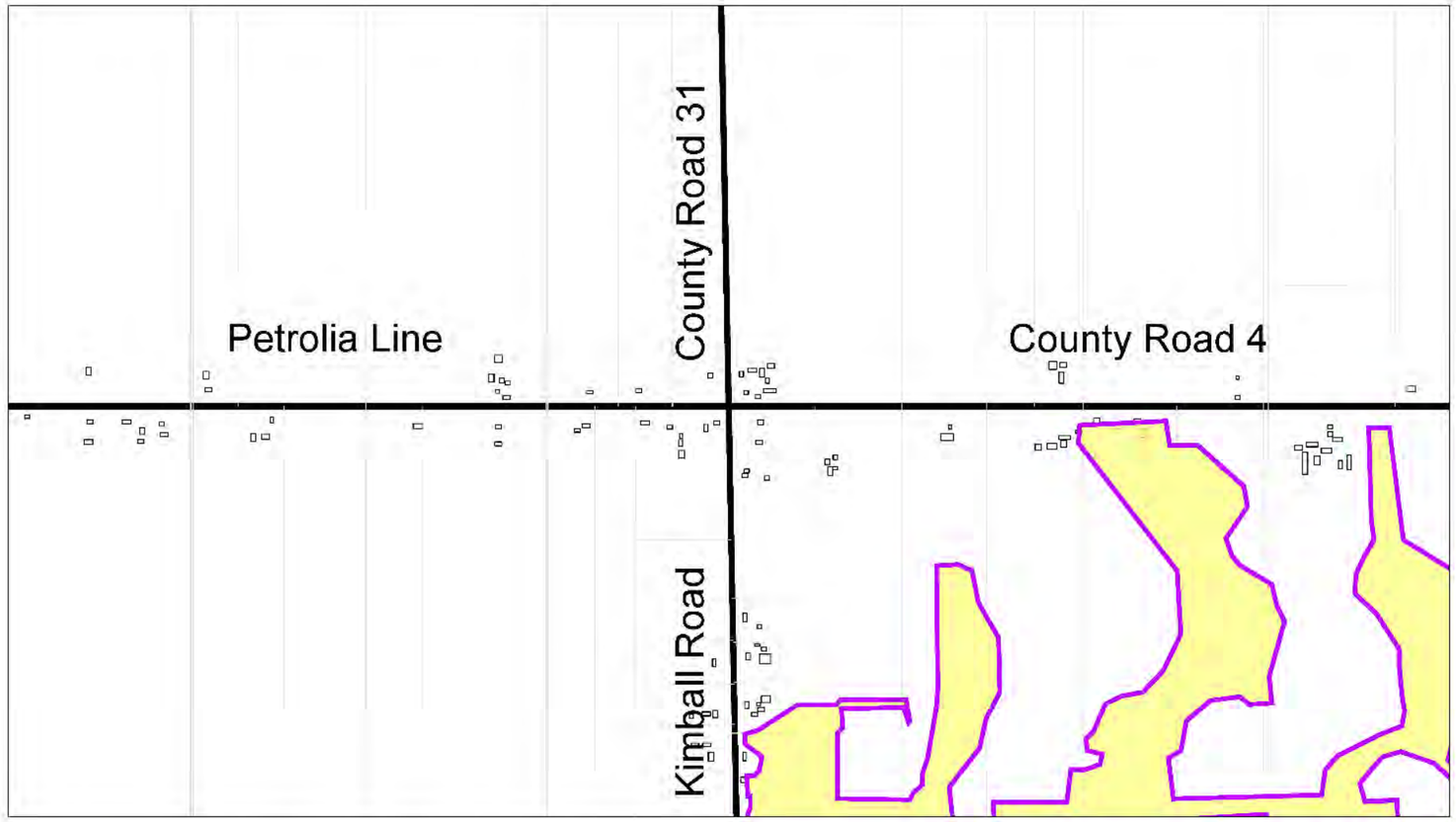
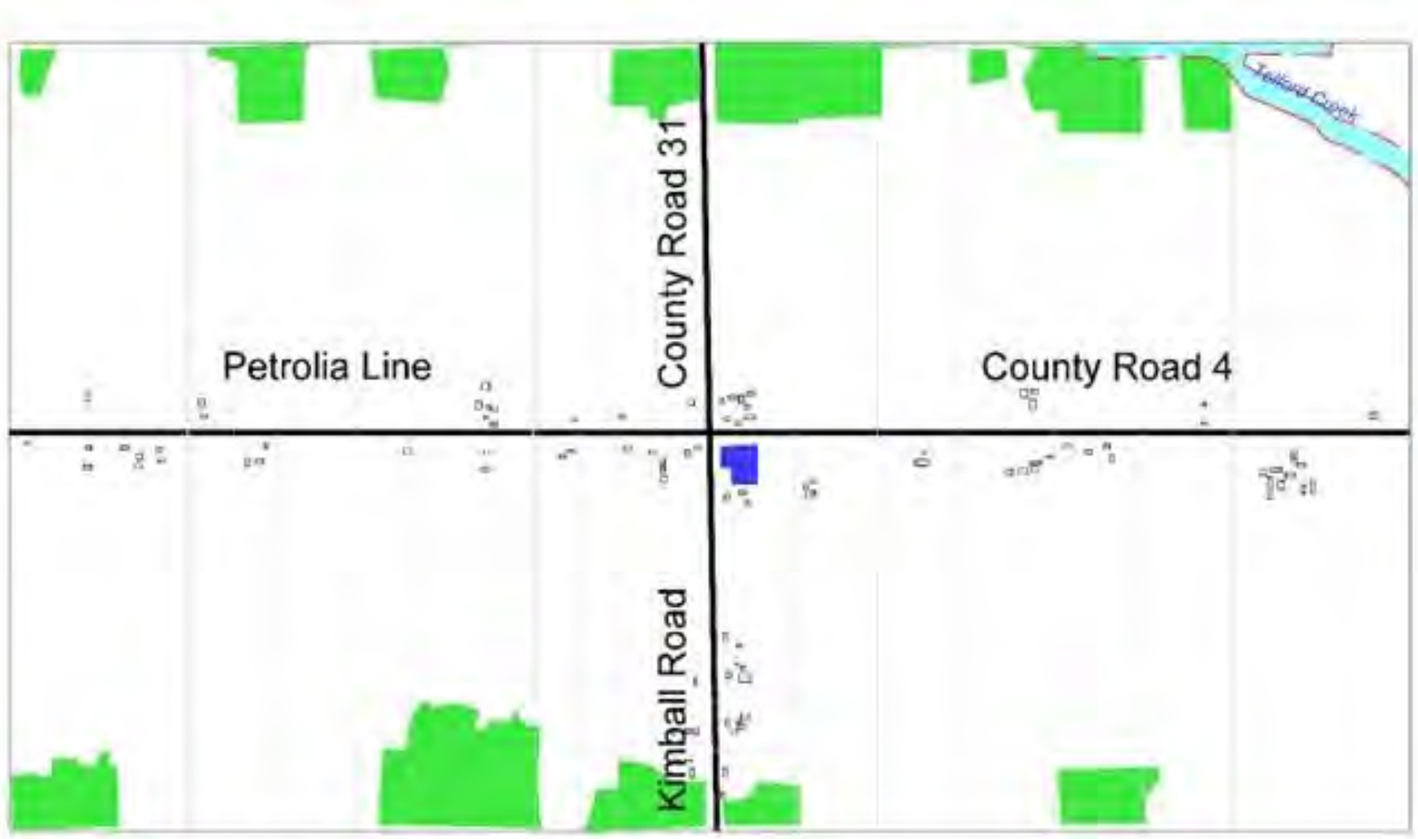


Figure 13: Source Water Protection



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

Figure 14: Zoning

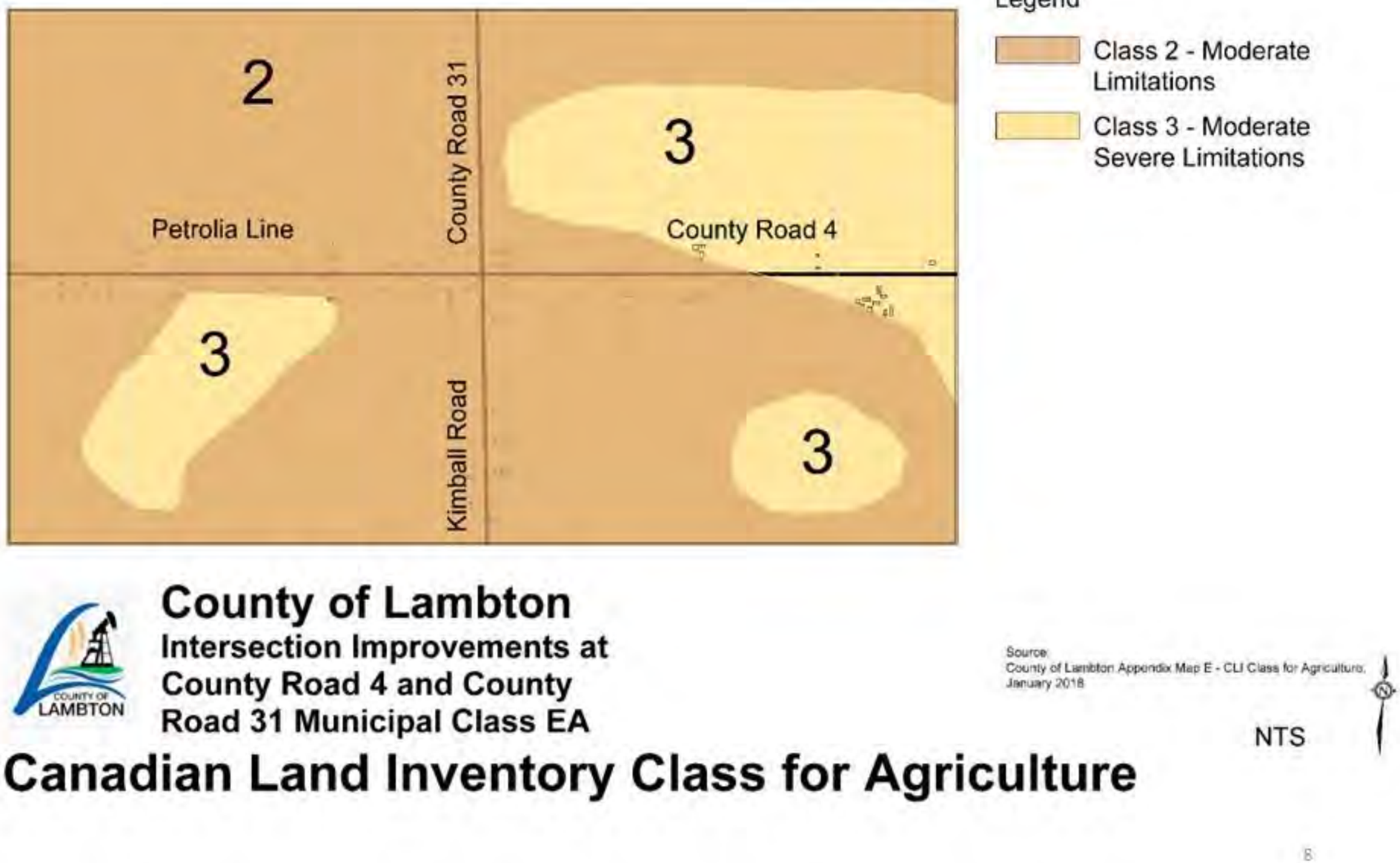


Figure 15: Canadian Land Inventory Classes for Agriculture

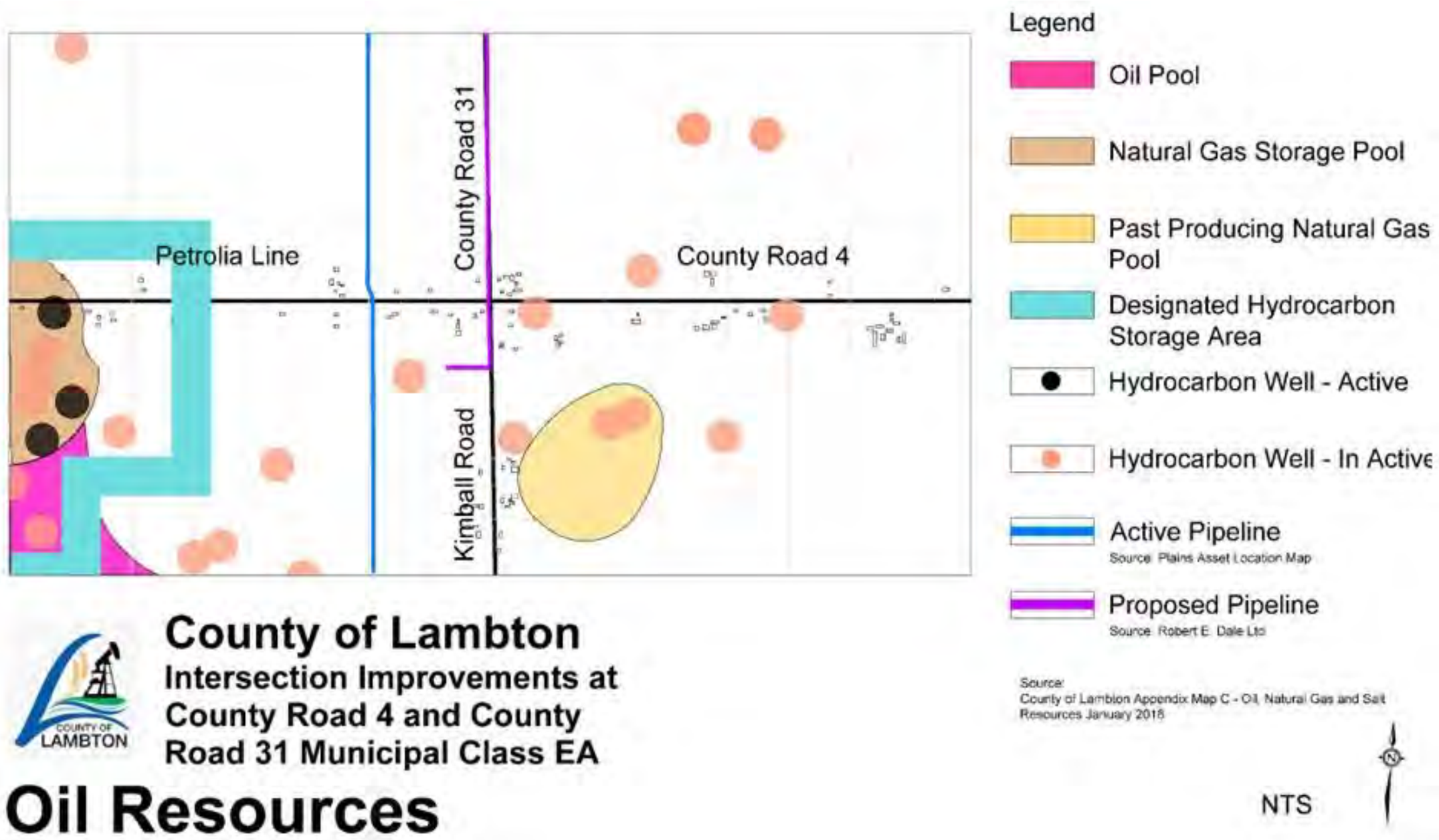


Figure 16: Oil Resources

6.0 GENERATION OF ALTERNATIVES

The analysis and evaluation of alternatives is a central requirement of the EA process. Alternatives for improvements to County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) that were viable, had relatively fewer impacts, or had improved safety and operation compared with other alternatives, were considered to be reasonable alternatives.

Alternative Planning Solutions represent alternative ways or methods of addressing the Problem / Opportunity Statement specific to this study, refer to **Section 1.2**. These reflect different strategies and include the "Do Nothing" approach (maintaining the status quo but not addressing the Problem / Opportunity Statement).

Following the assessment of Alternative Planning Solutions, those alternatives judged to address the Problem / Opportunity Statement were carried forward and formed the Recommended Planning Solution. The selected "Planning Solution" was deemed to address the Problem / Opportunity Statement to improve the safety of the travelling public at the intersection of County Road 4 and County Road 31 and provide a cost effective interim and long-term plan for the intersection, while providing the best overall balance between the transportation engineering objectives, life cycle costs, and other environmental, cultural, socio-economic, and land use planning objectives.

6.1 Alternatives Planning Solutions

Potential improvement alternatives include:

- Do-nothing.
- All-way Stop Control.
- Signalized Intersection.
- Roundabout Intersection.

The following sections describe each alternative as described in **Appendix C**.

6.1.1 Alternative 1 - Do Nothing

The environmental assessment process requires Do Nothing to be considered as an alternative for any project. The Do Nothing alternative will not address the safety concerns at the intersection which have resulted in 2 fatalities and other injuries in the last 5 years.

6.1.2 Alternative 2 - All-Way Stop Control

A traffic volume warrant to consider the provision of an All-Way Stop on a rural arterial road is described in the Ontario Traffic Manual Book 5 to be a minimum of 375 vehicles/hour for each of the highest 8 hours of the day. Based on the traffic volumes recorded at the intersection on May 9, 2023, the intersection is approaching the warrant to consider provision of an all-way stop but the warrant is not fully satisfied. The current volumes represent 96% of the minimum vehicle warrant. With the current rate of area traffic growth, it is anticipated that it could be 10 years or more (2032) before off-peak traffic volumes increase sufficiently to consider all-way stop control.

The provision of an all-way stop will typically result in an increase in vehicle collisions. Most commonly, it is the number of rear-end collisions that typically increase with a lower percentage of rear-end collisions resulting in injury. While this is identified as an intersection improvement alternative, it should be recognized that the safety concerns at this location could potentially be exacerbated with the provision of an all-way stop. The most common cause of the reported collisions is the failure of northbound and southbound motorists approaching the stop signs to yield to crossing traffic. An all-way stop would create a similar condition for east/west traffic on Petrolia Line.

6.1.3 Alternative 3 - Signalized Intersection

The provision of traffic signals at the intersection would require the widening of Petrolia Line and Kimball Road to construct left-turn lanes on each approach. The warrants/justifications for the installation of traffic signals, attached in **Appendix C**, were examined in accordance with Ontario Traffic Manual (OTM) Book 12. The existing traffic demands do not meet any of the warrants for installing traffic signals, summarized as follow:

- Minimum Vehicle Volume 86%
- Delay to Cross Traffic 45%
- Combination No
- 4-Hour Volume 48%
- Collision Experience 33%

The provision of unwarranted traffic signals will typically result in increased traffic delays and vehicle emissions. Right angled collisions should be reduced with the installation of traffic signals, but the overall safety of an intersection will commonly be adversely affected. Traffic signals are normally not installed unless one of the warrants is fully satisfied. Based on the historical growth rate in area traffic, the installation of traffic signals is unlikely to be warranted in the next 20 years. A typical signalized intersection is shown on **Photo 6** and shown on **Figure 17.**

Photo 6: Typical Signalized Intersection

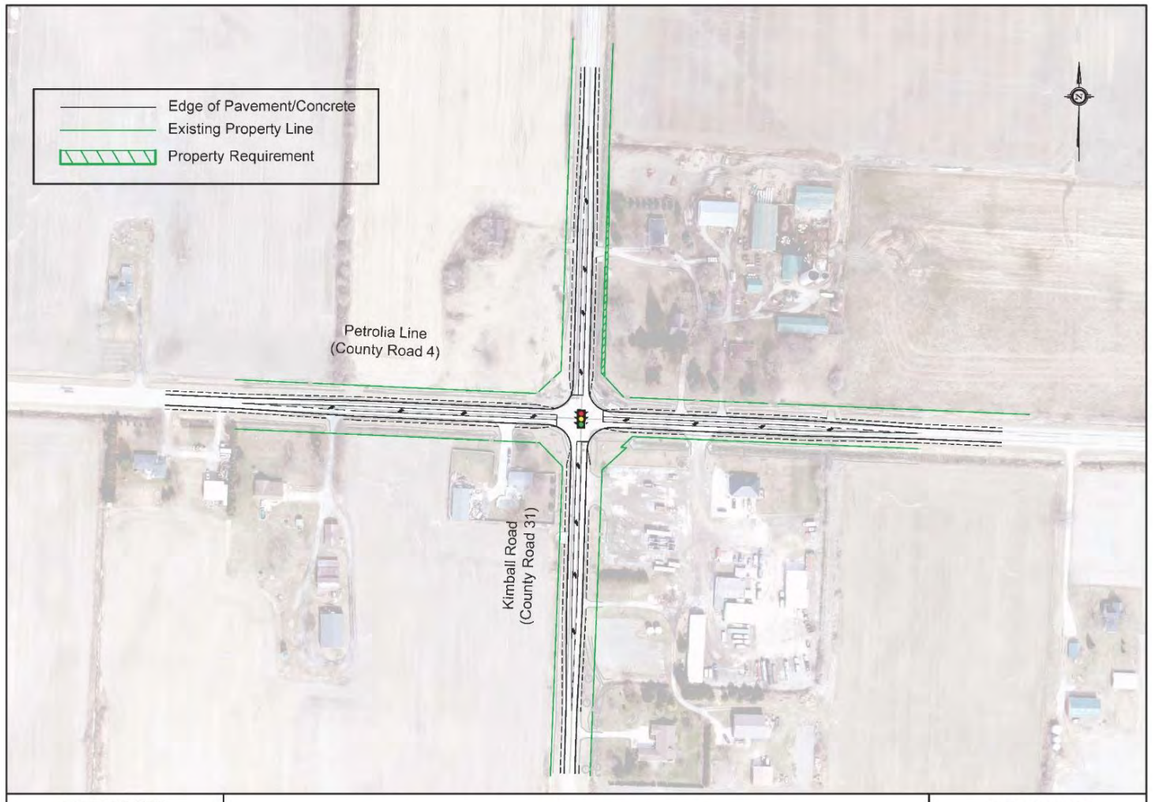


Figure 17: Signalized Intersection

6.1.4 Alternative 4 - Roundabout Intersection

The use of roundabouts throughout North America is continuing to increase. Provision of a single-lane roundabout would improve the safety of the intersection and traffic operations. The potential for high-speed right-angled crashes that have resulted in injuries and fatalities would be virtually eliminated.

The geometry of a roundabout can be designed to accommodate oversized vehicles.

6.1.5 Conclusions and Recommendations

The collision history at the intersection of Petrolia Line and Kimball Road which includes 2 fatalities and at least 3 individuals injured over a 5-year period demonstrates a major safety deficiency. Countermeasures including enhanced signage, the provision of transverse rumble strips on Kimball Road in advance of the intersection and an overhead flashing beacon in the centre of the intersection have been unsuccessful in addressing these concerns.

Based on historical area traffic growth, the traffic demands will not warrant the installation of traffic signals for 20 or more years. The provision of unwarranted traffic signals is not recommended. Unwarranted traffic signals will increase delays and will adversely impact the overall safety of the intersection.

The provision of an all-way stop was considered and is not recommended. The type of collisions indicates that some drivers on Kimball Road are not expecting to be required to stop at Petrolia Line. An all-way stop can be expected to exacerbate the existing safety concerns at the intersection by adding an unexpected stop for Petrolia Line traffic.

The provision of a roundabout is recommended to be carried forward to address the existing safety concerns and improve traffic operations at the intersection. A typical roundabout intersection is shown on **Photo 7.**

Photo 7: Typical Roundabout Intersection

6.2 Preliminary Design Alternatives

Based on an evaluation of the planning alternatives, the Preferred Planning Alternative was carried forward for more detailed investigations. The Planning Alternatives were presented to the public at a Public Consultation Centre on June 28, 2023.

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).

The alternatives are shown in **Figure 18** to **Figure 21**.

6.2.1 Evaluation of Preliminary Design Alternatives

The evaluation of preliminary design alternatives was completed using a qualitative assessment to compare the effects and performance of the alternatives. This method considers the advantages and disadvantages of each of the alternatives using the evaluation criteria as descriptors to measure the relative differences of the alternatives being considered. The effects considered the natural, social and physical environments in the Study Area.

	Alternative 1 Conventional Roundabout	Alternative 2 Modified Roundabout with Splitter Island Bub-outs
Traffic and Transportation	• Speeds reduced for traffic approaching the intersection. • Improves safety. ✗	• Better control of speeds approaching the intersection. • Improves safety. ✓
Natural Environment	No anticipated impacts	No anticipated impacts
Cultural Environment	No anticipated impacts	No anticipated impacts
Socio-economic Environment	Accommodates over sized load vehicles.	Accommodates over sized load vehicles.
Land Use and Property	• Agricultural land: 0.25 ha • Industrial land: 0.9 ha • Driveway Relocation: 0 ✓	• Agricultural land: 1.19 ha • Industrial land: 1.09 ha • Driveway Relocation: 1 ✗
Cost	Costs are the same order of magnitude.	Costs are the same order of magnitude.
Recommendation	Not recommended to be carried forward	**Recommended to be carried forward**

Alternative 2 has marginally greater impacts to land use and property however it exhibits greater traffic and transportation attributes which will improve the safety and reduce the severity of collisions at this intersection. No significant impacts to the natural, cultural, or socio-economic environments are anticipated. Negative environmental effects can be reduced with acceptable mitigation measures, refer to **Section 8.0**.

6.2.2 Recommended Preliminary Design Alternative

The evaluation of intersection alternatives recommended that **Alternative 2** be carried forward as the Technically Preferred Alternative (TPA), see **Figure 22**. The advantages of the TPA include:

- Minor property impacts.
- Roadway geometry (chicanes) better controls speeds approaching the intersection.
- Improved safety.
- It is a more context sensitive design for the location.

6.3 Conclusions

Based on the technical analysis, the existing conditions and public input the “Roundabout Intersection” was recommended to be carried forward. This recommendation will improve the County Road 4/31 intersection operations and safety. The advantages of the roundabout intersection include the following:

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

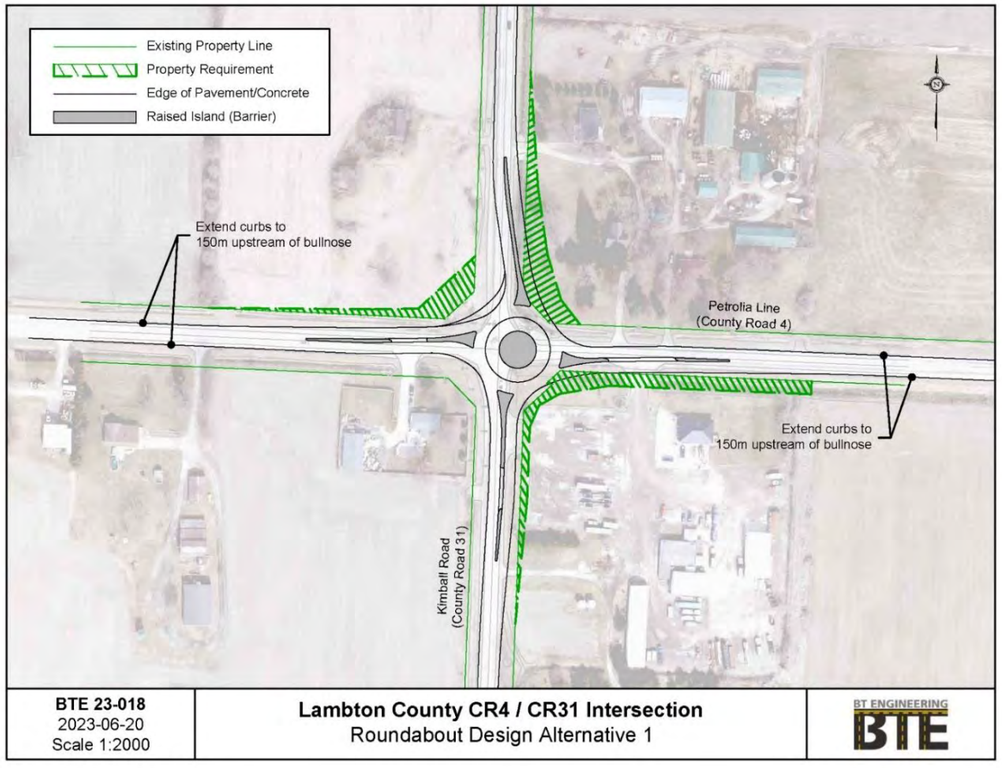


Figure 18: Conventional Roundabout - Alternative 1

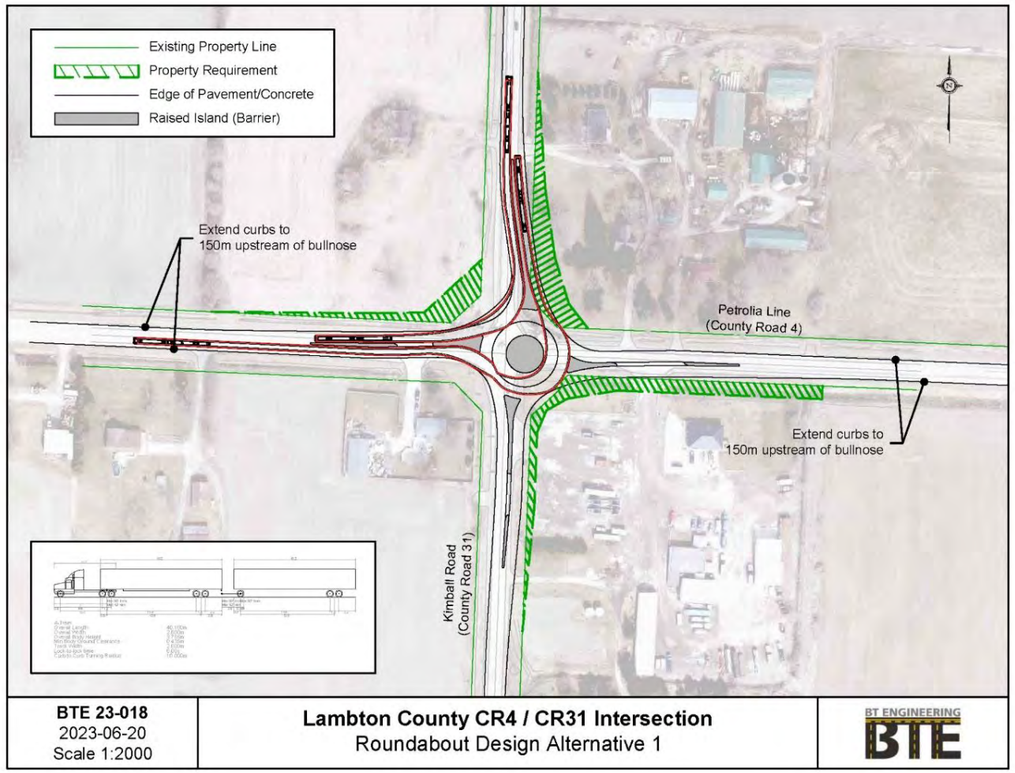


Figure 19: Roundabout Alternative 1 with Large Vehicle Turning Radii

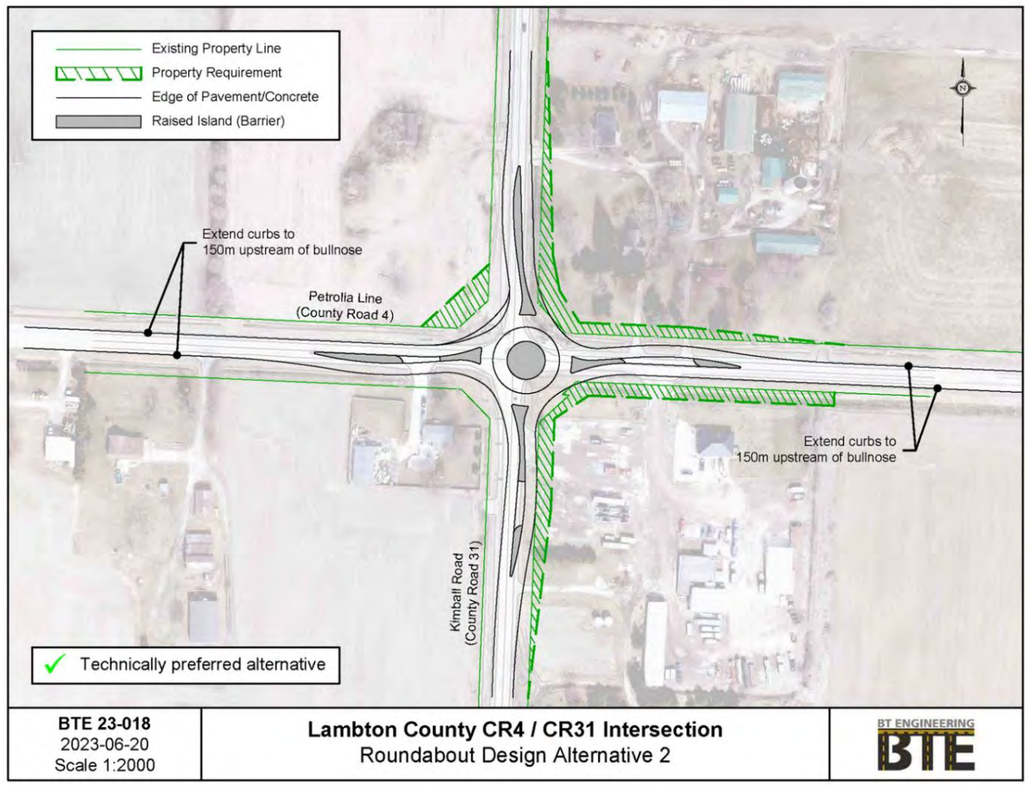


Figure 20: Modified 4-legged Roundabout - Alternative 2

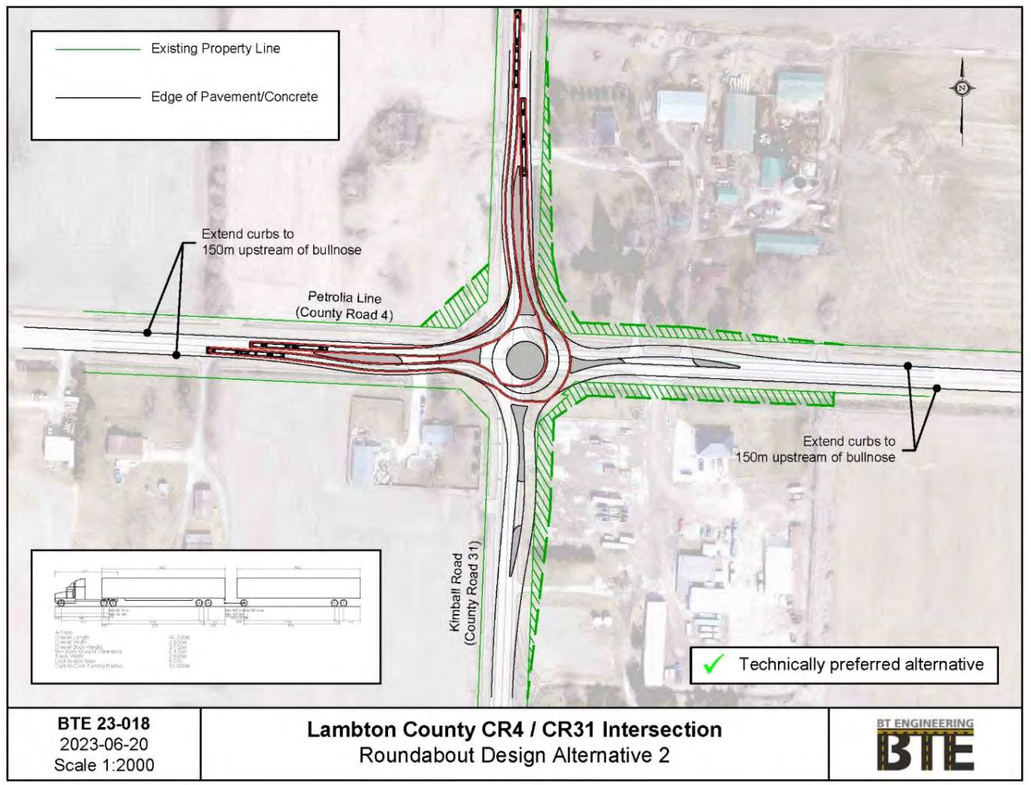


Figure 21: Roundabout Alternative 2 with Large Vehicle Turning Radii

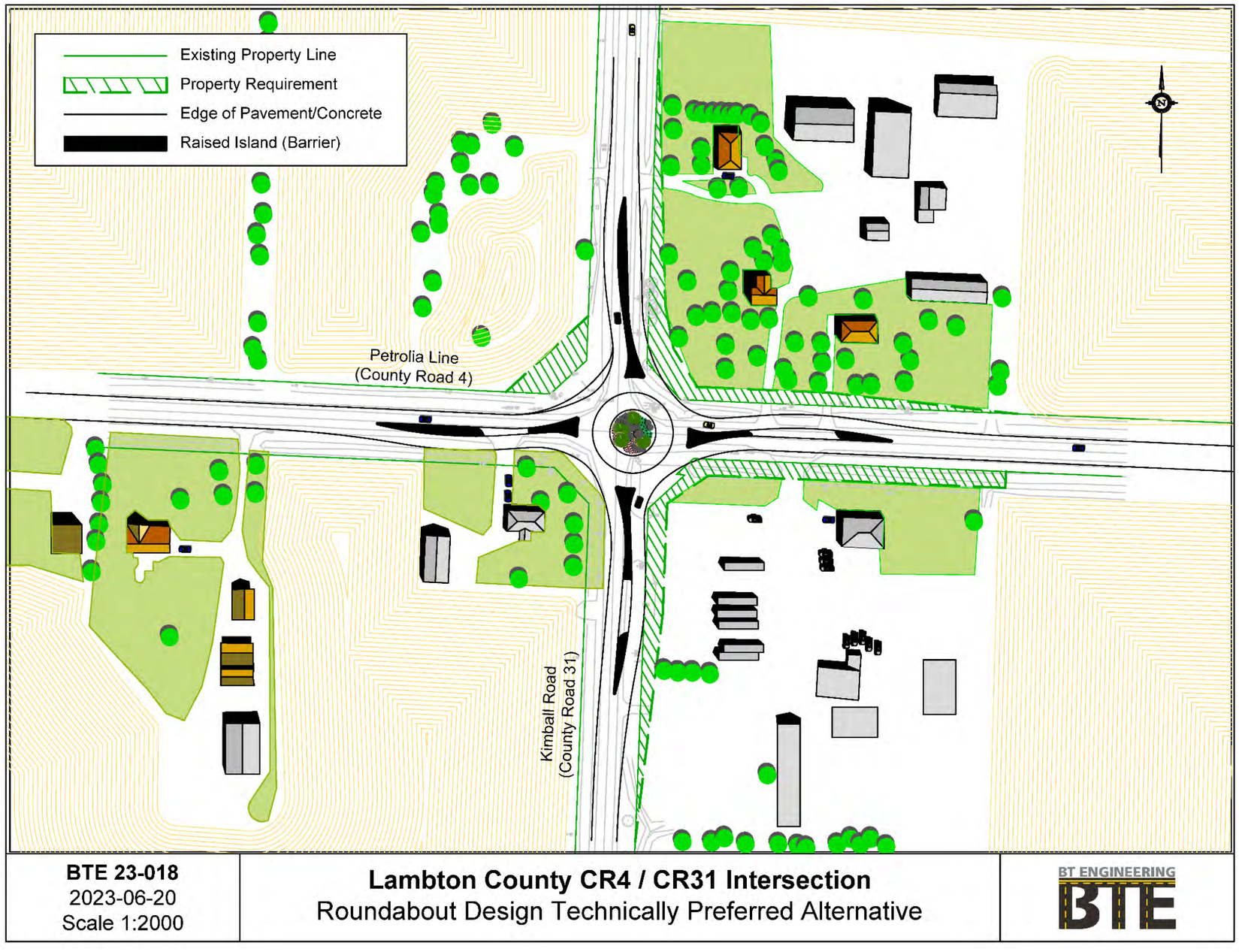


Figure 22: Technically Preferred Alternative Landscape Sketch

7.0 RECOMMENDED PLAN

The Recommended Plan includes:

- Roundabout Alternative 2 to modify the existing intersection.

The TPA was shown to the public at the PCC and the public supported the recommendations.

Specific modifications to the TPA that have been included in the Recommended Design include:

- Retention of the commercial entrance driveway location and width for the commercial property in the southeast quadrant. This location accommodates the internal truck movements at the business.
- Addition of a driveway and traversable median for the property owner in the southwest quadrant. This second driveway will allow the owner to enter with a trailer and to back it onto the site. Today the owner backs the trailer from the westbound lane on the County Road. The existing driveway closer to the roundabout will become a right-in/right-out driveway.
- Removal of the ditches on each side of the residential property in the southwest quadrant to create a more urban front and side yard. In these areas, smaller swales will be used. On the north side, ditch inlets will be investigated in detail design to drain across the driveways (water flowing westerly). A paved boulevard will be included behind the curb to transition to the lawn.
- For the residential property in the southwest quadrant, landscaping will be provided for the property owner (either on the County property or private lands); to be determined during detail design.
- For the residential property in the northeast quadrant, landscaping will include the replacement of trees. This will mitigate the loss of a mature tree at the corner on private land. The trees will be on private property outside the daylighting triangle for visibility. The tree locations will be determined at the detail design stage in consultation with the property owner.
- The shoulders will be paved and widened in the northwest quadrant to accommodate larger trucks. This will include an outer apron to accommodate the wide turns at this corner. An example of an outer boulevard is shown in **Photo 8**.
- Recommendation to utilize central lighting (in the middle of the centre island) to supplement the conventional decision point lighting and remove poles within the path of the oversized truck movements.

Photo 8: Sample Outer Apron

Site-specific modifications to the recommendations will be investigated during detail design to address the effects of oversized vehicles and accommodate entrances and driveways.

7.1 Statement of Flexibility

This Project File documents the need for potential additional property acquisition to accommodate utility relocations or wheel tracking for oversized load vehicles. These utility relocation details will be finalized during detail design.

7.2 Endorsement of the Recommended Plan

The Technically Preferred Alternative (TPA) reflects the recommendations of the Technical Advisory Committee (TAC). Following the presentation of the TPA to the public at the PCC, the updated TPA (Recommended Plan) was presented to Lambton County Council where it was endorsed. The resolution is included in **Appendix E.**

The plan was then carried forward as the Recommended Plan. The final Recommended Plan is shown on **Figure 23**.

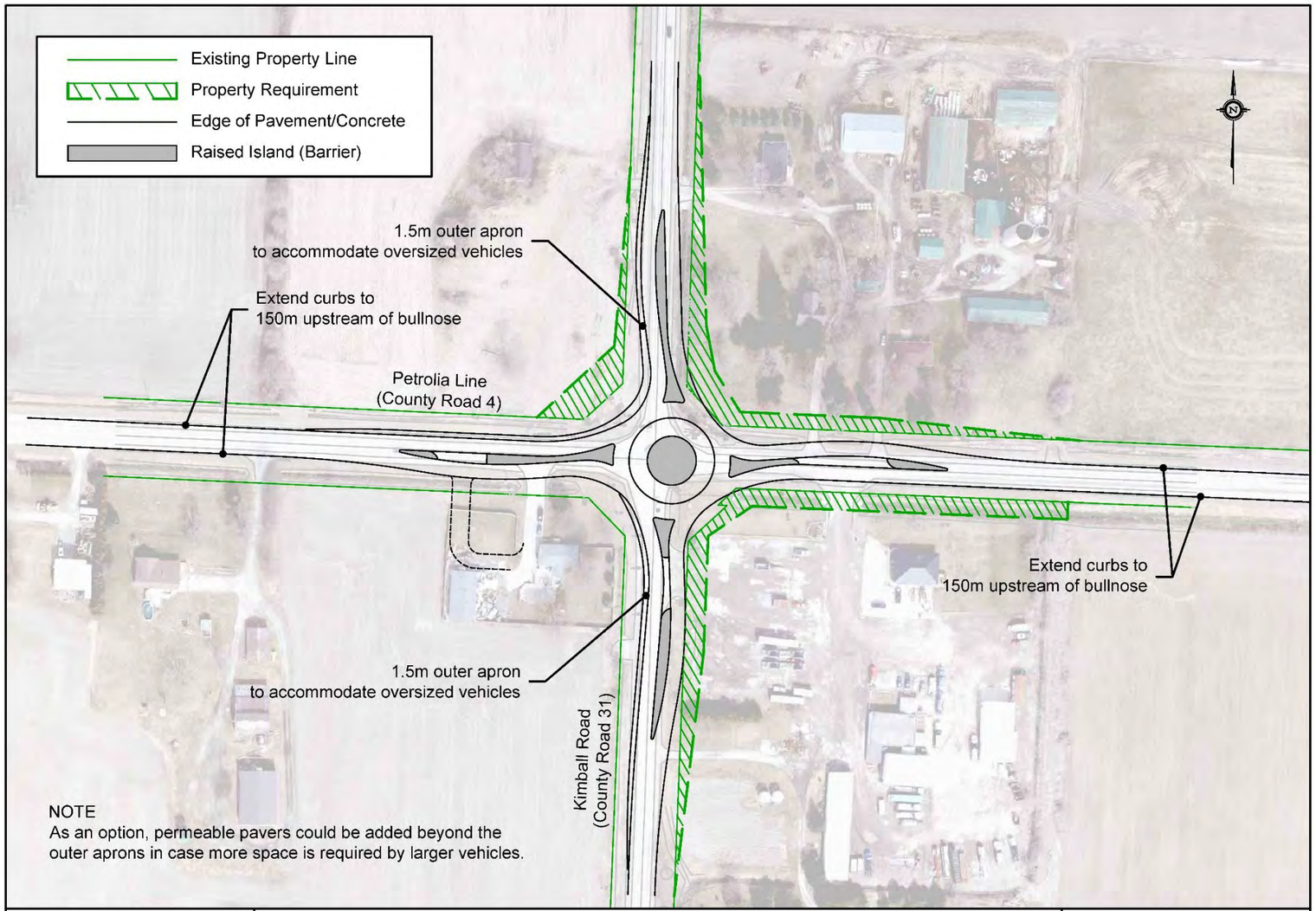


Figure 23: Recommended Plan

8.0 EFFECTS AND MITIGATION

Public comments were received during the comment period for the PCC. Adjacent property owners impacted by the construction of the works were contacted regarding property acquisition.

Effects on the environment were considered in accordance with the Municipal Class EA process.

A specific effect of the project that will be included in the construction phase it to allow closure of the north and south legs of the intersection during construction. During this period a signed detour will be used.

Remaining concerns related to the Recommended Plan will be mitigated to minimize or eliminate any detrimental effects. **Table 3** provides a description of the effects and mitigation proposed with the Recommended Plan. Refer to **Figure 24** illustrating the Recommended Plan Landscape Sketch. The Recommended Plan was reviewed and accepted by MAMMOET Canada Eastern Ltd., refer to **Appendix F**.

8.1.1 30-day Review

Following the Notice of Study Completion there is a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent.

The public may request a higher level of assessment on a project if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Section 16(6) of the *Environmental Assessment* act. In addition, the Minister may issue an order on their own initiative within a specified time period. The Director of the Environmental Assessment Branch will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on the project.

The Notice of Study Completion, for this study, will contain directions on how an individual or group can communicate their concerns to the Minister of the Environment. Conservation and Parks. These directions are outlined below and in the public Notice.

Therefore, the proponent cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Section 16 order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed Order regarding the project.

Outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, a Section 16 order request on those matters should be addressed in writing to:

Minister David Piccini Ministry of Environment, Conservation and Parks 777 Bay Street, 5th Floor Toronto, ON M7A 2J3 minister.mecp@ontario.ca	and	Director, Environmental Assessment and Permissions Branch Ministry of Environment, Conservation and Parks 135 St. Clair Avenue West, 1st Floor Toronto, ON M4V 1P5 EABDirector@ontario.ca

9.0 FUTURE ACTIVITIES

At the end of the 30-day review period, should there be no objections to the project, the County may proceed with design and construction of the Recommended Plan, subject to availability of funding and construction priorities.

Following EA clearance this project, or any individual element of this project, may proceed to detail design and construction. Mitigation measures listed in **Table 3** are to be incorporated during design and construction, as appropriate.

Table 3: Effects and Mitigation

Factor	Interested Party	Environmental Issues and Potential Effects	Preliminary Design Proposed Mitigation Measures
Traffic Operations - Delay	General Public	Potential for traffic travel delays associated with construction staging.	• Provide advance notice of any closures / lane reductions / detours. • Prepare and implement Traffic Management Plan during construction.
Emergency Services	Lambton County St. Clair Township	Potential impact to emergency service routes / access due to closures / lane reductions.	• Prepare and implement Traffic Management Plan during construction. • Ensure ongoing and advance communication with emergency service providers during construction.
Property Impacts	Public	Property acquisition for intersection improvements for the ultimate plan.	• Early communication / coordination with owner(s) and tenants to minimize disruption associated with property purchase. • Compensation for lands and decommissioning of wells if required. • Prepare a planting plan if street trees are requested by property owner.
Interruption in access to residence and business entrances	Public	Residents, business owners, facility owners/users and motorists travelling through the area may be inconvenienced as a result of reduced access to local entrances/exits.	Provide access to residences, farms, and businesses where necessary to maintain access/egress during construction. Maintain access/egress for emergency response vehicles and school buses at all times during construction. • Stage entrance upgrading to reduce access restrictions to the extent possible.
Aesthetics	Lambton County	Roundabouts provide opportunities to enhance aesthetics.	• If appropriate, context sensitive design elements will be considered for inclusion.
Archaeology	MCM	Potential damage to or loss of archaeological artefacts.	• Carry out a Stage 1 Archaeological Assessment. Comply with the recommendations of the Stage 1 archaeological assessment. • Any further recommended archaeological assessments (e.g., Stage 2,3,4) will be undertaken by a licensed archaeologist as early as possible during detailed design and prior to any ground disturbing activities. • Should previously undocumented archaeological resources be discovered, they may indicate 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 assessment, in compliance with Section 48 (1) of the Ontario Heritage Act. • The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11, the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism (MCM) should also be notified (at archaeology@ontario.ca) to ensure that the

Factor	Interested Party	Environmental Issues and Potential Effects	Preliminary Design Proposed Mitigation Measures
			archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act
Noise (Construction)	General Public	Noise from construction equipment and vehicles during construction.	• Maintain equipment in good operating condition to prevent unnecessary noise. Restrict idling of equipment to the minimum necessary to perform the work. Contractor will be required to abide by noise control by-laws for day-to-day operations. • Apply for a noise by-law exemption or limit works to daylight hours;
Management of Excess Materials	MECP	The project will result in the generation of waste asphalt, granulars, concrete and possibly earth materials.	• Excess generation will be minimized through promoting contractor salvage, recycling and re-use in the contract tender documents. • Manage and dispose of excess materials generated in accordance with OPSS 180 (General Specification for the Management and Disposal of Excess Material) and MOE's Protocol for the Management of Excess Material in Road Construction and Maintenance. • Manage contaminated material in accordance with O. Reg. 153/04 and O. Reg. 406/19 and the MECP's current documents: • Management of Excess Soil – A Guide for Best Management Practices (2014); and • Rules for Soil Management and Excess Soil Quality Standards (2022).
Species at Risk	MECP	Potential disruption to migratory birds, nesting and / or species at risk (SAR).	• Conduct site 'sweeps' prior to any tree removals and prior to and during construction. • Clear any vegetation outside of the breeding bird season. • Ensure Contractor's staff are trained to recognize potentially affected species and are required to notify authorities if any are encountered on site. • Consultation with MECP during detail design.
Utilities	Utility Companies	Potential for impacts to existing utilities.	• Ensure advance coordination with utility companies and approval for all utility relocations / protections.
Vegetation		Removal of various trees and woody vegetation due to clearing for staging areas.	• Maintain, where possible, mature tree specimens with a diameter (DBH) greater than 50 cm.
Lighting	General Public	Light spillover to houses Headlight glare into residential properties	• Use of cut-off lighting. • Use of landscaping to reduce effects.
Drainage	St. Clair Township	Drainage modifications to roadside ditches	• Consideration of piped stormwater system.

Factor	Interested Party	Environmental Issues and Potential Effects	Preliminary Design Proposed Mitigation Measures
			• Drainage ditches to be sized to accommodate the increased runoff surface created by the roundabout. The sizing of the ditches will accommodate anticipated increased storm events associated with climate change in the future. • Coordination with the Township for changes to municipal drain and requirements under the *Drainage Act*.
Tile drainage outlet to be protected	Public	Drainage modifications to fields	• Farm tile drainage outlets to be accommodated.
Air Quality and Odour	MECP	Dust during construction	• Use non-chloride dust suppressants be applied during construction.
Oversized Vehicles	Public	Oversized vehicles may damage route through roundabout	• All north-south oversized vehicles will travel on the west side of the roundabout. • All vehicles from the west to the north will travel the wrong way direction on the northwest corner, avoiding the roundabout. • To accommodate wider vehicles the design has included concrete outer boulevards. • During detail design consider use of grass concrete pavers beyond the concrete outer boulevards.

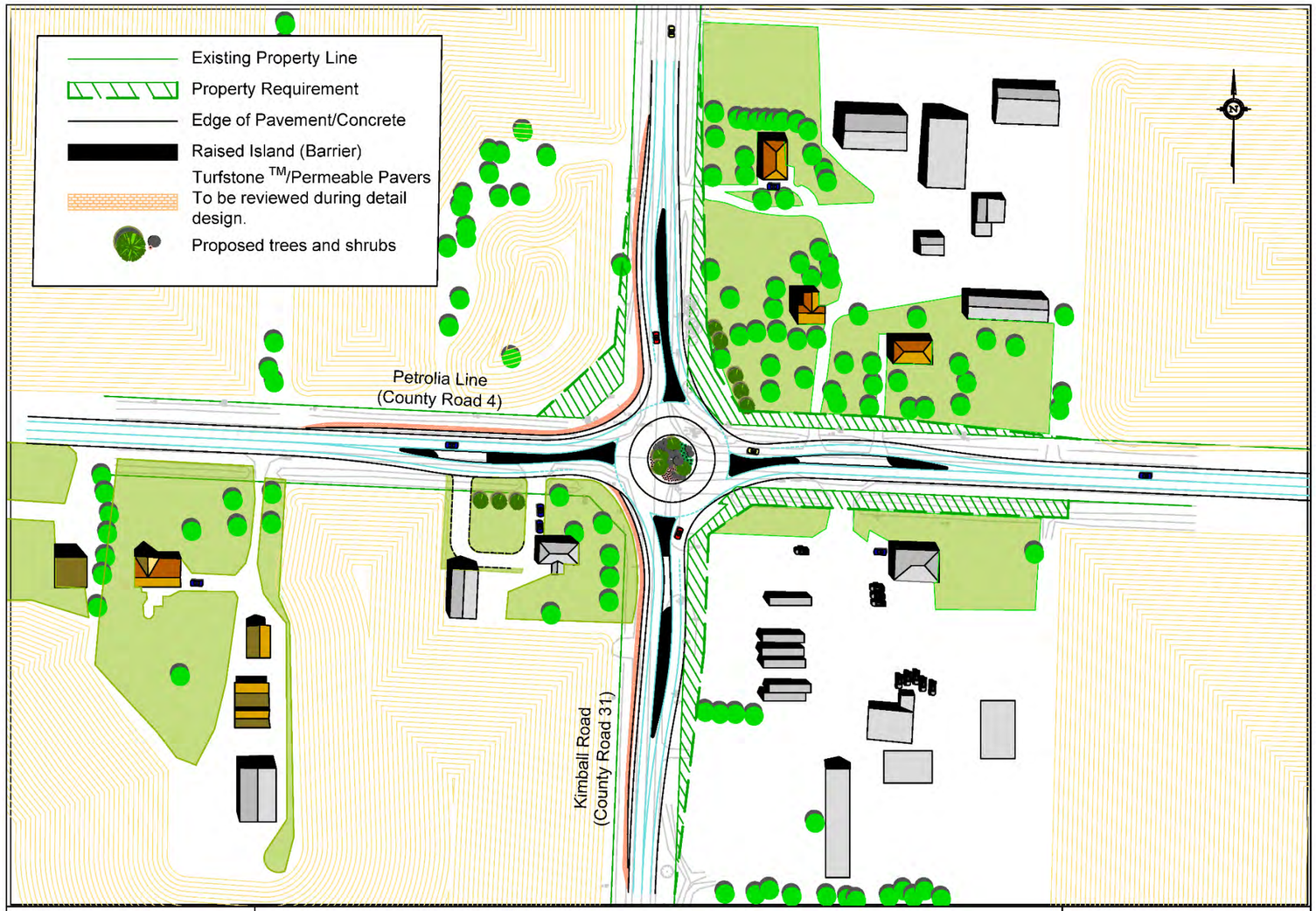


Figure 24: Recommended Plan Landscape Sketch

GLOSSARY OF TERMS

AADT	Annual Average Daily Traffic – the average 24-hour, two-way traffic for the period from January 1st to December 31st.
Alignment	The vertical and horizontal position of a road.
Alternative	Well-defined and distinct course of action that fulfils a given set of requirements. The EA Act distinguishes between alternatives to the undertaking and alternative methods of carrying out the undertaking.
Alternative Planning Solutions	Alternative ways of solving problems or meeting demand (Alternatives to the Undertaking).
Alternative Design Concepts	Alternative ways of solving a documented transportation deficiency or taking advantage of an opportunity. (Alternative methods of carrying out the undertaking).
Alternative Project	Alternative Planning Solution, see above.
Canadian Environmental Assessment Act (CEAA)	The CEAA applies to projects for which the federal government holds decision-making authority. It is legislation that identifies the responsibilities and procedures for the environmental assessment.
Class Environmental Assessment Document	An individual environmental report documenting a planning process which is formally submitted under the EA Act. Once the Class EA document is approved, projects covered by the class can be implemented without having to seek further approvals under the EA Act provided the Class EA process is followed.
Class Environmental Assessment Process	A planning process established for a group of projects in order to ensure compliance with the Environmental Assessment (EA) Act. The EA Act, in Section 13 makes provision for the establishment of Class Environmental Assessments.
Compensation	The replacement of natural habitat lost through implementation of a project, where implementation techniques and other measures could not alleviate the effects.
Corridor	A band of variable width between two locations. In transportation studies a corridor is defined area where a new or improved transportation facility might be located.
Criterion	Explicit feature or consideration used for comparison of alternatives.
Cross Section	Configuration of the road at a right angle to the centreline. Typical sections show the width, thickness and descriptions of the pavement section, as well as the geometrics of the graded roadbed, side ditches, and side slopes.
Cumulative Effects Assessment	Cumulative Effects Assessment assesses the interaction and combination of the residual environmental effects of the project during its construction and operational phases on measures to prevent or lessen the predicted impacts with the same environmental effects from other past, present, and reasonably foreseeable future projects and activities.
Detail Design	The final stage in the design process in which the engineering and environmental components of preliminary design are refined and details concerning, for example, property, drainage, utility relocations and quantity estimate requirements are prepared, and contract documents and drawings are produced.
DFO	Department of Fisheries and Oceans.
EA	Environmental Assessment
EA Act	Ontario Environmental Assessment Act (as amended by S.O. 1996 C.27), RSO 1980.

Environment	Air, land or water, Plant and animal life, including man, The social, economic and cultural conditions that influence the life of man or a community, Any building structure, machine or other device or thing made by man, Any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from the activities or man, or Any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.
Environmental Effect	A change in the existing conditions of the environment which may have either beneficial (positive) or detrimental (negative) effects.
Environmentally Sensitive Areas (ESA's)	Those areas identified by any agency or level of government which contain natural features, ecological functions or cultural, historical or visual amenities which are susceptible to disturbance from human activities and which warrant protection.
Equivalent Sound Level (Leq)	The level of a continuous sound having the same energy as a fluctuating sound in a given time period. In this report Leq refers to 24-hour, 16 or 18-hour averages.
Evaluation	The outcome of a process that appraises the advantages and disadvantages of alternatives.
Evaluation Process	The process involving the identification of criteria, rating of predicted impacts, assignment of weights to criteria, and aggregation of weights, rates and criteria to produce an ordering of alternatives.
External Agencies	Include Federal departments and agencies, Provincial ministries and agencies, conservation authorities, municipalities, Crown corporations or other agencies other than MTO.
Factor	A category of sub-factors.
Grade Raise	Increase the elevation of the road.
Hydraulic	Civil engineering concerned with the flow of fluids, primarily water and sewage.
Individual Environmental Assessment	An environmental Assessment for an undertaking to which Assessment the EA Act applies and which requires formal review and approval under the Act.
MECP	Ministry of the Environment, Conservation and Parks
Mitigating Measure	A measure that is incorporated into a project to reduce, eliminate or ameliorate detrimental environmental effects.
Mitigation	Taking actions that either remove or alleviate to some degree the negative impacts associated with the implementation of alternatives.
MNRF	Ministry of Natural Resources and Forestry
Planning Alternatives	Planning alternatives are "alternative methods" under the EA Act. Identification of significant transportation engineering opportunities while protecting significant environmental features as much as possible.
Planning Solutions	That part of the planning and design process where alternatives to the undertaking and alternative routes are identified and assessed. Also described as "Alternative Project" under the federal EA Act.
PCC	Public Information Centre
Prime Agricultural Areas	Prime agricultural areas as defined in municipal official plans and other government policy sources.
Project	A specific undertaking planned and implemented in accordance with this Class EA including all those activities necessary to solve a specific transportation problem.
Project File	The final product of a Schedule B project. This is a completion of all data/reports produced for the project.

Proponent	A person or agency that carries or proposes to carry out an undertaking, or is the owner or person having change, management, or control of an undertaking.
Public	Includes the general public, interest groups, associates, community groups, and individuals, including property owners.
Recommended Plan	That part of the planning and design process, during which various alternative solutions are examined and evaluated including consideration of environmental effects and mitigation; the recommended design solution is then developed in sufficient detail to ensure that the horizontal and vertical controls are physically compatible with the proposed site, that the requirements of lands and rights-of-way are satisfactorily identified, and that the basic design criteria or features to be contained in the design, have been fully recognized and documented in sufficient graphic detail to ensure their feasibility.
Screening	Process of eliminating alternatives from further consideration, which do not meet minimum conditions or categorical requirements.
Sub-factor	A single criterion used for the evaluation. Each sub-factor is grouped under one of the factors.
Source protection plan	A document that is prepared by a source protection committee under Section 22 of the Ontario Clean Water Act, 2006 to direct source protection activities in a source protection area. Each plan is approved by the Ontario Ministry of the Environment.
TAC	Technical Advisory Committee
TMP	Transportation Master Plan
Traceability	Characteristics of an evaluation process which enables its development and implementation to be followed with ease.
Tributary	A stream or river that flows into a larger river or lake.
Undertaking	In keeping with the definition of the Environmental Assessment Act, a project or activity subject to an Environmental Assessment.
Watershed	Land that channels water from rainfall and snowmelt into streams and rivers that have an outflow to lakes, oceans, bays, and reservoirs.
Wellhead protection area (WHPA)	An area of land surrounding a well, where human activities may need to be regulated to protect the quality and quantity of groundwater that supplies that well.

Appendix A

Record of Consultation

BT ENGINEERING

PCC Summary Report

County of Lambton
Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA
Public Consultation Centre

July 31, 2023

Submitted by:
BT Engineering Inc.
509 Talbot Street
London, ON N6A 2S5
519-672-2222

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1.0 INTRODUCTION

The County of Lambton is conducting a 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 intersection and has identified the property requirements to implement the improvement alternatives.

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, which is a summary of all public consultation, data, recommendations, and reports produced for the project.

A Public Consultation Centre (PCC) was held on Wednesday June 28, 2023, from 5:00 pm to 8:00 pm at the Legion in Corunna, Ontario. This PCC Summary Report provides an overview of the comments received during the PCC review period. The PCC presentation discussed background information, the study objectives, the preliminary design alternatives and the Technically Preferred Alternative.

All members of the public and interest groups were encouraged to provide a written response to any issues or concerns.

1.1 Study Area

The Study Area is located in the Township of St. Clair, within the County of Lambton, Ontario and is shown in **Figure 1**.

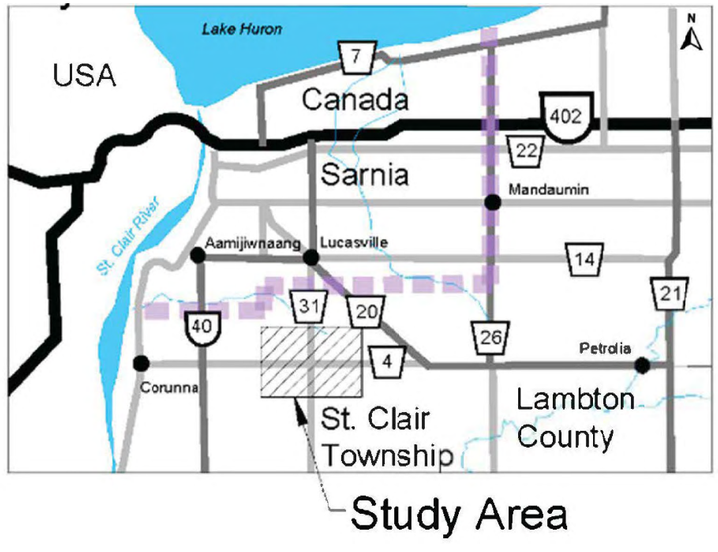


Figure 1: Study Area

2.0 PUBLIC AND AGENCY CONSULTATION

One of the key aspects of the study is to provide the public, interested parties, affected agencies and municipalities with the opportunity for input. In order to ensure this objective is met, a public and agency notification program was undertaken. The program includes a number of communication mechanisms, discussed in the following sections.

2.1 Public Contacts

Notices were mailed to adjacent property owners, located within 1 km of the intersection, refer to **Figure 2**. This contact was to notify them of the Study Commencement and invite them to attend the PCC.

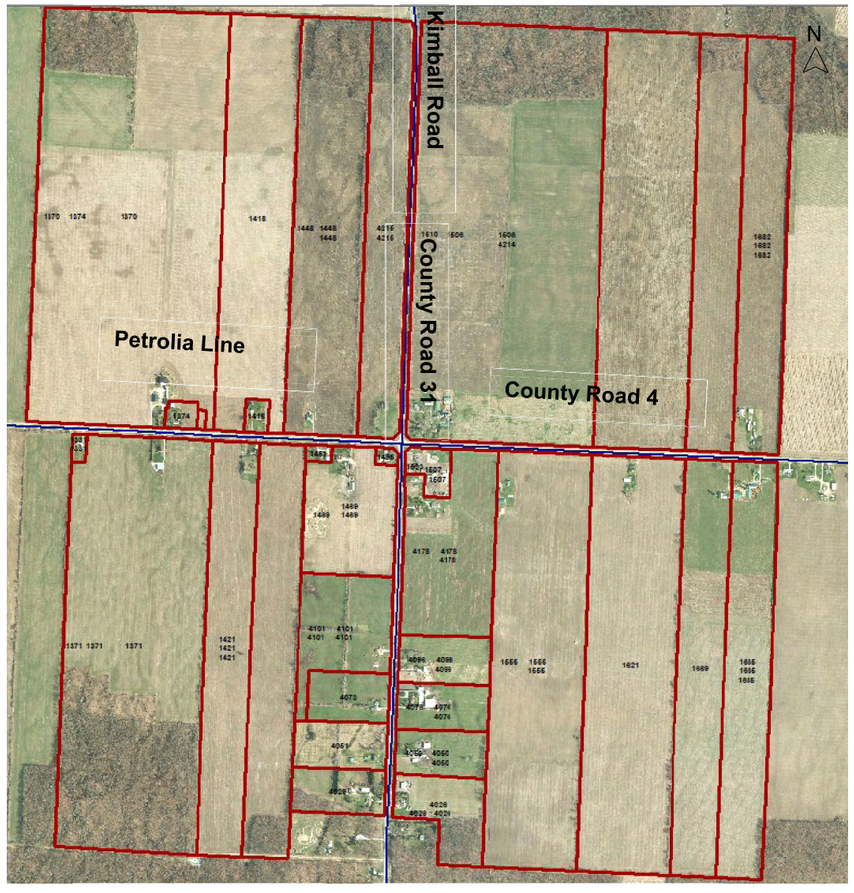


Figure 2: Landowners Notified

2.2 Indigenous Peoples Contacts

Notices were sent to Indigenous Peoples in the vicinity of the Study Area, inviting them to attend the PCC. Notices were sent to the following:

- Walpole Island First Nation
- Aamjiwnaang First Nation
- Kettle & Stony Point First Nation
- MNO Windsor-Essex Métis Council

2.3 Newspaper Notices

A notice of the PCC was published in Sarnia This Week on Thursday June 15, 2023 and the Sarnia Observer on Saturday June 17, 2023.

A copy of the newspaper notice is provided in **Appendix A**.

2.4 Lambton County Website

The Notice of the PCC was posted on the Lambton County website inviting interested persons to attend the PCC. The website link is: www.lambtononline.ca

2.5 Agency and Stakeholder Contacts

The following ministries, agencies and stakeholders were invited to attend the PCC:

- St. Clair Region Conservation Authority
- Township of St. Clair
- St. Clair Township Fire Department
- Fisheries and Oceans Canada
- Ministry of Agriculture, Food and Rural Affairs
- Ministry of the Environment, Conservation and Parks
- Ministry of Natural Resources and Forestry
- Ministry of Multiculturalism and Citizenship

2.6 Variable Message Sign

A variable message sign was located at the County Road 4 and 31 intersection advertising the PCC. Refer to **Photo 1**, **Photo 2,** and **Photo 3**.

Photo 1: PCC Variable Message Sign

Photo 2: Variable Message Sign - Intersection Improvements

Photo 3: Variable Message Sign - Meeting Location

3.0 PCC COMMENTS

PCC exhibits and the presentation were provided online for public/agencies to view at their convenience. A copy of the PCC exhibits is provided in **Appendix B**.

Invitations to attend the PCC were sent to Indigenous Peoples, public agencies and members of the public who were on the contact list and who had requested to be on the contact list in advance of the PCC. Sixty-one (61) people registered at the PCC event. Comments were received from those that participated in either of the live PCC or who reviewed the exhibits online. Copies of the written submitted comments (24), excluding personal information are provided in **Appendix C**.

3.1 Summary of Comments

The comments submitted by members of the public are summarized in **Table 1**. Responses to key questions and comments are summarized in **Appendix E**.

Table 1: Major Themes of PCC No. 1 Public Comments

Comment	Number of Respondents	Comment Sheet Nos.
In favour of the roundabout.	8	2, 3, 5, 9, 10, 12, 13, 21
Not in favour of the roundabout.	6	8, 14, 16, 17, 18, 19
In favour of an alternative solution other than a roundabout (i.e., lower speed limit, more visible stop signs and flashing lights, larger rumble strip).	10	1, 6, 8,14, 16,18, 19, 20, 22, 23
Roundabout needs to be wide enough to accommodate large farm equipment.	1	4
Existing 4-legged intersection is unsafe.	5	3, 5, 6, 12, 13
Ensure size of McGilvery Drain is large enough for farms along Petrolia Line.	1	7
Increase visibility of stop signs and flashing lights and reduce speed limit prior to construction of roundabout.	2	10, 23
Concerned about cost to taxpayers.	6	8, 11, 14, 19, 20, 23
Concerned roundabout will not accommodate heavy vehicles.	5	14, 15, 16, 19, 20
Concerned with anticipated inconveniences during construction of roundabout (i.e., temporary detour, utility interruptions).	3	11, 19, 20
Concerned roundabout will infringe on adjacent properties.	7	15, 16, 18, 19, 20, 23, 24
Roundabout is not the solution because driver error is the cause of collisions.	6	14, 16, 18, 19, 20, 23
Add signs saying “Two way stop” to the two stop signs.	1	6
House located on northeast corner impedes visibility of cars traveling through the existing intersection.	1	1
Collisions and fatalities occur repeatedly at the existing intersection.	5	1, 12, 18, 2, 23
Traffic congestion is commonly experienced during peak periods at the existing intersection.	2	20, 21
Traffic survey should have been conducted over several days to be more representative of traffic flow.	2	19, 20

4.0 CONCLUSIONS

The primary conclusions from the meeting include:

- There was general agreement that improvements are required to the existing intersection.
- There were people who were in favour of a mix of solutions including a roundabout or improving the visibility of existing stop signs, lowering the speed limit of Kimball Road and Petrolia Line, and installing larger rumble strips.

The main comments from the Public Consultation Centre were:

- Support for the provision of a roundabout;
- Concern a roundabout would not accommodate heavy load machinery;
- Concern about the cost of constructing a roundabout; and
- Concern a roundabout would infringe on adjacent properties.

Based on these comments, the following commitments were made during the presentation provided in **Appendix D**:

1. The wheel tracking will be confirmed based on the largest oversized vehicles from a specialty heavy lifting transport company (Mammoet).
2. The property impacts will be considered, and refinements made based on comments from landowners in the southeast quadrant (driveway locations and sizes) and southwest quadrant (to accommodate vehicle entry with trailer).
3. Visual screening/landscaping of new trees (northeast and southwest quadrants).

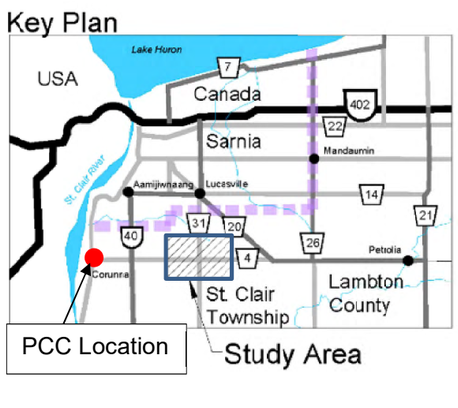
Appendix A

Newspaper Notice

Notice of Study Commencement and Public Consultation Centre
County of Lambton
County Road 4 (Petrolia Line) and County Road 31 (Kimball Road)
Intersection Improvement Study

INTRODUCTION

The County of Lambton has retained BT Engineering Inc. to complete a Schedule B Environmental Assessment for improvements to the County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) intersection in St. Clair Township, Ontario. The study will evaluate all reasonable alternatives to improve the operation and safety of the existing intersection.



STUDY PROCESS

The project is being conducted as a Schedule B project under the Municipal Class Environmental Assessment (MCEA) (2023). The Study will follow the MCEA process by establishing the need and justification for the project, considering all reasonable alternatives with acceptable effects on the natural, social and cultural environments, and proactively consulting with the public, stakeholders and Indigenous Peoples.

PUBLIC CONSULTATION

The public consultation process is vital to this Study and the County wants to ensure that anyone with interest in the project has the opportunity to provide input. An in-person Public Consultation Centre (PCC) is being held as follows:

Date:	June 28, 2023
Time:	5:00 pm to 8:00 pm, presentation at 7:00 pm
Location:	Royal Canadian Legion Leslie Sutherland Branch 447 350 Albert Street, Corunna ON

There is an opportunity at any time during the Class EA process for interested persons to provide comments. Early identification of individual and group concerns greatly aids in addressing these concerns. All information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* (2009). Personal information you submit will become part of the public record that is available to the general public unless you request that your personal information remain confidential. Persons will be advised of future communication opportunities by electronic notice in addition to newspaper public notices.

For more information or if you wish to be placed on the study's mailing or emailing contact list, contact either:

Steve Taylor, P.Eng., M.Eng.
Consultant Project Manager
BT Engineering Inc.
509 Talbot Street
London, ON N6A 2S5
Email: stevenj.taylor@bteng.ca
Phone: 519-672-2222
Toll Free: 1-866-218-1001

Glen Hamill, C.E.T.
Public Works Department - Engineering
County of Lambton
789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0
Email: glen.hamill@county-lambton.on.ca
Phone: 519-845-0809 ext. 5250

This Notice issued June 16, 2023.

Appendix B

PCC Exhibits

Welcome!

County of Lambton

Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA Public Consultation Centre

Welcome to the Public Consultation Centre (PCC) for the Intersection Improvements at County Road 4 and County Road 31 Schedule B Municipal Class Environmental Assessment Study.

Should you have any questions regarding the study, please contact the County or Consultant Project Managers listed below.

Several background reports are available to supplement the information shown in the exhibits. Should you have any questions regarding the materials or any other aspect of the study, please contact the following by **July 12, 2023.**

Steve Taylor, P.Eng.
BT Engineering Inc., Consultant Project Manager
Email: stevenj.taylor@bteng.ca
Phone: 613-228-4813

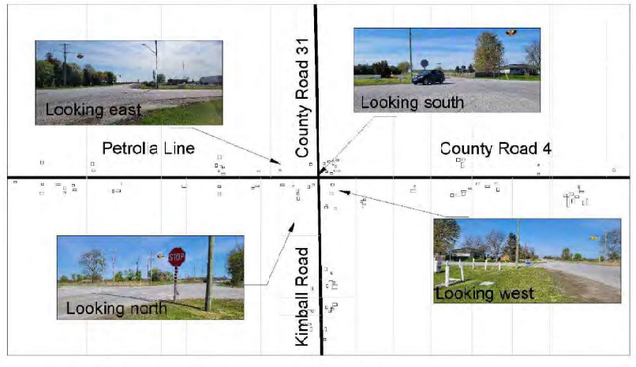
Glen Hamill, C.E.T.
Public Works Department - Engineering
County of Lambton
Email: glen.hamill@county-lambton.on.ca
Phone: 519-845-0809 Ext 5250

There is an opportunity at any time during the Class EA process for interested persons to provide written input. Any comments received will be collected under the *Environmental Assessment Act*. Personal information you submit will become part of the public record that is available to the general public unless you request that your personal information remain confidential.

Introduction

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

Alternatives considered include an all-way stop, traffic signals or a roundabout control.



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

Study Area

Purpose of Public Consultation Centre (PCC)

The purpose of this event is to engage the public/stakeholders on their perspectives and interests in the Study.

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.

Municipal Class Environmental Assessment (Class EA) Process

The CR 4 (Petrolia Line) and CR 31 (Kimball Road) Intersection Improvements Environmental Assessment 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.

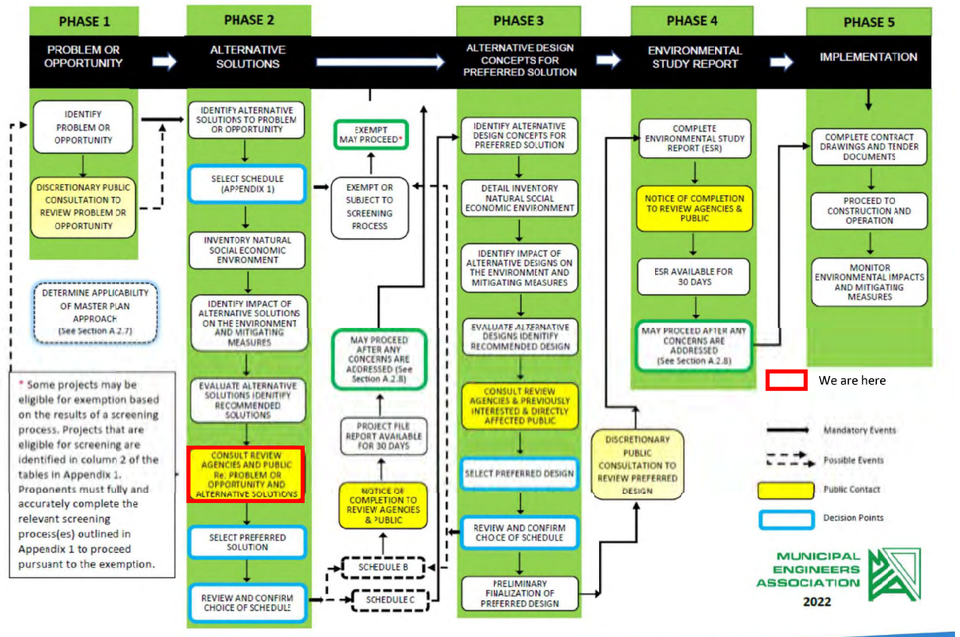
The Schedule B EA Study will be documented in a Project File, which is a summary of all public consultation, data, recommendations and reports produced for the project.

If after viewing the PCC exhibits and making your concerns known to the project team, you still have concerns at the time the Notice of Study Completion is published in the media and on the County website, you will have the right to request the Minister of Environment, Conservation and Parks to undertake a higher level of assessment on the project based on two criteria:

- The need for a Part II Order, now referred to as a Section 16 Order, regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights.
- The need for additional assessment and evaluation of all other non-Aboriginal issues and concerns.

These rights and guidance on how to contact the Minister of Environment, Conservation and Parks will be described in the Notice of Study Completion at the end of the Study.

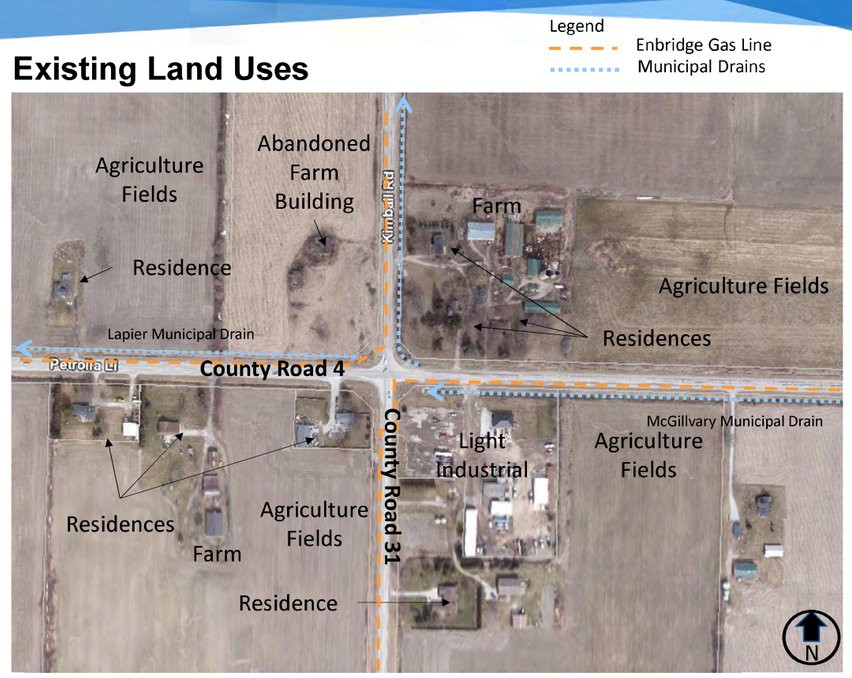
The Municipal Class EA Process Flowchart is illustrated on the following exhibit.

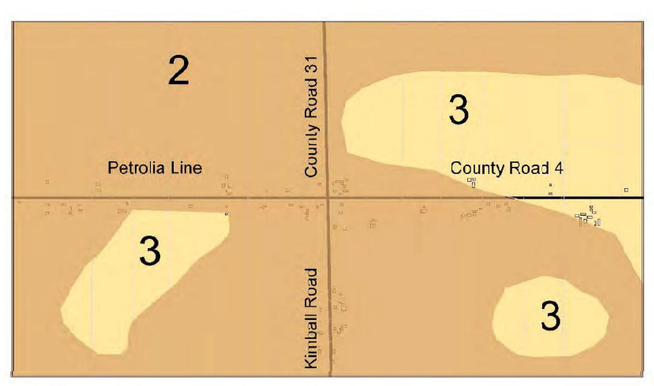


Problem and Opportunity Statement

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 and can accommodate oversized vehicles.

Existing Land Uses



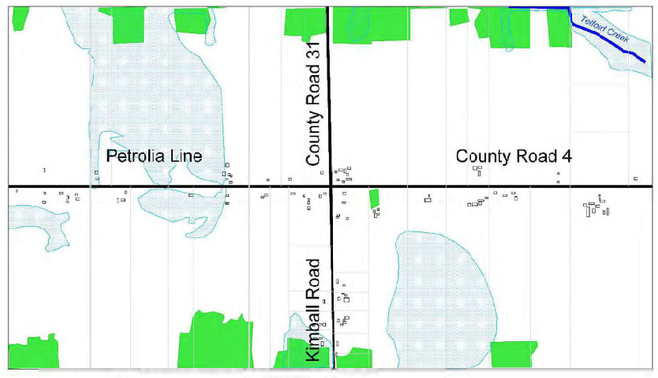


County of Lambton
Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA

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

NTS

Canadian Land Inventory Class for Agriculture

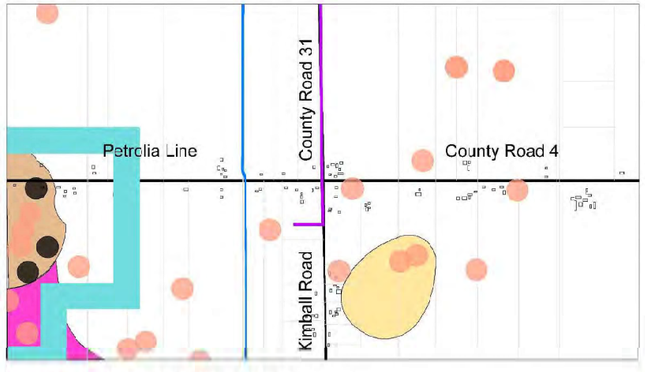


County of Lambton
Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA

Source:
2120907_Regulations Viewer_Floodplain St Clair Region CA

NTS

Natural Environment



Legend

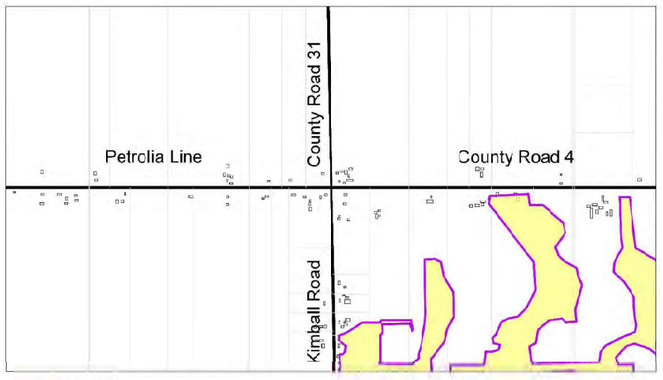
- Oil Pool
- Natural Gas Storage Pool
- Past Producing Natural Gas Pool
- Designated Hydrocarbon Storage Area
- Hydrocarbon Well - Active
- Hydrocarbon Well - In Active
- Active Pipeline
- Proposed Pipeline

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

NTS

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

Oil Resources



Legend

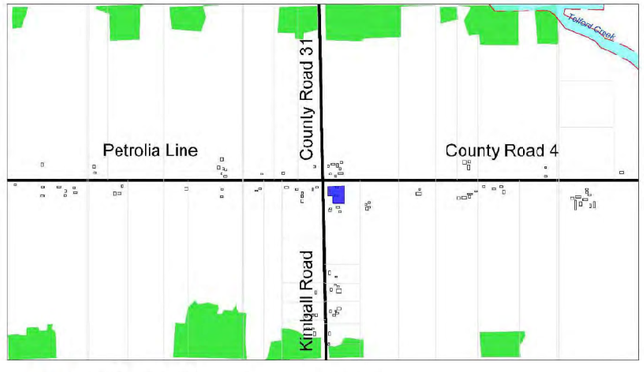
- Significant Groundwater Recharge Area

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

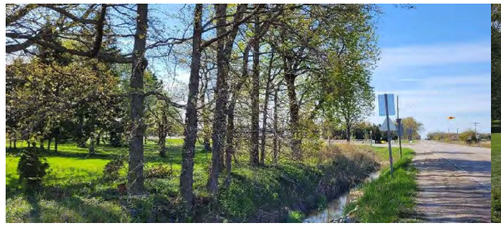
Zoning

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.
- There is a municipal drain/ditch in the northeast quadrant of the intersection within the road allowance that will be modified by the Township of St. Clair.
- 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).

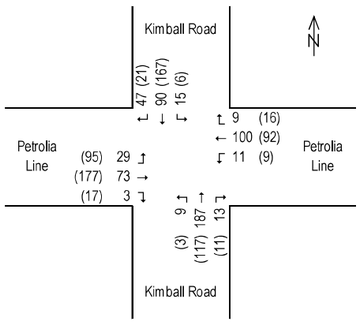


Proposed Municipal Drain Improvements 2023

- Changes to the municipal drain are being implemented to accommodate over sized vehicle wheel tracking at the intersection.
- These movements currently occur on the north and west legs of the intersection.
- Modifications to the McGillvary Municipal Drain have been planned under the *Municipal Drainage Act*. As per By-Law 34, 2022.

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.



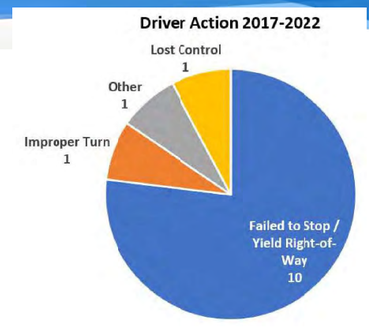
Existing Peak Hour Traffic Volumes (2023)
AM Peak (PM Peak)

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*:
  - $3.5M 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 Alterative must be considered, as mandated by the Class EA. It represents a baseline from which other approaches can be compared. The Do Nothing does not address the Problem Statement and is not recommended to be carried forward.
- All-way stop
- Signalized Intersection
- Roundabout Intersection ☑

The intersection control alternatives advantages and disadvantages are described on the following exhibits.

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;
- Result in an increase in rear end vehicle collisions; and
- An all-way stop would make 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.

Advantages and Disadvantages of a Roundabout

Advantages

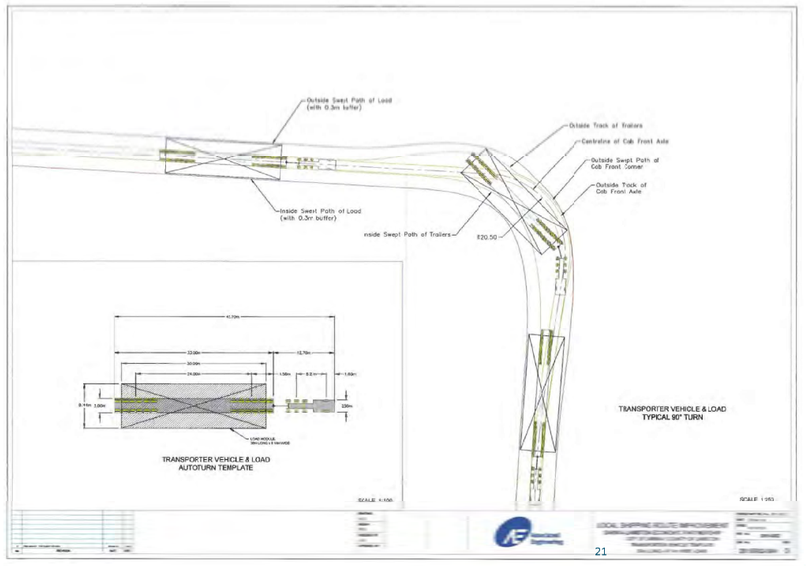
- Improves safety (reduces frequency and severity of collisions);
- Improves traffic operations (reduces delays);
- Reduces travel speeds; and
- Design accommodates oversized loads and farm equipment.

Disadvantages

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

- Recommended to be carried forward to Preliminary Design.

Over Sized Load Transporter Vehicle Template 30 m Long x 9.14 m Wide Load

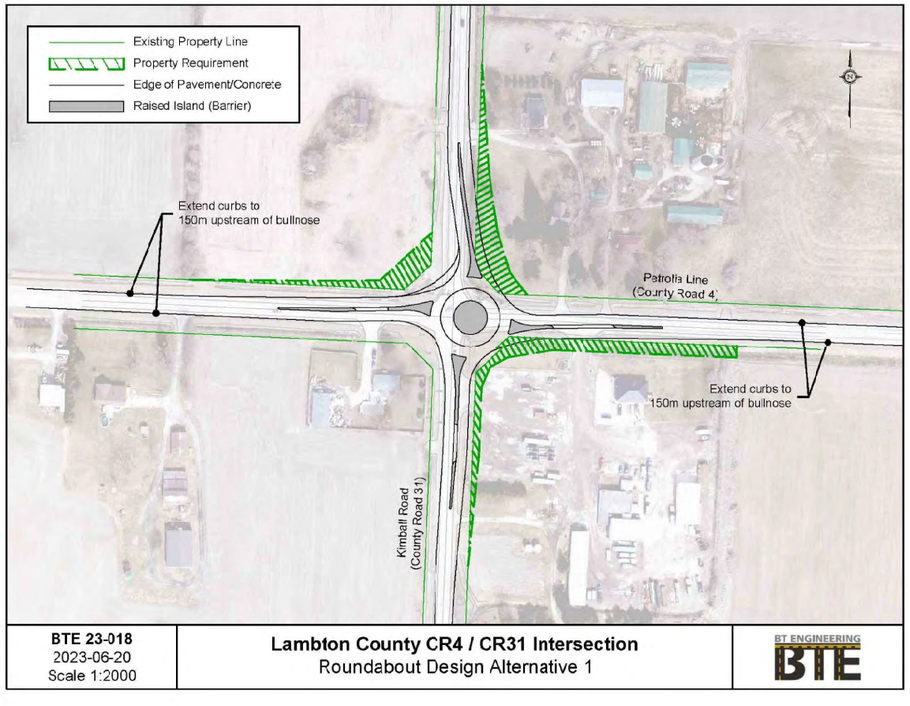


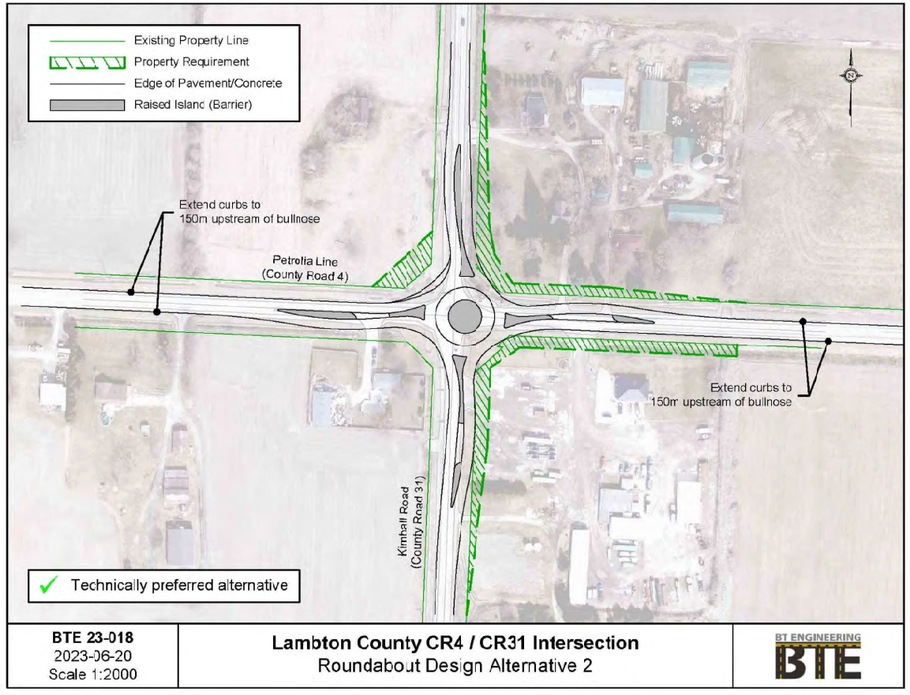
Preliminary Design Alternatives

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).

The alternatives are shown in the following exhibits.



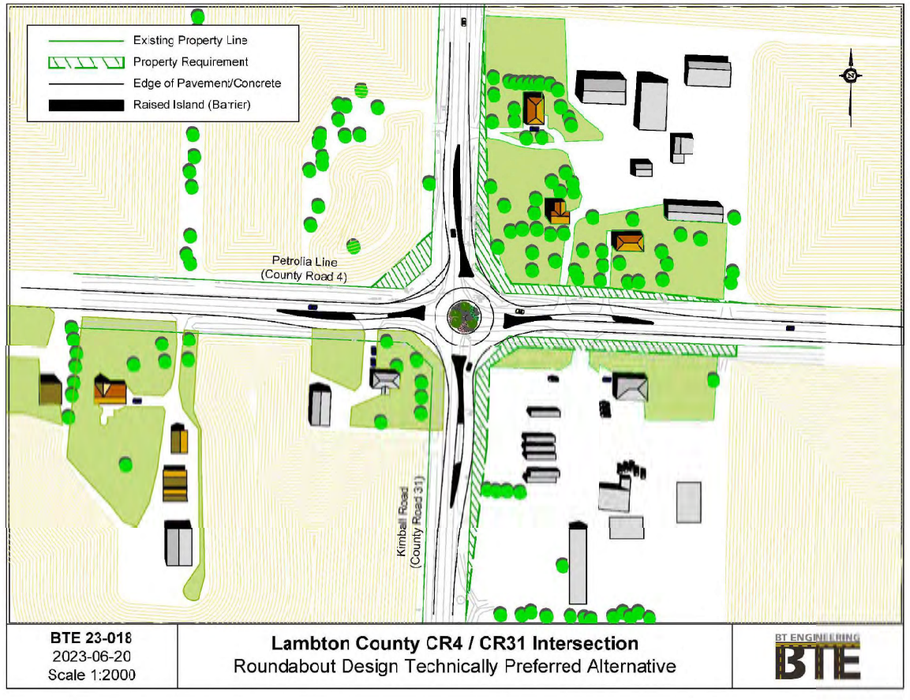


Evaluation of Preliminary Design Alternatives

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

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

Vissim Model

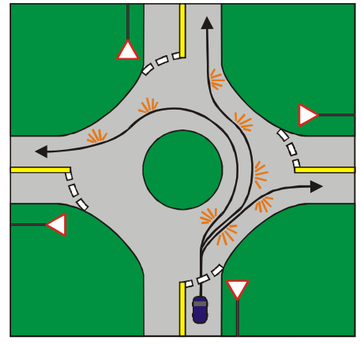


Roundabout Driving Tips

- Slow down as you approach the roundabout.
- View direction signage to plan exit leg of roundabout.
- Watch and yield to pedestrians crossing the roadway when approaching or exiting a roundabout.
- Traffic in the roundabout has the right-of-way (treat roundabout as a one-way street).
- Do not stop within roundabout.
- Always signal your exit.

Position and Signalling within the Roundabout

1. Drivers must signal to turn right.
2. Drivers must signal to exit the roundabout.
3. Drivers must signal to change lanes and should check their rear-view mirror and blind spot.
4. When travelling past two or more exits on the roundabout, drivers can use a courtesy left-hand signal.



Effects and Mitigation

Factor	Environmental Issues and Potential Effects	Preliminary Design Proposed Mitigation Measures
Traffic Operations - Delay	Potential for traffic travel delays associated with construction staging.	• Provide advance notice of all closures / lane reductions / detours. • Prepare / implement Traffic Management Plan during construction.
Emergency Services	Potential impact to emergency service routes / access due to closures / lane reductions.	• Prepare / implement Traffic Management Plan during construction. • Ensure ongoing and advance communication with emergency service providers during construction.
Property Impacts	Property acquisition for intersection improvements for the ultimate plan.	• Early communication / coordination with owner(s) and tenants to minimize disruption associated with property purchase. • Compensation for lands and decommissioning of wells if required.
Aesthetics	Roundabouts provide opportunities to enhance aesthetics.	• If extent of work at any given site supports it, context sensitive design elements will be considered for inclusion.
Archaeology	Potential damage to or loss of archaeological artefacts.	• If deeply buried archaeological remains are encountered during construction, construction will be stopped in the vicinity of the discovery and the Contractor must notify the Ministry of Citizenship and Multiculturalism. • Indigenous Peoples communities will be contacted during the construction phase.
Noise (Construction)	Noise from construction equipment and vehicles during construction.	• Maintain equipment in good operating condition to prevent unnecessary noise. Restrict idling of equipment to the minimum necessary to perform the work. Contractor will be required to abide by noise control by-laws for day-to-day operations. • Apply for a noise by-law exemption;
Management of Excess Materials	The project will result in the generation of waste asphalt, granulars, concrete and possibly earth materials.	• Excess generation will be minimized through promoting contractor salvage, recycling and re-use in the contract tender documents.
Species at Risk	Potential disruption to migratory birds, nesting and / or species at risk (SAR).	• Conduct site 'sweeps' prior to any tree removals and prior to and during construction. • Clear any vegetation outside of the breeding bird season. • Ensure Contractor's staff are trained to recognize potentially affected species and are required to notify authorities if any are encountered on site.
Utilities	Potential for impacts to existing utilities.	• Ensure advance coordination with utility companies and approval for all utility relocations / protections.
Vegetation	Removal of various trees and woody vegetation due to clearing for staging areas.	• Maintain, where possible, mature tree specimens with a diameter (DBH) greater than 50 cm.
Lighting	Spill over to houses Headlight glare into residential properties	• Use of cut-off lighting standards. • Use of landscaping to reduce effects.
Drainage	Drainage modifications to roadside ditches	• Consideration of piped stormwater system.

Next Steps

Following this meeting we will:

- Review all PCC comments and ideas and prepare a Summary Report.
- Finalize the Recommended Plan.
- Project File 30-day Public Review Period.
- Property Acquisitions.

How can you remain involved in the Study?

- Request that your name/e-mail be added to the mailing list.
- Provide a comment.
- Contact the Project Managers at any time (contact information is shown below).

Steve Taylor, P.Eng.
BT Engineering Inc.
Consultant Project Manager
Email: stevenj.taylor@bteng.ca
Phone: 613-228-4813
Toll Free: 1-855-228-4813

Glen Hamill, C.E.T.
Public Works Department - Engineering
County of Lambton
Email: glen.hamill@county-iambton.on.ca
Phone: 519-845-0809 Ext 5250

Thank you for your participation. Your input into this study is valuable and appreciated.

Please submit any questions or comments to the contacts listed above by **July 12, 2023.**

All information is collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act.* Personal information you submit will become part of the public record that is available to the general public unless you request that your personal information remain confidential.

Appendix C

PCC Comment Sheets

BT ENGINEERING

Comment Sheet 1

Sirs:

I am glad that there is something finally moving forward with safety concerns with this corner.

It has been baffling why something hasn't been done much sooner considering the money put into other corners like Lakeshore/Mandaumin traffic circle (needed), Nauvoo Road & CR 22 (baffling) and CR 22 and Forest Rd (CR 8) (another puzzling place for a circle).

After our last fatality at the corner of Kimball & Petrolia Line, I asked some local councillors why this could not be fast tracked into a traffic light or a four-way stop on an interim basis. The reply was not helpful. Bureaucracy and the county were blamed for lack of progress.

In the last year, I have had two close calls at that corner.... in both cases I was headed WEST on Petrolia Line. In both cases, it was a southbound car on Kimball that crossed in front of me. The first time, I managed to slow instantly to allow the car to clear through the intersection. That happened in the evening about 30 minutes before sunset. The second instance was in the morning when shadows are dark and long. I had to take evasive action to miss the collision with the southbound car. It was a very near miss.

I do have some observations with that corner.... the house on the northeast corner seriously impedes visibility of cars coming through the intersection southbound and hides those cars from view of people heading westbound. Because of that house and the foliage on the property, a west bound vehicle cannot see a southbound vehicle on the approach to that corner. Add high speeds and traffic volume and you have a serious issue.

I have also noticed when you travel south on Kimball, because of the shift in the road eastward before the intersection and the dark foliage to the south of the intersection, the effect of the blinking light is often lost into the darkness of the tree cover, making it less than an ideal warning.

Unless the house and buildings are being removed from the north east corner, I would suggest that a traffic circle will suffer from the same visibility issues that exist today, making that corner an ongoing tragic folly. Perhaps however, with less severe accidents. A full traffic signal at that corner seems to me to be the easiest and best solution. In studies I've read, rear end collisions can increase with

traffic signals, but that isn't what is killing people at that corner. Traffic signals would likely also be the quickest to install and would not impede heavy oversized loads from using that corner as well.

I appreciate the efforts now going into improving this corner. I am hoping this is accomplished quickly and it is done correctly.

[redacted]

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

This is our first time coming to an information meeting. Wow a lot of information + research. Looks to be really well done. Kudos to Steve Taylor for giving us a small presentation

Yeah Round About!

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

I feel that a round about would be the way to go

The stop sign with flashing light people do not pay attention to the flashing light

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

- IF A ROUND ABOUT IS DONE IT NEEDS TO BE WIDE ENOUGH TO ACCOMODATE LARGE FARM EQUIP. MIN. 22-24' WIDE WITH SLOPED CURBS

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

Thank you for your clear explanation of the options and your recommendation

We believe a roundabout is the best option since this ~~takes out~~ minimizes human error

This intersection has so many of speed deter measurement already that don't work

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
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Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

I have been in the community for 50 years keeping a coach and Optimist Club President. I use Petrolia Line to access Kimball to go into east Sarnia and use Mandaumin to get to the 402. I have never been in any close calls at the intersection. (Kimball and Confederation Line are similar) I would prefer to see the removal of the yellow & red flashing light as an older driver this marked 4 way stops. Add signs saying "Two WAY STOP" to the two stop signs.

(Please turn over if additional space is required.)

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Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
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Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

The Drainage of farms Along Petrolia line. McGillvery Drain. Make sure sizing is big enough.

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

We do not agree that the best solution is a roundabout.

There are many other lower cost measures that could be put in place. Larger stop signs, lower speed limits, larger rumble strip, larger brighter flashing lights.

Bigger stop signs on Kimball Rd & Flashing red lights on stop signs, much cheaper solution for taxpayers.

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

Please Put

In a Roundabout

IT Makes Sense

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

I feel a roundabout is the best solution overall. Driver error is the issue. and that is difficult/impossible to change. However, In the meantime, please increase the size of the existing Stop sign & add larger flashing red lights on the tops. + reduce the speed north & south approaching the intersection.

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

VERY CONCERNED ABOUT COST TO TAX PAYERS FOR CHANGES TO MUNICIPAL DRAINS THAT HAVE ALREADY BEEN UPDATED. AND PAID FOR ALREADY. WILL THERE BE ANY MORE COST?

WHAT WILL DETOURS, IN FACT THE RESIDENTS? GRAVEL ROADS, LENGTH, MILES! WILL HAVE TO BE TRAVELS DUE TO DETOUR. FOR MONTHS!

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

Came with a open mind - think roundabout is best option

Lived on Petrolia Line my whole life. intersection is very dangerous at times I take a different route home to avoid the intersection.

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

Four way stops will not solve the Petrolia line / Kimball Rd. problem

After hearing the presentation I think the Round about is the way to go.

I have routinely used Round-a-bouts in London and they are very safe and easy to use.

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

I am against roundabout: cost, inconvenience for farm machinery. Try lights but the top problem is speed & lack of attention to Stop Signs. You can not fix Stupid

Overall there is not enough accidents for a roundabout. Alot of the accidents are not ~~crazy~~ even happening at the corner. They are happening before the corner. Speed is the factor and they are ending up in the ditch.

Impossible for heavy loads for a roundabouts

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
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Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

Why not move the roundabout over to the east so that the corner house on the south west corner is less infringed upon. Do more to reduce the impact on these neighbors, and consult them every step of the way to give them as much input as possible. Do what you can to hear their concerns and act on them. Do better. Re design. there must be a way to make it better. The designs are good if they save lives, but also need to consider nearest neighbor's concerns respectfully. this will reduce their property value. Make it fair and buy them out or compensate them. Not sure the pictures are realistic. Thinly veiled biases in the reasons why alternatives won't work. Feels like this consultation is more of a show, and it is already decided. What can be done to change this ~~feeling~~?

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
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Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

The reality is that the neighbours & those most affected are not in favor of a round about. The family on the north east corner will either be removed or have all their privacy & enjoyment removed as it will affect their clearance.

People simply do not pay attention

When the big sign & warning lights were installed accidents doubled

When cell phones came in the accidents increased. Now the car controls the phone but the driver is still distracted.

Lights would work fine & not interfere with oversized loads & farm equipment

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
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Public Consultation Centre

What is the time frame of study & do it during Nov & build?

Which neighbours will be heard.

When we had a stop sign there was bigger on the stop less accidents went down

This is a county decision & what concern is it of the rest of the County if we have a light / stop & or a roundabout.

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
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Public Consultation Centre

Most of the collisions are driver error
I agree a roundabout would in all
likelyhood reduce fatalities however
there are other intersections that have
higher serious collisions.
Roundabouts are not the solution.
Maybe enforcement would be of
assistance.
Traffic at rush hour.

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4
and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

I feel that the presentation was very informative.
I understand the concept of a roundabout at
intersections. And the reasoning for wanting change
at that particular corner is to hopefully prevent the
very serious accidents.
Probably a roundabout would achieve the said
results but at this intersection I don't think
it should be put in and the main reason is because
of the house on the south west corner. Personally
I wouldn't want to live in house that
close to a roundabout. That family pay the most
as it will devalue their property greatly and will
probably really have a problem when they decide
to move as selling. Really — would anyone of
you want to live there?
Maybe there should be more consideration
given to enhance what is there. Like larger
Stop signs and a larger flashing like. I understand

(Please turn over if additional space is required.)

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA
Public Consultation Centre

that there are more large stop signs with LED ~~light~~ flashing lights around it (solard powered) Could this be tried on a trial basis before major decisions are made to change all of it. Even the stop lights might be a better choice as well. I know they do not meet said specifications but can that not be overruled. I believe that at the time that the stop lights in Corunna at St Clair Parkway + St. Clair Blvd. were installed the study done at that time stated they were not needed. But that the decision was made to do it anyways. It certainly worked out fine.

Roundabouts do work well but not all location are feasible to have them built. Most of the accidents at 10TH & KIMBALL have been caused by driver error. They have stopped but then continued. What made them do that?

Each individual driver should be aware at all times or they shouldn't be behind the wheel. Figure out how to teach that and problem solved.

(SORRY FOR BAD PENMANSHIP. HAND DOESN'T WORK LIKE IT USED TO)

June 30, 2023

To Whom It Will Concern: Glenn Hamill, C.E.T.

After attending the meeting on Wednesday, June 28, 2023, I have lots of questions more than answers especially after sitting and reading the documents presented that read "Do Not Remove". I took photos of them.

1. I question the validity and reliability of everything that BTE has done. From addresses not being correctly sent to the appropriate individuals and blaming the County for inaccurate information to the two BTE representatives that could not present factual data as to the thresholds for a light. Are they professionals? Were they prepared?

2. On page 2 of their report, it notes that the stop signs are Oversized Stop Signs, which as noted at the meeting were not the ones requested according to Sharon Lapier (one of the neighbors who spoke up about sitting at the corner for weeks to gather information and forward it to the County Staff.)

3. On page 3 of their report they noted that Kimball is a NO TRUCK except for local delivery. No place in that report was there any mention of it being part of the Heavy Load Corridor that the County has just spent millions to reposition hydro poles and is still in the process of completing the Sarnia portion.

4. The document presented indicated 2 fatalities at the corner. But speaking as someone who lives on Petrolia Line there have been more than 2 fatalities on the road due to speed and inattention while driving. This can be verified through a Freedom of Information access if you don't believe someone who lives on the street**. LOWER THE SPEED.**

5. The document also indicated only one day of data collection – May 9, 2023 by an individual named Cam. The data collection was not conducted during a planting or harvest season, did not take place during a shut down (of any type), and did not take into consideration that two of the main roads from Sarnia had construction taking place (Plank Road – has been closed from Indian to Modeland since April 2023) and the Southbound Lane out of Sarnia onto Modeland has been closed for construction of the bridge just south of Highway 402. If the County is spending $45,000 for an incomplete survey, I have questions about the integrity of the individuals overseeing our collective tax dollars.

6. On page 5 of the document BTE indicated Collision Type for 2017 to2022 as 13 incidents – 10 angle hits, 1 turning, and 2 rear ends. There have been more single car accidents on both Kimball and Petrolia due to driver error. Only LOWERING THE SPEED on these routes may help. But to quote someone at the meeting, "You can't fix STUPID".

7. In regards to the data presented by the speakers – why quote what's happening in the United States. We are not the United States. Why quote a figure of 2 million dollars when there are existing local examples which are much higher? In the Sarnia Observer (June 29, 2023) article written by Paul Morden, he notes that a roundabout on Egremont and Nauvoo Road the projected cost of 3 million.

8. As for BTE doing 1000's of roundabouts, after reading the information the first page, it indicates this company has been involved in only "100". Why lie during a public meeting on environmental impact and only push one alternative? Is the public not part of the process?

9. As for being 20 years away from the threshold for street lights, I as well as many others would like to know the thresholds for lights.

10. Advertising a meeting in the Sarnia Observer on the day after the meeting is not helpful and suggests that something underhanded is being done.

I personally believe the Report was <u>not thoroughly</u> conducted nor worth the $45, 000. Why wasn't it? Why weren't those directly going to be affected even contacted during BTE's investigative phase?

Suggestions:

MAKE SURVEY RELEVANT

Contrary to the report and speaking with many people. People travel the Kimball at high rates of speeds and usually miss one of **ONLY THREE** stops from **Sarnia to Wallaceburg**. The three stops being at Petrolia Line, Highway 80 and Becher (commonly referred to by locals as Hazards) compared to the **five sets of stop lights from Churchill Road to Courtright Line** (Highway 80 for those not familiar to the area). Note: Churchill Road runs up to Plank where it becomes Modeland Road. Plank was one of the roads closed during BTE survey. Highway 40 and Kimball are both paved roads. Several of the other North-South routes are not paved. The closest North-South road to Kimball that is paved is the 40 Highway.

Many more people take the road than on the **one survey date**. See comments above as to why (e.g., road closures, seasons, construction, etc.)

As a member of the county, I would be concerned with not only rate of speed but would suggest implementing more stops on Kimball with the introduction of the new plants being brought to the area. And, if we're using Mr. Taylor's personal recommendation to do what's been done in the area. It sure looks like five sets of stop lights in the same general area sets a precedence even without a threshold that they were not able to provide and said that it would not be met in 20 years.

COMPARE LOCAL ROUNDABOUTS CURRENTLY IN PLACE

By looking at Google Earth, one can easily determine that the location of other roundabouts in Lambton County (Lakeshore and Mandaumin/ Egremont and Nauvoo Road) were both built with lots of space around them. At both of these locations there are no immediate requirements to access individual homes or businesses. Neither of these is on the HEAVY LOAD Corridor or on heavily travelled roads used

to access major industries. The proposed roundabout does not take into account the safety of the farmers and those living at either the northeast or southwest corner especially if there will be no stopping of traffic. The farm has existed there for more than a century. *For safety sake, a stop of some kind is required not continuous movement*. There is relevant data on low impact collisions causing severe injuries. The impact would (in my opinion) only be multiplied if one was not in a confined space but on an open tractor. How are they to safely exit their driveways with large slow moving vehicles?

How to Improve NOW at a Lower Cost to Taxpayers.

1. <u>Lower of the speeds</u> on both Kimball and Petrolia Line. Petrolia Line is an emergency route and **speeds don't need to be 90 km/h if safety is paramount**. Consult the OPP for the accidents on Petrolia LIne**. LOWER THE SPEED and ENFORCE it**. MAKE THOSE WHO ABUSE THE PRIVILEDGE of driving on our roads pay the cost.

2. <u>ENLARGE THE STOP SIGNS</u>. Or put more along the Kimball so that it is not the "dragstrip" that people use it as.

3. **Photo radar.** I understand from doing some investigation of my own and speaking with one of the councillors from St. Clair Township that there is on the market a moveable photo radar that could be purchased for under $35, 000. Make those who don't pay attention pay the cost not the taxpayers of the County.

4. **Reduce the Speed on Petrolia Line farther away from the corner.**

BTE's shortfalls in presentation.

1. Professional **failure** to consider the local business especially in their initial drawing designs. To admit that you just found that out during a public meeting does not relate well to being PROFESSIONAL. The $45 000 Mr. Taylor quoted as an expense for the work consulting did not take into consideration a trucking company (Dallas Haul) at the south east corner of the intersection. Mr. Taylor spent more than 20 minutes trying to convince an experienced trucker that he knew more than the trucker. Mr. Taylor appeared dishevelled when the trucker pointed out during the presentation that the one truck going through the roundabout rode the shoulders when going straight through. I expect to see in the County records that no more than $45, 000 was paid.

2. Did not have facts just suppositions during his presentation. No thresholds. Personal experience about an accident he and his daughter were in. Used example from Picton, Prince Edward Island which in no way was similar to the corner in question. There were no close houses or farms. Could not answer how many rear end collisions take place in roundabouts? Could only state they didn't cost as much as it reduced fatalities. My questions …. Show me the research. Collisions under $2,000 don't have to be reported and severe injuries are still possible with low speed collisions with more lasting effects.

Other Questions/Comments:

1. What happens during the construction to the heavy loads often needed during industrial shutdowns?
2. What happens to those who rely on these roadways for their livelihood during construction? Will the county be offsetting fuel costs to be rerouted to their local fields around county block?
3. Whose property would be compromised during construction (if done)? Where would all the equipment be stored? The land is used for people's livelihood. The north-west corner is used for hay to feed animals.
4. Who will be "on the hook" financially for issues of drainage once the drains at the corner are filled in? At present, local taxpayers pay a percentage of drains? Is the county taking over all the responsibility of drains which tie through this intersection?
5. What happens with already present infrastructure like water mains, pipelines, and wifi (local industry paid for this)? Kimball may be assigned no trucks except local traffic. So, why is the County covering in the drainage ditches to accommodate for trucks on Kimball? Has the MTO been notified that Kimball is part of a HEAVY LOAD corridor. It was not noted in the reports by BTE. Be transparent! Those of us living in the area know that Kimball is a HEAVY LOAD CORRIDOR and there is a trucking company right on the corner.
6. Having been trained in utilizing Tregoe Decision Making and Problem Solving. I was wondering why a "root cause analysis" was not conducted prior to spending tax dollars? This would have indicated that the intersection does need a little work on the north-east corner but that the overlying issue with the corner is inattentive and impatient drivers as the root cause of accidents and that the lack of stops making Kimball a "dragstrip" may be the problem.
7. What decision making model was used? What was the proposed purpose of the decision making? Was it to find the root cause? Or change the intersection?
8. How? Who? and What is the county currently doing about educating the public about roundabouts? Education was pointed out as being needed.
9. In several online professional traffic articles read about roundabouts, all indicate that with heavy traffic volumes and increased size of roundabouts to accommodate heavy loads, there would be diminished safety and reduced efficiency. Roundabouts may decrease fatalities but are still costly. In 2019, according to Michigan Auto Law the worst intersection was a roundabout. The most dangerous intersection was also a roundabout. In Britain, roundabouts are being eliminated because cycling and vehicles in roundabouts don't mesh. At this intersection we routinely have cyclists, one travels from Brigden to Sarnia on a regular basis. A cyclist was killed on Petrolia Line a few years back. As county council, will you scrap the heavy load corridor in favour of a smaller safer roundabout?

As an individual who lives near the intersection, we routinely advise our guests and people who come to our home to turn signals on way before you have to turn as traffic is going more than 90 km/hr. We also tell everyone leaving our place to drive out. We also remind them of the corner and suggest that they personally slow down at the corner to make sure North and Southbound traffic is stopped or well on their way to stopping.

Comment Sheet Public Consultation Centre (PCC)

Wednesday, June 28, 2023

Personal information you submit will become part of the public record that is available to the general public unless you request that your personal information remain confidential. Please check the box below if you want your personal information below to remain confidential. Questions about this collection should be directed to the Project Manager.

[redacted]

Please check this box if you would like personal information removed from your comment. **X**

Please check a box if you would like to be added to our mailing list to be informed of the publication of the final Class EA Document. Mailing address **X**

P.S. A copy of this will be sent to the mayor of St. Clair Township. The municipality in which the two county roads cross.

Comment Sheet Public Consultation Centre (PCC)
Intersection of Petrolia Line and Kimball Road
Wednesday, June 28, 2023

First of all, I would like to address the poor communications with residents and most of all the landowners who would have property impact. The letter we got was improperly addressed. Did they know who they were dealing with. Other letters came addressed to tenant farmer and an owner who passed away in 2016 (as you were told by his son). All this gave me a bad impression right off the bat.

Publishing the meeting in the Observer (local paper) on June 29th, the day after the meeting took place is also an example of the poor communication. BTE team should have researched publishing the information earlier. They would have found the Observer's only published and delivered on Tuesday, Thursday, and Saturday. I was told it was on Facebook. Everyone doesn't go on Facebook. Anyone with vision problems would likely have trouble reading the small print anyways.

My perception is this whole issue of traffic control/safety revolves around inattentive/speeding drivers traveling on Kimball Rd. in a hurry to get somewhere. I travel this route consistently with no problem. Visual lines not a problem. Tree/trucks do not block view if you're paying attention. One can see, if they are paying attention, the flashing beacon light 2 ½ km plus from the corner.

I do implicitly agree that something needs to be done. Long past due.

Maybe should have had a large stop sign with flashing red light from north and south. Even still, if it happens that a roundabout be built, when and how long before construction?

OTHER CORNER ISSUES

1. Northbound Kimball traffic can't make timely left hand turns during specific times of the day onto Petrolia Line because of lineups of cars going east on Petrolia Line as well as those heading south. Farmers have tried to adjust their times to avoid heavy traffic when they can or have used alternative unpaved routes. In addition, vehicles heading south do not follow the rules of the road and head straight through giving anyone turning left onto Petrolia Line a delay.

2. Impact on property – Did BTE check on any possible signed agreements between land owners and utility companies i.e. gas company?
3. Utilities – Water lines, phone/gas lines are all buried there. How long will these services be interrupted as all are needed?
4. Heavy load corridor – huge vessels – not only 48 m – try 100 m plus (oversize)
5. Costs to residents related to the <u>whole project</u>
6. What truck traffic is considered local? I know that farmers have been securing transport trucks to take their grain to elevators because it's safer, but costlier.

SURVEY

Your one-day survey by Cam doesn't really mean much. The peak hours can change from day to day depending on the activity at the various industrial sites. For example, summertime hours for maintenance 7 – 3:30/4:00, and operational hours start from 5:30 – 12 hour shifts. Plant turn around hours differ. Activity determines changing work hours. Heat related issues outdoors. When it's too hot to work, employees are sent home sometimes at 11 a.m. Did anyone consult with industry regarding their shift times and activities? Another plant works 12 hour shifts. Others have administrative personnel present from 7:30 – 4 p.m. What about the increased traffic flow due to shutdowns and construction?

STATEMENT – "TRAFFIC SIGNAL WARRANT WILL NOT BE MET FOR DECADES AND AS SUCH SHOULD NOT BE CONSIDERED."

This statement I feel is one persons' opinion. Look to the future – historical data 5 years old. A lot has changed since then – number one being the Nova plant expansion and new construction. Did the BTE assessment look into the projected new industry in the area – Distillery Plant, Battery Plant, Nova/Plastic recycling plant, Enbridge enhanced project, Ethanol plant, the growth of rural communities due to the costs of large urban centers? A lot of out of town employees are present.

NEEDS TO ACCOMMODATE OVERSIZED AGRICULTURE EQUIPMENT

- Combines with wide heads

- Tractors towing 2 to 3 grain wagons
- Long grain augers
- Large long square hay bale hauler wagons
- Agricultural sprayers
- Farm equipment being on the move throughout the day

COLLISION ANALYSIS (JUNE 6, 2023)

Utilizing Waterloo's crash cost historical data analysis not appropriate for this area. Population and traffic is not similar to a university city. I personally question why BTE compared Waterloo to St. Clair Township/Lambton County. I'm sure insurance costs are higher in Waterloo.

STATEMENT on the Last Page of the Technical Memorandum – "not looking for rural high-speed entries to the roundabouts"

We are concerned about safety not high-speed. Shouldn't we just decrease the speed. If not, are speed limits going to be highly visible and posted before and exiting? Speeders are well known in this area as well as are inattentive drivers. "Can't fix stupid."

CYCLERS/MAIL

The plans include nothing about a bicycle pathway or crossing. What about pedestrians trying to cross the roadway to get their mail near the entrances. I believe that the Moore, DeGurse, and Dallas Haul mailboxes are within the roundabout boundary. Speaking with the postal carrier she has concerns but doesn't believe a roundabout will solve the problem.

GARBAGE/RECYCLE PICK-UP.

At present garbage is picked up on the south side of the road one day a week. In order in ensure the safety of the garbage collectors and those who put their garbage out near a roundabout could create a two-fold problem. Safety for those putting garbage at the road and those collecting it when in a roundabout traffic is suppose to have continuous motion. As well as safety for those following the garbage and recycling vehicles.

IMPACT ON SOCIAL SERVICES

Personal Support Workers constantly utilize these roads. Are the Care Agencies aware of PSW concerns with extra mileage to get to clients by having to "go around the country block" as well as the additional time it will take as not all roads are paved. They will need to travel other longer routes to get to their clients. They receive a minuscule stipend which does not near cover their mileage costs. In addition, they pay for their own gas.

CONCLUSION

In concluding, I perceived that no public input was really wanted given the negative responses to questions. The moderator always had reasons based on his opinion and personal experience. What happened to the inclusion of public discussion in the process? This meeting appeared to have a predetermined outcome. "My way or the highway." Like I said earlier, I agree something needs to be done especially with the deep ditch on the one corner and trucks turning. Too bad participant's opinions weren't respected and contributions valued.

During my professional educational experience, a professor once said one could manipulate any data/numbers they want to get the results they want.

Personal information you submit will become part of the public record that is available to the general public unless you request that your personal information remain confidential. Please check the box below if you want your personal information below to remain confidential. Questions about this collection should be directed to the Project Manager.

[redacted]

Please check this box if you would like personal information removed from your comment. X
Please check a box if you would like to be added to our mailing list to be informed of the publication of the final Class EA Document. Mailing address X

Subject: Comments regarding Intersection Improvement at County Road 4 and County Road 31

To whom it may concern,
I attended the public consultation at the Legion in Corunna on June 28 to obtain more information on the proposed improvements for the intersection at Kimball Rd and Petrolia Line. I wanted to put in writing my support for the proposed roundabout to improve flow of traffic and overall safety to the area. I lived on Kimball just down the road from this intersection for 8 years and witnessed way too many accidents in my time living there. I have already signed 2 petitions that have been put forth to the County previous to this study being conducted. The speed limit leading up to the intersection was a major concern that I had while living on Kimball Rd. I encourage you to sit in the driveway at 3997 Kimball Rd and witness yourself how many people go off the road at the S bend in that area. You might even see a car end up in either that yard or the neighbours while sitting there (this happened multiple times in the mere 8 years I lived there). I believe the roundabout will force people to pay attention and slow down. The traffic flow has always been awful at this corner. My husband and I would wait 5-10 minutes at times trying to get through at peak hours. I recognize that there are truck drivers and farmers who were quite tense at the meeting with concerns that land would be lost to build this, tractors/trucks not being able to get through, etc. I trust that this study will have addressed

Hello Steve and Glen,

I was just writing to give my input for this Petrolia line and Kimball intersection improvement Study. As a first responder and a person who travels these and many other southwestern Ontario roads I do believe some steps can be taken to make people more aware of this stop. What I've seen that has worked for me on unfamiliar roads are signs that are three times the size of a normal stop surrounded in continuous flashing red and white led lights. Also the "rumble strips" in this area are well wore and perhaps not as effective. I've been on some that are far more coarse and alert the driver more with vibration through the vehicle.
My only additional idea would be to have a trigger to activate lights on a stop sign for approaching vehicles maybe 100-200 feet before the intersection. I've noticed the cross walk strobe lights to be quiet effective and having this result at a stop light I believe would help this location.

Thanks for your consideration,
Nolan Marriott
St. Clair Township resident
St. Clair Township fire department

In the meantime, let's look at ways to reduce collisions for tomorrow. We have been too long spending money/time and only talking about all the various ways to correct the situation, while nothing physical is being done.

Reduce and enforce speed of East/West traffic through the intersection, Larger Stop signs, solar Flashing approach lights, Travel speed notification signs. Anything would be an improvement whether temporary or permanent.

Many municipalities are setting up permanent solar powered signs reminding drivers of their travel speeds. Portables were set up after the Fatal crash in May 2020 which clearly slowed traffic through the intersection while they were in place.

The fact that Mr Steven Taylor stated He is prepared to put in writing a guarantee that a roundabout will 100% eliminate fatalities at the intersection as a result of motor vehicle incidents is comforting. That justifies the expense.

****

Comment Sheet
Public Consultation Centre (PCC)
Wednesday June 28, 2023

County of Lambton
Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA
Public Consultation Centre

Thank you for attending tonight's community meeting. Please provide your comments on any of the material presented.

MY CONCERN WITH BOTH ROUNDABOUT DESIGNS IS THE SIZE OF THE BREAK IN THE MEDIAN FOR TRUCKS AND TRAILERS ENTERING AND EXITING OUR YARD FROM BOTH THE KIMBALL ROAD AND PETROLIA LINE.

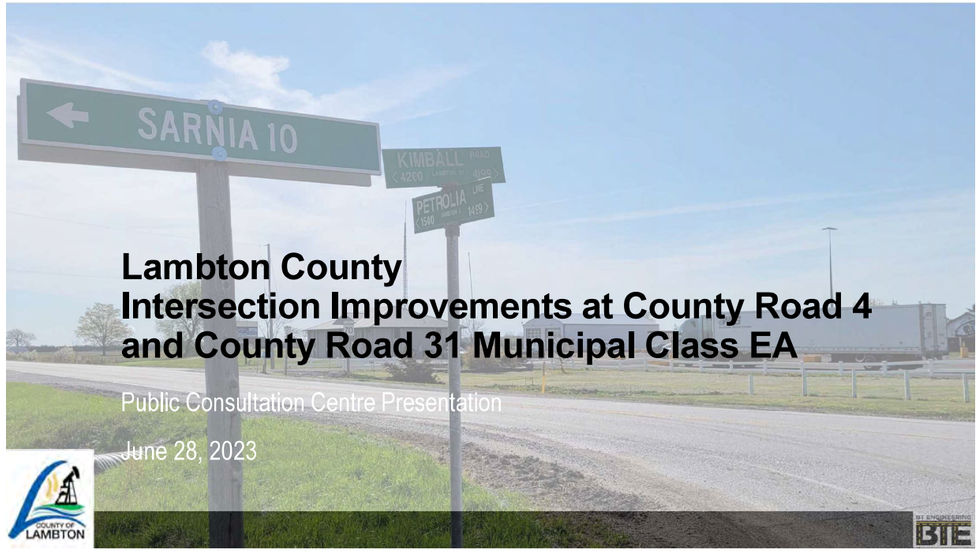
OUR ENTRANCE OFF OF KIMBALL ROAD IS APPROXIMATELY 80'. WE WOULD LIKE TO KEEP THE SAME SIZE OF ENTRANCE IN THE NEW DESIGN. FOR OUR TRUCK TRAFFIC WE WOULD PREFER THIS ENTRANCE LOCATION TO STAY IN THE SAME LOCATION AS IT IS NOW.

(Please turn over if additional space is required.)

Appendix D

PCC Presentation

BT ENGINEERING



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

Public Consultation Centre Presentation

June 28, 2023

Meeting Overview

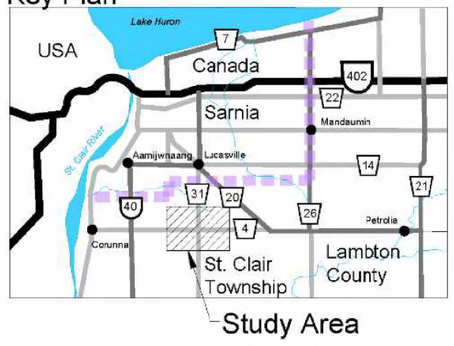
- Project Introduction
- Study Area Issues and Opportunities
- Preliminary Design
- Schedule

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

Project Introduction

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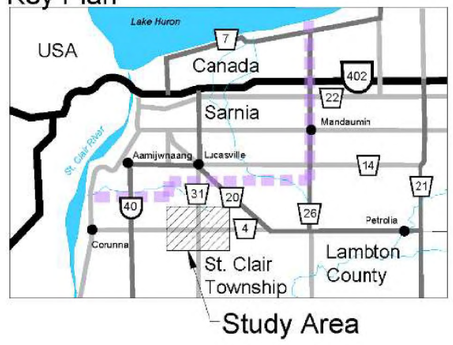

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- The Schedule B EA Study will be documented in a Project File Report, which is a summary of all public consultation, data, recommendations and reports produced for the project.

Study Area

Purpose of Public Consultation Centre (PCC)

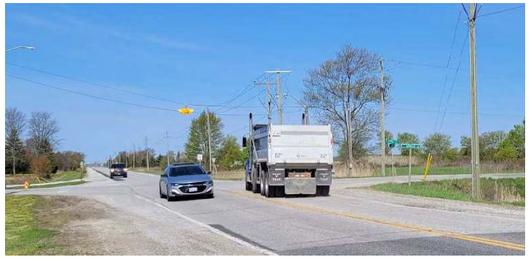
This PCC will present:

- 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.

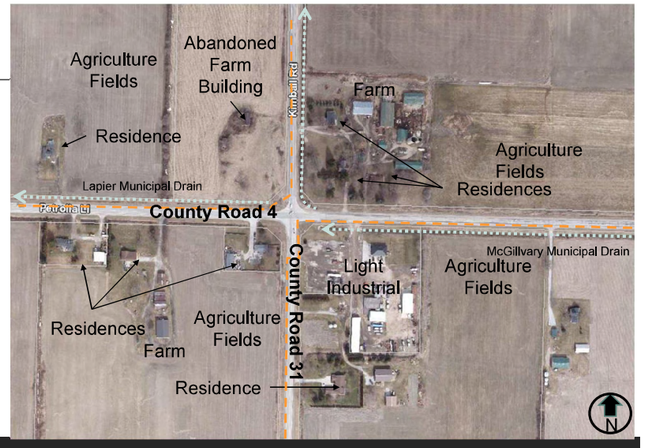
Study Area Issues and Opportunities

Problem and Opportunity Statement

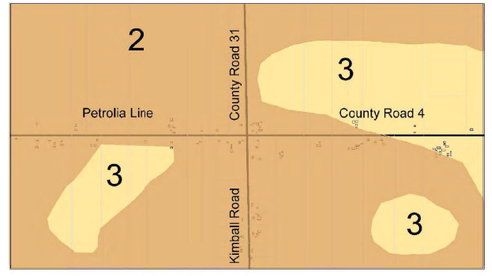
- Develop an intersection design that will reduce the frequency and severity of vehicular collisions at the County Road 4/31 intersection while minimizing delays to the travelling public and impacts to adjacent landowners.
- Where possible, the intersection configuration should also minimize construction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



Existing Land Uses



Legend
- Enbridge Gas Line
- Municipal Drains

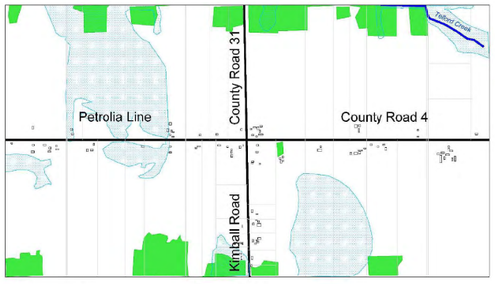


County of Lambton
Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA

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

NTS

Canadian Land Inventory Class for Agriculture

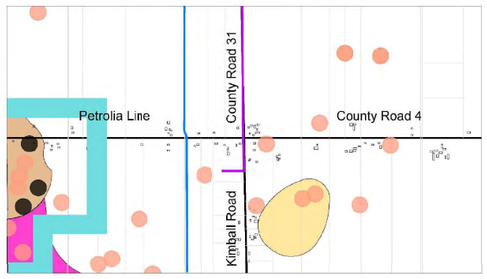


County of Lambton
Intersection Improvements at County Road 4 and County Road 31 Municipal Class EA

Source: 2126997_Regulations Viewer_Floodplain St Clair Region EA

NTS

Natural Environment



Legend

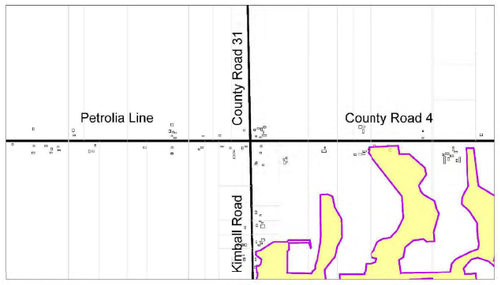
- Oil Pool
- Natural Gas Storage Pool
- Past Producing Natural Gas Pool
- Designated Hydrocarbon Storage Area
- Hydrocarbon Well - Active
- Hydrocarbon Well - In Active
- Active Pipeline
  Source: Plains Asset Location Map
- Proposed Pipeline
  Source: Robert E. Dale Ltd

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

NTS

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

Oil Resources



Legend

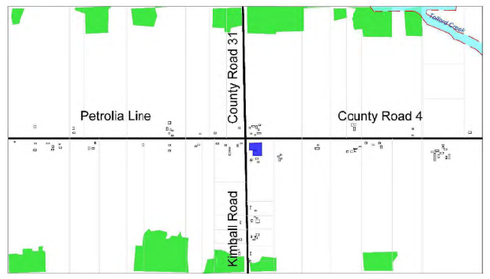
- Significant Groundwater Recharge Area

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

NTS

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

Source Water Protection



Legend

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

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

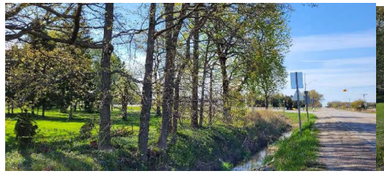
NTS

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

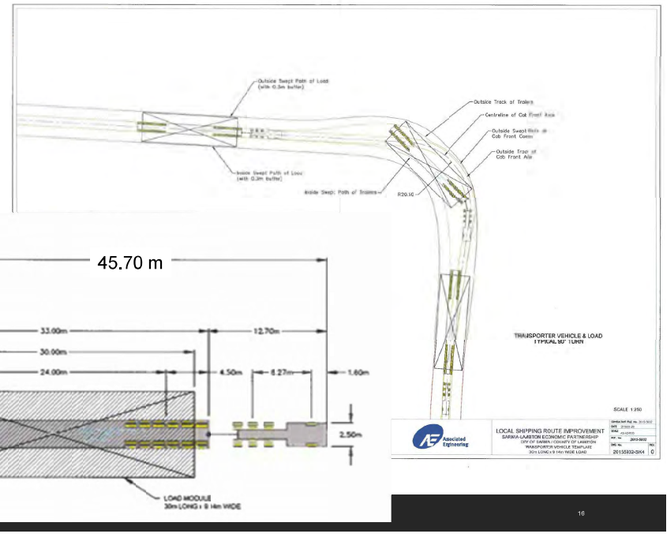
Zoning

Drainage Existing Conditions and Stormwater Management Recommendation

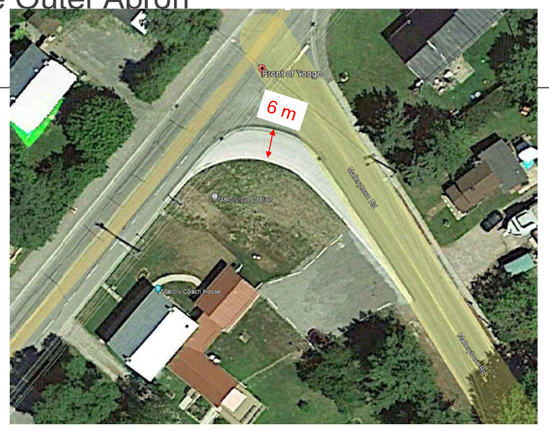
- The intersection is located in the St. Clair Region Conservation Authority.
- Existing road drainage is conveyed by roadside ditches.
- The McGillvary Municipal Drain is located in the northeast quadrant of the intersection within the road allowance and will be modified (buried) by the Township of 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

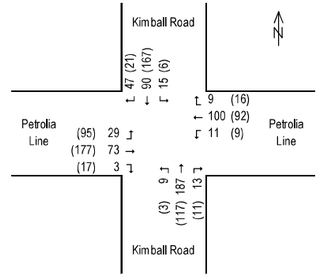


Sample Outer Apron



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.



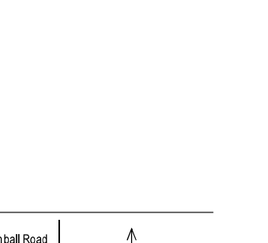
Existing Peak Hour Traffic Volumes (2023)
AM Peak (PM Peak)

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 Alterative 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

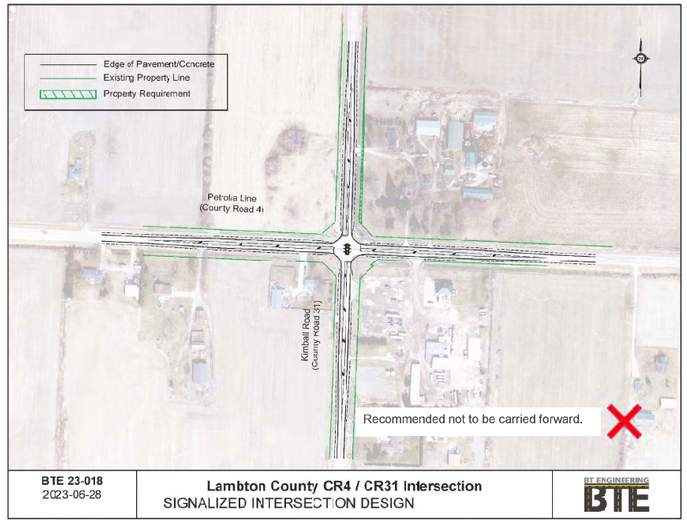
Advantages

- 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.



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.

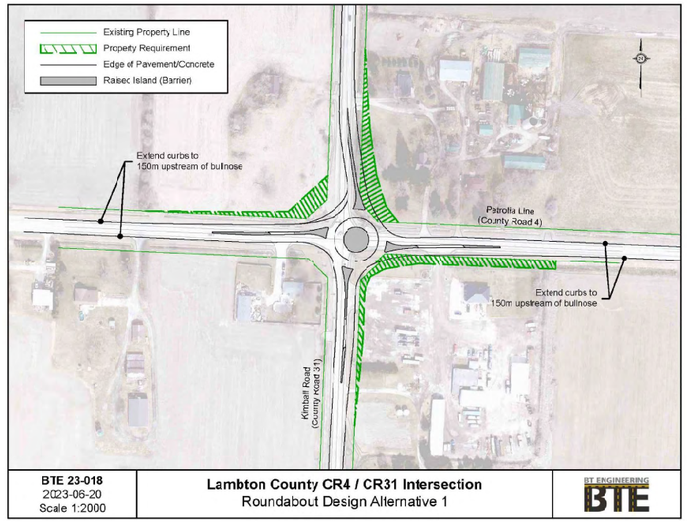
Recommended to be carried forward to Preliminary Design.

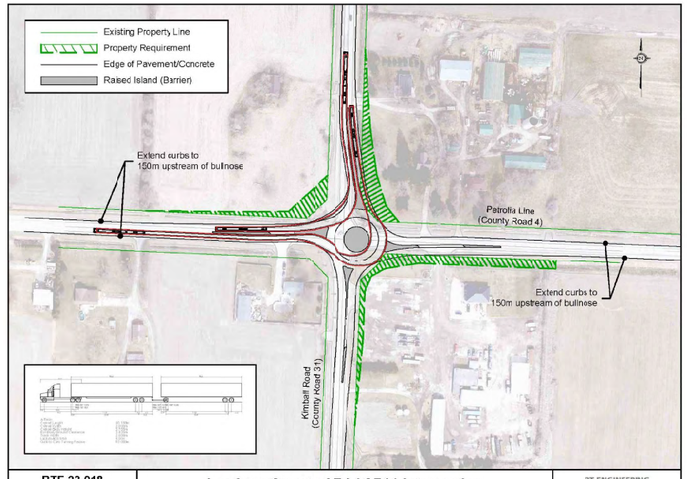
Roundabout

Preliminary Design Alternatives

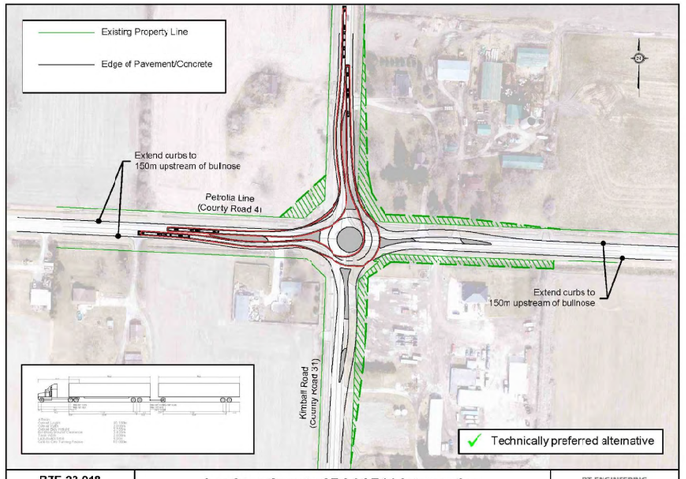
Two (2) Preliminary Design Alternatives are being considered for the Preferred Planning Solution:

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

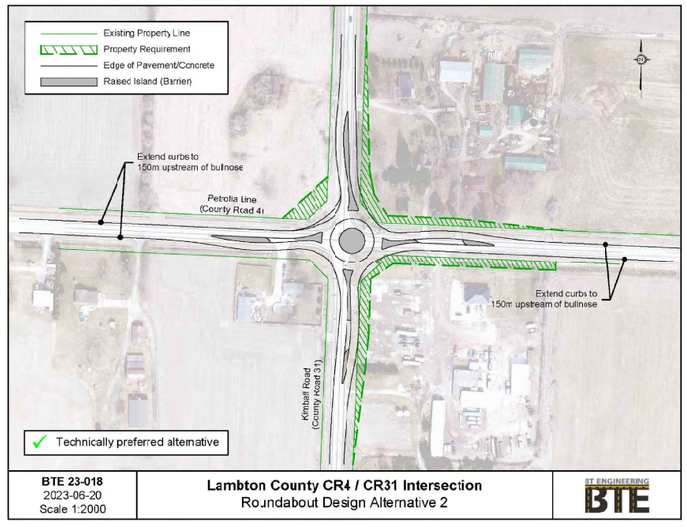




BTE 23-018 2023-06-20 Scale 1:2000	**Lambton County CR4 / CR31 Intersection** Roundabout Design Alternative 1	RT ENGINEERING BTE



BTE 23-018 2023-06-20 Scale 1:2000	**Lambton County CR4 / CR31 Intersection** Roundabout Design Alternative 2	RT ENGINEERING BTE



BTE 23-018 2023-06-20 Scale 1:2000	**Lambton County CR4 / CR31 Intersection** Roundabout Design Alternative 2	RT ENGINEERING BTE

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.

Schedule and Next Steps

Vissim Model

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

Appendix E

Comments-Responses Table

Appendix E
Summary of Key PCC Questions and Responses

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

Key Questions/Comments	Response
Will a roundabout infringe on adjacent properties?	The Technically Preferred Alternative (TPA) has minor property requirements from adjacent properties. The Recommended Plan has been revised by committing to improved driveway access in the southeast and southwest quadrants based on comments received from landowners.
How will property owners be impacted?	Loss of property will be mitigated by direct compensation. Loss of vegetation will be compensated with new landscaping.
Will a roundabout accommodate heavy vehicles and farm equipment?	The design of the roundabout accommodates oversized loads and farm equipment.
Will McGilvery Drain be large enough for farms along Petrolia Line?	The McGilvery Drain will include a new closed storm sewer pipe to accommodate a 25-year storm event following the requirements of the MTO Highway Drainage Manual Design.
Comments regarding anticipated inconveniences during construction of roundabout (i.e., temporary detour, utility interruptions).	Notice of all closures and detours will be provided in advance. A Traffic Management Plan will be implemented during construction. The EA describes that the north and south legs of the intersection will be closed with detour routes provided during construction. Access will be maintained to all properties.
Comments regarding cost of constructing a roundabout.	The initial capital cost of the roundabout is marginally higher than traffic signals at this location. However, based on the societal costs of collisions and loss of life, the roundabout alternative has the lowest life cycle cost.

Appendix B

Select Correspondence

BT ENGINEERING

Public Works Department
789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0

Telephone: 519-845-0801
Toll-free: 1-866-324-6912
Fax: 519-845-3872

June 15, 2023

Chief Kimberly Bressette
Kettle & Stony Point First Nation
Kimberly.Bressette@kettlepoint.org

Re: County Road 4 (Petrolia Line) and County Road 31 (Kimball Road)
Intersection Improvement Study Municipal Class Environmental Assessment (EA)
Notice of Study Commencement and Public Consultation Centre

Dear Chief Kimberly Bressette:

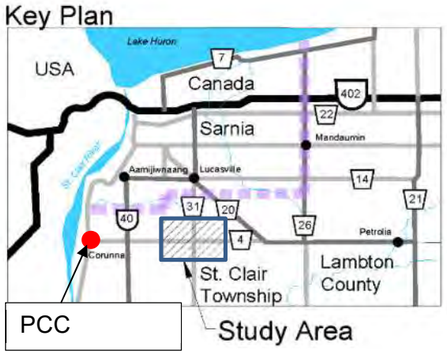
INTRODUCTION

The County of Lambton has retained BT Engineering Inc. to complete a Schedule B Environmental Assessment for improvements to the County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) intersection in St. Clair Township, Ontario. The study will evaluate all reasonable alternatives to improve the operation and safety of the existing intersection.

STUDY PROCESS

The project is being conducted as a Schedule B project under the Municipal Class Environmental Assessment (MCEA) (2023). The Study will follow the MCEA process by establishing the need and justification for the project, considering all reasonable alternatives with acceptable effects on the natural, social and cultural environments, and proactively consulting with the public, stakeholders and Indigenous Peoples.

Key Plan



PUBLIC CONSULTATION

The public consultation process is vital to this Study and the County wants to ensure that anyone with interest in the project has the opportunity to provide input. As part of the consultation process, the Study Team is willing to meet at a location and time of your choosing to discuss the project and receive comments.

An in-person Public Consultation Centre (PCC) is being held as follows:

Date: June 28, 2023
Time: 5:00 pm to 8:00 pm, presentation at 7:00 pm
Location: Royal Canadian Legion Branch 447
350 Albert Street, Corunna, ON N0N 1G0

There is an opportunity at any time during the Class EA process for interested persons to provide comments. Early identification of individual and group concerns greatly aids in addressing these concerns. All information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* (2009). Personal information you submit will become part of the public record that is available to the general public unless you request that your personal information remain confidential. Persons will be advised of future communication opportunities by electronic notice in addition to newspaper public notices.

We are contacting you to initiate engagement for the project. We offer to meet separately from the PCC to answer any questions you may have related to this project.

For more information or if you wish to be placed on the study's mailing or emailing contact list, contact either:

Steve Taylor, P.Eng., M.Eng.
Consultant Project Manager
BT Engineering Inc.
509 Talbot Street
London, ON N6A 2S5
Email: stevenj.taylor@bteng.ca
Phone: 519-672-2222
Toll Free: 1-866-218-1001

Glen Hamill, C.E.T.
Public Works Department
County of Lambton
789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0
Email:glen.hamill@county-lambton.on.ca
Phone: 519-845-0809 ext. 5250

If you require additional information or wish to provide comments during the Class EA process, please contact us at anytime.

Yours truly,

Matt Deline, P.Eng.
Manager, Public Works, County of Lambton

cc: Glen Hamill, C.E.T., Public Works Department
Steve Taylor, P.Eng., Consultant Project Manager, BT Engineering Inc.
Kristine Dimoff, Consultant Environmental Planner
Gord Bell, Consultant Environmental Planner

Public Works Department
789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0

Telephone: 519-845-0801
Toll-free: 1-866-324-6912
Fax: 519-845-3872

June 15, 2023

Sharilyn Johnston
Environment Coordinator
Aamjiwnaang First Nation
sjohnston@aamjiwnaang.ca

Re: County Road 4 (Petrolia Line) and County Road 31 (Kimball Road)
Intersection Improvement Study Municipal Class Environmental Assessment (EA)
Notice of Study Commencement and Public Consultation Centre

Dear Sharilyn Johnston:

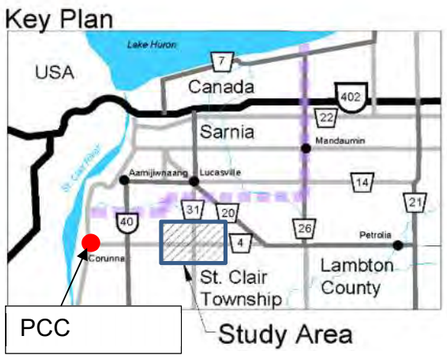
INTRODUCTION

The County of Lambton has retained BT Engineering Inc. to complete a Schedule B Environmental Assessment for improvements to the County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) intersection in St. Clair Township, Ontario. The study will evaluate all reasonable alternatives to improve the operation and safety of the existing intersection.

STUDY PROCESS

The project is being conducted as a Schedule B project under the Municipal Class Environmental Assessment (MCEA) (2023). The Study will follow the MCEA process by establishing the need and justification for the project, considering all reasonable alternatives with acceptable effects on the natural, social and cultural environments, and proactively consulting with the public, stakeholders and Indigenous Peoples.

Key Plan



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Public Works Department
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789 Broadway Street, Box 3000
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Email:glen.hamill@county-lambton.on.ca
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Yours truly,

Matt Deline, P.Eng.
Manager, Public Works, County of Lambton

cc: Glen Hamill, C.E.T., Public Works Department
Steve Taylor, P.Eng., Consultant Project Manager, BT Engineering Inc.
Kristine Dimoff, Consultant Environmental Planner
Gord Bell, Consultant Environmental Planner

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789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0

Telephone: 519-845-0801
Toll-free: 1-866-324-6912
Fax: 519-845-3872

June 15, 2023

MNO Windsor-Essex Métis Council
600 Tecumseh Road East
Windsor, ON N8X 4X9

Re: County Road 4 (Petrolia Line) and County Road 31 (Kimball Road)
Intersection Improvement Study Municipal Class Environmental Assessment (EA)
Notice of Study Commencement and Public Consultation Centre

Dear Sir/Madam:

INTRODUCTION

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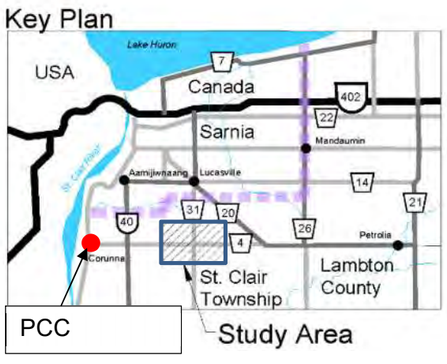

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Public Works Department
County of Lambton
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Email:glen.hamill@county-lambton.on.ca
Phone: 519-845-0809 ext. 5250

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Yours truly,

Matt Deline, P.Eng.
Manager, Public Works, County of Lambton

cc: Glen Hamill, C.E.T., Public Works Department
Steve Taylor, P.Eng., Consultant Project Manager, BT Engineering Inc.
Kristine Dimoff, Consultant Environmental Planner
Gord Bell, Consultant Environmental Planner

Public Works Department
789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0

Telephone: 519-845-0801
Toll-free: 1-866-324-6912
Fax: 519-845-3872

June 15, 2023

Chief Chris Plain
Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON N7T 7H5
chief.plain@aamjiwnaang.ca

Re: County Road 4 (Petrolia Line) and County Road 31 (Kimball Road)
Intersection Improvement Study Municipal Class Environmental Assessment (EA)
Notice of Study Commencement and Public Consultation Centre

Dear Chief Chris Plain:

INTRODUCTION

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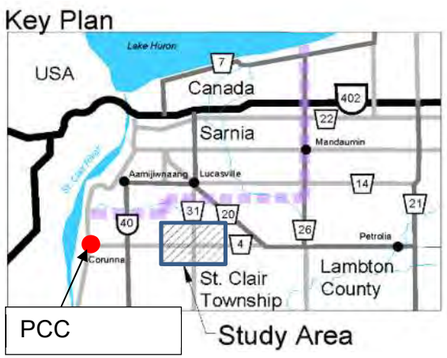

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Yours truly,

Matt Deline, P.Eng.
Manager, Public Works, County of Lambton

cc: Glen Hamill, C.E.T., Public Works Department
Steve Taylor, P.Eng., Consultant Project Manager, BT Engineering Inc.
Kristine Dimoff, Consultant Environmental Planner
Gord Bell, Consultant Environmental Planner

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789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0

Telephone: 519-845-0801
Toll-free: 1-866-324-6912
Fax: 519-845-3872

June 15, 2023

Chief Dan Miskokomon
Walpole Island First Nation
117 Tahgahoning Road
Wallaceburg, ON N8A 4K9
drskoke@wifn.org

Re: County Road 4 (Petrolia Line) and County Road 31 (Kimball Road)
Intersection Improvement Study Municipal Class Environmental Assessment (EA)
Notice of Study Commencement and Public Consultation Centre

Dear Chief Dan Miskokomon:

INTRODUCTION

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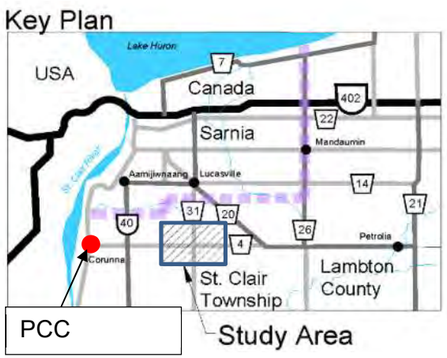

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Wyoming, ON N0N 1T0
Email:glen.hamill@county-lambton.on.ca
Phone: 519-845-0809 ext. 5250

If you require additional information or wish to provide comments during the Class EA process, please contact us at anytime.

Yours truly,

Matt Deline, P.Eng.
Manager, Public Works, County of Lambton

cc: Glen Hamill, C.E.T., Public Works Department
Steve Taylor, P.Eng., Consultant Project Manager, BT Engineering Inc.
Kristine Dimoff, Consultant Environmental Planner
Gord Bell, Consultant Environmental Planner

Kristine Dimoff

From: Gord Bell
Sent: Thursday, June 15, 2023 7:44 PM
To: eanotification.swregion@ontario.ca
Cc: Glen Hamill; Steve Taylor (London); Brenda Badham; Andra Bursey; Gord Bell; Kristine Dimoff
Subject: Lambton County MCEA Intersection Improvement Study Cty. Rds 4 and 31 Commencmeent Notice
Attachments: Lambton County MCEA Intersection Improvement Study Cty Rds. 4 and 31 Commencement Notice.xlsx; 23-018 Lambton CR 4-31 Study Commcement PCC 1 Notice Jun 14-23 QC.pdf

In accordance with the MECP Streamlined Notification Process, please find attached the following: Streamlined Notification form and a copy of the project Notice of Study Commencement and Public Consultation Centre for the Schedule B project. The Notice was placed on the County website on June 16, 2023 and will be further advertised by the placement of a roadside signs in the study area adjacent to the intersection. Finally, the County has sent individually addressed letters containing the Notice wording to each of the following four Indigenous Communities the County contacts for past projects; Walpole Island First Nation, Aamjiwnaang First Nation, Kettle and Stony Point First Nation and the Metis Nation of Ontario Windsor -Essex Metis Council. The letters to the Indigenous communities contained an offer to meet with the community at a time and location of their choosing.

Gordon Bell
Senior Environmental Planner
B T Engineering (2023).Inc
gord.bell@bteng.ca

Ontario

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

July 17, 2023

Glen Hamill
Public Works Department – Engineering
County of Lambton
glen.hamill@county-lambton.on.ca

BY EMAIL ONLY

Re: **County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) Intersection Improvement Study**
County of Lambton
Municipal Class Environmental Assessment, Schedule B
Acknowledgement of Notice of Commencement

Dear Project Team,

This letter is in response to the Notice of Commencement for the above noted project. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that the County of Lambton (proponent) has indicated that the study is following the approved environmental planning process for a Schedule B project under the Municipal Class Environmental Assessment (Class EA).

The **updated (August 2022)** attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class EA process. Please address all areas of interest in the EA documentation at an appropriate level for the EA study. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. **Further information is provided at the end of the Areas of Interest document relating to recent changes to the Environmental Assessment Act through Bill 197, Covid-19 Economic Recovery Act 2020.**

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

The proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed project**, the MECP is delegating the procedural aspects of rights-based consultation to the proponent through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information provided to date and the Crown`s preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the proposed project:

- Aamjiwnaang First Nation
- Bkejwanong (Walpole Island)
- Caldwell First Nation
- Chippewas of Kettle and Stony Point
- Chippewas of the Thames First Nation
- Oneida Nation of the Thames
- Munsee Delaware
- Delaware Nation

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments.

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information, including the MECP's expectations for EA report documentation related to consultation with communities.

The proponent must contact the Director of Environmental Assessment Branch (EABDirector@ontario.ca) under the following circumstances after initial discussions with the communities identified by the MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right;
- Consultation with Indigenous communities or other stakeholders has reached an impasse; or
- A Section 16 Order request is expected based on impacts to Aboriginal or treaty rights

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play should additional steps and activities be required.

A draft copy of the report should be sent directly to me prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments.

Please also ensure a copy of the final notice is sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca) after the draft report is reviewed and finalized.

Should you or any members of your project team have any questions regarding the material above, please contact me at Mark.Badali1@ontario.ca.

Sincerely,

Mark Badali
Senior Project Evaluator
Environmental Assessment Program Support, Environmental Assessment Branch

Cc: Sean Morrison, Manager, Sarnia District Office, MECP
Steve Taylor, Consultant Project Manager, BT Engineering Inc.

Enclosed: Areas of Interest

Attached: Client's Guide to Preliminary Screening for Species at Risk
A Proponent's Introduction to the Delegation of Procedural Aspects of Consultation with Aboriginal Communities

AREAS OF INTEREST (v. August 2022)

It is suggested that you check off each section after you have considered / addressed it.

☐ **Planning and Policy**

- Applicable plans and policies should be identified in the report, and the proponent should describe how the proposed project adheres to the relevant policies in these plans.
    - Projects located in MECP Central, Eastern or West Central Region may be subject to **A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020)**.
    - Projects located in MECP Central or Eastern Region may be subject to the **Oak Ridges Moraine Conservation Plan (2017)** or the **Lake Simcoe Protection Plan (2014)**.
    - Projects located in MECP Central, Southwest or West Central Region may be subject to the **Niagara Escarpment Plan (2017)**.
    - Projects located in MECP Central, Eastern, Southwest or West Central Region may be subject to the **Greenbelt Plan (2017)**.
    - Projects located in MECP Northern Region may be subject to the **Growth Plan for Northern Ontario (2011).**

- The **Provincial Policy Statement (2020)** contains policies that protect Ontario's natural heritage and water resources. Applicable policies should be referenced in the report, and the proponent should describe how the proposed project is consistent with these policies.

- In addition to the provincial planning and policy level, the report should also discuss the planning context at the municipal and federal levels, as appropriate.

☐ **Source Water Protection**

The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects that are subject to the Environmental Assessment Act that fall under a Class EA, or one of the Regulations, have the potential to impact sources of drinking water if they occur in designated vulnerable areas or in the vicinity of other at-risk drinking water systems (i.e. systems that are not municipal residential systems). MEA Class EA projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- In October 2015, the MEA Parent Class EA document was amended to include reference to the Clean Water Act (Section A.2.10.6) and indicates that proponents undertaking a Municipal Class EA project must identify early in their process whether a project is or could potentially be occurring with a vulnerable area. **Given this requirement, please include a section in the report on source water protection.**

    - The proponent should identify the source protection area and should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed. Specifically, the report should discuss whether or not the project is located in a vulnerable area and provide applicable details about the area.
    - If located in a vulnerable area, proponents should document whether any project activities are prescribed drinking water threats and thus pose a risk to drinking water (this should be consulted on with the appropriate Source Protection Authority). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local source protection plan. This section should then be used to inform and be reflected in other sections of the report, such as the identification of net positive/negative effects of alternatives, mitigation measures, evaluation of alternatives etc.

- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.

- In order to determine if this project is occurring within a vulnerable area, proponents can use Source Protection Information Atlas, which is an online mapping tool available to the public. Note that various layers (including WHPAs, WHPA-Q1 and WHPA-Q2, IPZs, HVAs, SGRAs, EBAs, ICAs) can be turned on through the "Map Legend" bar on the left. The

mapping tool will also provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.

- For further information on the maps or source protection plan policies which may relate to their project, proponents must contact the appropriate source protection authority. **Please consult with the local source protection authority to discuss potential impacts on drinking water. Please document the results of that consultation within the report and include all communication documents/correspondence.**

More Information
For more information on the *Clean Water Act*, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MECP.

☐ **Climate Change**

The document "Considering Climate Change in the Environmental Assessment Process" (Guide) is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. Proponents should review this Guide in detail.

- **The MECP expects proponents of Class EA projects to:**

1. Consider during the assessment of alternative solutions and alternative designs, the following:
    a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
    b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).
2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

☐ **Air Quality, Dust and Noise**

- If there are sensitive receptors in the surrounding area of this project, a quantitative air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization and a quantification of local air quality impacts on the sensitive receptors and the environment in the study area. The assessment will compare to all applicable standards or guidelines for all contaminants of concern. **Please contact this office for further consultation on the level of Air Quality Impact Assessment required for this project if not already advised.**

- If a quantitative Air Quality Impact Assessment is not required for the project, the MECP expects that the report contain a qualitative assessment which includes:

    - A discussion of local air quality including existing activities/sources that significantly impact local air quality and how the project may impact existing conditions;
    - A discussion of the nearby sensitive receptors and the project's potential air quality impacts on present and future sensitive receptors;
    - A discussion of local air quality impacts that could arise from this project during both construction and operation; and
    - A discussion of potential mitigation measures.

- As a common practice, "air quality" should be used an evaluation criterion for all road projects.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The MECP recommends that non-chloride dust-suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures that could be applied, refer to *Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from*

Construction and Demolition Activities report prepared for Environment Canada. March 2005.

- The report should consider the potential impacts of increased noise levels during the operation of the completed project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The report should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- Natural heritage and hydrologic features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
  - Key Natural Heritage Features: Habitat of endangered species and threatened species, fish habitat, wetlands, areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands; significant wildlife habitat (including habitat of special concern species); sand barrens, savannahs, and tallgrass prairies; and alvars.
  - Key Hydrologic Features: Permanent streams, intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands.
  - Other natural heritage features and areas such as: vegetation communities, rare species of flora or fauna, Environmentally Sensitive Areas, Environmentally Sensitive Policy Areas, federal and provincial parks and conservation reserves, Greenland systems etc.

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, for projects located in Central Region you may consider the provisions of the Rouge Park Management Plan if applicable.

Species at Risk

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario's Species at Risk program. Information, standards, guidelines, reference materials and technical resources to assist you are found at https://www.ontario.ca/page/species-risk.

- The Client's Guide to Preliminary Screening for Species at Risk (Draft May 2019) has been attached to the covering email for your reference and use. Please review this document for next steps.

- For any questions related to subsequent permit requirements, please contact SAROntario@ontario.ca.

Surface Water

- The report must include enough information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the report and utilized when designing stormwater control methods. **A Stormwater Management Plan should be prepared as part of the Class EA process** that includes:

  - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
  - Watershed information, drainage conditions, and other relevant background information
  - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
  - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the *Ontario Water Resources Act* (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If a proposed sewage treatment plant is listed in Table 1 of the regulation, the report should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

- Any potential approval requirements for surface water taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please

review the Water Taking User Guide for EASR for more information. Additionally, an Environmental Compliance Approval under the OWRA is required for municipal stormwater management works.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the report.

- If the potential construction or decommissioning of water wells is identified as an issue, the report should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, with the exception of certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information.

- Consultation with the railroad authorities is necessary wherever there is a plan to use construction dewatering in the vicinity of railroad lines or where the zone of influence of the construction dewatering potentially intercepts railroad lines.

Excess Materials Management

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

- The report should reference that activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).

- All waste generated during construction must be disposed of in accordance with ministry requirements

Contaminated Sites

- Any current or historical waste disposal sites should be identified in the report. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites. We recommend referring to the MECP's D-4 guideline for land use considerations near landfills and dumps.
    - Resources available may include regional/local municipal official plans and data; provincial data on large landfill sites and small landfill sites; Environmental Compliance Approval information for waste disposal sites on Access Environment.

- Other known contaminated sites (local, provincial, federal) in the study area should also be identified in the report (Note – information on federal contaminated sites is found on the Government of Canada's website).

- The location of any underground storage tanks should be investigated in the report. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the appropriate MECP District Office for further consultation if contaminated sites are present.

Servicing, Utilities and Facilities

- The report should identify any above or underground utilities in the study area such as transmission lines, telephone/internet, oil/gas etc. The owners should be consulted to discuss impacts to this infrastructure, including potential spills.

- The report should identify any servicing infrastructure in the study area such as wastewater, water, stormwater that may potentially be impacted by the project.

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with MECP's Environmental Permissions Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

- We recommend referring to the ministry's environmental land use planning guides to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

Mitigation and Monitoring

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the report and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly.

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- The proponent's construction and post-construction monitoring plans must be documented in the report, as outlined in Section A.2.5 and A.4.1 of the MEA Class EA parent document.

Consultation

- The report must demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and **describes how they have been addressed by the proponent** throughout the planning process. The report should also include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments (as directed by the Class EA to include full documentation).

- Please include the full stakeholder distribution/consultation list in the documentation.

Class EA Process

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. **The Master Plan should clearly indicate the selected approach for conducting the plan**, by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. Please note that any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the Environmental Assessment Act, although the plan itself would not be. **Please include a description of the approach being undertaken (use Appendix 4 as a reference).**

- If this project is a Master Plan: Any identified projects should also include information on the MCEA schedule associated with the project.

- The report should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment (including planning, natural, social, cultural, economic, technical). The report should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments, cultural heritage assessments) such that all potential impacts can be identified, and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the report.

- Please include in the report a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including but not limited to, MECP's PTTW, EASR Registrations and ECAs, conservation authority permits, species at risk permits, MTO permits and approvals under the *Impact Assessment Act*, 2019.

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. We encourage you to review all the available guides and to reference any relevant information in the report.

issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;
- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers

- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;
- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;

Amendments to the EAA through the Covid-19 Economic Recovery Act, 2020
Once the EA Report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent. The Notice of Completion must be sent to the appropriate MECP Regional Office email address.

The public can request a higher level of assessment on a project if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights. In addition, the Minister may issue an order on his or her own initiative within a specified time period. The Director (of the Environmental Assessment Branch) will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on your project.

Therefore, the proponent cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Section 16 Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed order regarding the project.

Please ensure that the Notice of Completion advises that outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Section 16 Order requests on those matters should be addressed in writing to:

Minister David Piccini
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigates any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;

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- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

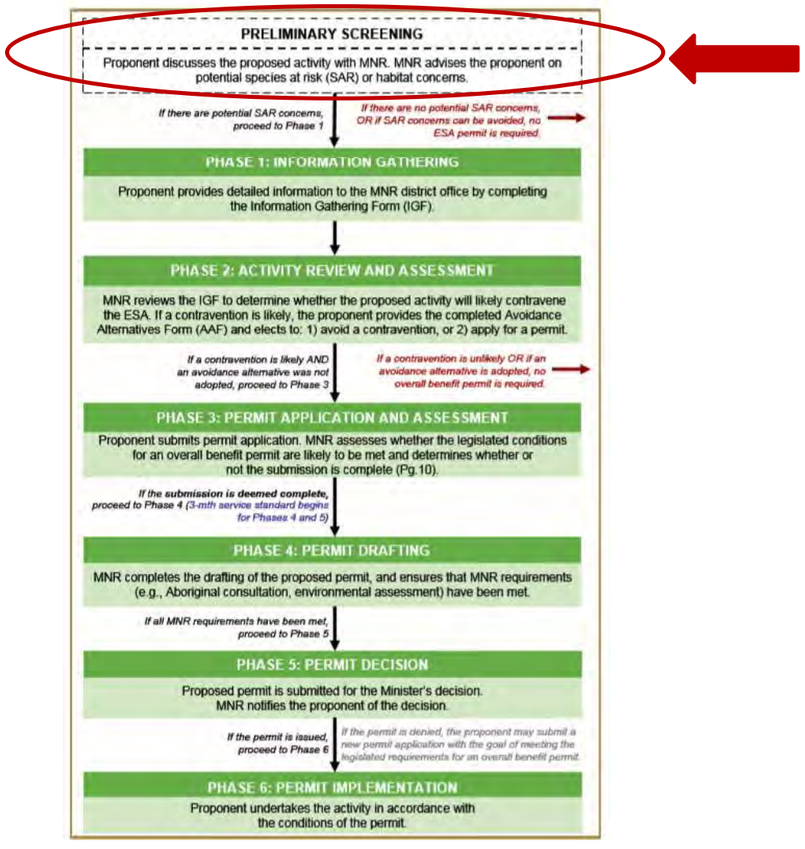
V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant documentation;

1.3 Background and Context

To receive advice on their proposed activity, clients must first determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits



Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, prior to contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

REQUESTED BY

Name WASIM ALDABBAGH

Company BT ENGINEERING INC.

(519)-672-2222 ext. WASIM.ALDABBAGH@BTENG.CA

Date 06/08/2023 10:21:00

Request# **20232320113**

LOCATION OF WORK

Address 1469 PETROLIA LINE (COUNTY ROAD 4)

Meet requested Yes ☐

DESCRIPTION OF WORK

DESIGN AND PLANNING

Date: 06/15/2023

Time: 12:00 AM

TYPE OF LOCATE

Water ☐ Sanitary ☐ Storm ☐ Street Light ☐ Fiber ☐

NOTES

It is understood the above information has been provided from our records, and represents our knowledge of the approximate location of St. Clair Township infrastructure only; the contractor should request stake-outs for other utilities to establish the location of their infrastructure. It is the responsibility of the contractor to exercise extreme caution where mechanical equipment is used in the vicinity of underground utilities, hand digging and or daylighting may be required to locate their actual position. liability for damages rest with the contractor. The information provided herein is valid for a period of 60 days from the date of the actual stake out. The contractor is responsible for maintaining the locate stakes and markings during the 60 day period. St Clair Township will not complete any relocating within the 60 day period. Any relocate request within the 60 day period will incur additional costs directly invoiced to locate requester.

All Clear of Municipal services

If the construction area extends beyond the idnetified dig location, a new locate request is required.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

Ontario

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

Via E-mail Only

August 25, 2023

Gordon Bell
Senior Environmental Planner
BT Engineering Inc.
Gord.Bell@bteng.ca

Re: County Rd. 4 (Petrolia Line) and County Rd. 31 (Kimball Road) Intersection Improvements
County of Lambton
Municipal Class Environmental Assessment – Schedule B
Project Review Unit Comments – Draft Project File Report

Dear Project Team,

Thank you for providing the ministry with an opportunity to comment on the draft Project File Report (Report) for the above noted Class Environmental Assessment (EA) project. Our understanding is that in order to reduce the frequency and severity of vehicular collisions at the County Roads 4/31 intersection, while minimizing delays to the travelling public and impacts to adjacent landowners, the County of Lambton (the proponent) has determined that the preferred alternative is to construct a roundabout at the intersection of County Road 4 (Petrolia Line) and County Road 31 (Kimball Road). The Ministry of the Environment, Conservation and Parks (ministry) provides the following comments for your consideration.

General

1) Section 6.0 of the Report refers to the "Problem / Opportunity Statement". As there is no Problem / Opportunity statement explicitly identified in the document, it is recommended that one be added or that an existing section revised to more clearly identify one.
2) The acronym OTM is used in section 6.1.3 and Appendix C of the Report but is not defined when the Ontario Traffic Manual is referenced. Acronyms should be defined at the first instance of their use in the document for ease of understanding by lay readers.
3) The proponent may wish to add a Conclusion section to the Report that includes a short summary listing key activities and the principal decisions/conclusions.

Class EA Process

4) The ministry recommends that the proponent consider including information on the ability to request a section 16 in the Report, which would describe that under Section 16(6) of the *Environmental Assessment Act* a request for an order can be made only on the grounds that the order may prevent, mitigate, or remedy adverse impacts on existing Aboriginal and treaty rights of the Aboriginal peoples of Canada as recognized and affirmed in section 35 of the Constitution Act, 1982.

   For additional information, please refer to: https://www.ontario.ca/page/class-environmental-assessments-section-16-order.
5) Please ensure that the Notice of Completion reflects the changes made to the *Environmental Assessment Act* in July 2020, which scoped the grounds on which a s.16 order request (formerly referred to as a Part II order request) can be made to the Minister. Section 16(6) of the *Environmental Assessment Act* provides that a request for an order can be made only on the grounds that the order may prevent, mitigate, or remedy adverse impacts on existing Aboriginal and treaty rights of the Aboriginal peoples of Canada as recognized and affirmed in section 35 of the Constitution Act, 1982.

Planning and Policy

6) A discussion of the provincial planning and policy context, particularly of the Provincial Policy Statement (PPS), 2020, is missing from the Report. As noted in Section C.1.1 of the Municipal Class EA document, the PPS is a key consideration for identifying land-use planning objectives and evaluating alternative solutions in Phase 2 of the Class EA process. The ministry recommends revising the Report to include a discussion of the PPS.

Evaluation of Alternatives

7) One of the key principles of successful environmental assessment planning is the systematic evaluation of alternatives in terms of their advantages and disadvantages, to determine their net environmental effects. Section A.2.3 of the Municipal Class EA parent document further describes the evaluation step of Phase 2 of the Class EA planning process. In order to best meet the requirements of the Class EA process, the evaluation of alternative solutions provided in Section 6 of the Report should demonstrate how the magnitude of net positive and negative effects on all natural, social and economic components of the environment was considered during the evaluation of alternatives.

Indigenous Consultation

8) The proponent had contacted three Indigenous communities and one Metis council at study commencement, and an additional five at study completion. It is understood that this discrepancy in timing was because early consultation with some communities was self-initiated by the proponent, and the list of communities provided by the ministry was received by the proponent after the Notice of Commencement had been sent out and the first Public Consultation Centre held. Moving forward for projects in this area the ministry recommends that the proponent consult with the eight identified communities, which the ministry will confirm when provided with the opportunity.

Air Quality and Odour

9) Please note that the ministry recommends that non-chloride dust suppressants be applied during construction.

Climate Change

10) Climate change considerations have not been documented in the Report. The document "Considering Climate Change in the Environmental Assessment Process" (Guide) (www.ontario.ca/page/considering-climate-change-environmental-assessment-process) is now a part of the EA program's Guides and Codes of Practice. The Guide sets out the ministry's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. The proponent should review this Guide in detail. The ministry expects proponents of Class EA projects to:

    a. Consider the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation), as well as resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).

    b. Include a discrete section in the Report detailing how climate change was considered in the EA.

    How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

Thank you for circulating this draft Report for the ministry's consideration. Please document the provision of the draft Report to the ministry as well as this Project Review Unit Comments letter in the final report, and please provide an accompanying response letter to support our review of the final report. A copy of the final Notice should be sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca).

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Sincerely,

Mark Badali
Senior Project Evaluator
Environmental Assessment Program Support, Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks

cc Sean Morrison, Manager, Sarnia District Office, MECP
Jasmine Safar, Assistant Project Officer, Project Support Unit, MECP
Glen Hamill, Public Works Department – Engineering, County of Lambton
Steve Taylor, Consultant Project Manager, BT Engineering Inc.

Bell Canada Municipal Operations Centre
100 Borough Drive. 3 Toronto (Ontario) Canada M1P 4W2

Application for Plant Location and Consent

Mark Up Number	64312	Date Received from Applicant	2023-06-08 10:21:47
MU Administrator Name	Magdaline Abel		
Mark Up Response Date	2023-06-27 11:49:12		

Applicant Information

Applicant	BT ENGINEERING INC.		
Applicant Ref Number	20232320113		
Applicant First Name	WASIM	Applicant Last Name	ALDABBAGH
Applicant Phone Number	5196722222	Extension	5196722222.0
Applicant Email	wasim.aldabbagh@bteng.ca		

Construction Details

Project Municipality	ST CLAIR
Project Location	Not Provided
Project Street	PETROLIA LINE (COUNTY ROAD 4)
Detail Type of Construction Taking Place	DESIGN AND PLANNING
Opportunity for Joint Build	No
Is it in Conflict	No
Conflict Identified Date	
Conflict Comments	

Group Mark Up #

Comments to Applicant

Critical Mark Up Details Pertaining Bell Plant Location

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:_____

  _____
- ✓ List local naturalist groups you contacted:_____

  _____
- ✓ List local Indigenous communities you contacted:_____

  _____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:_____

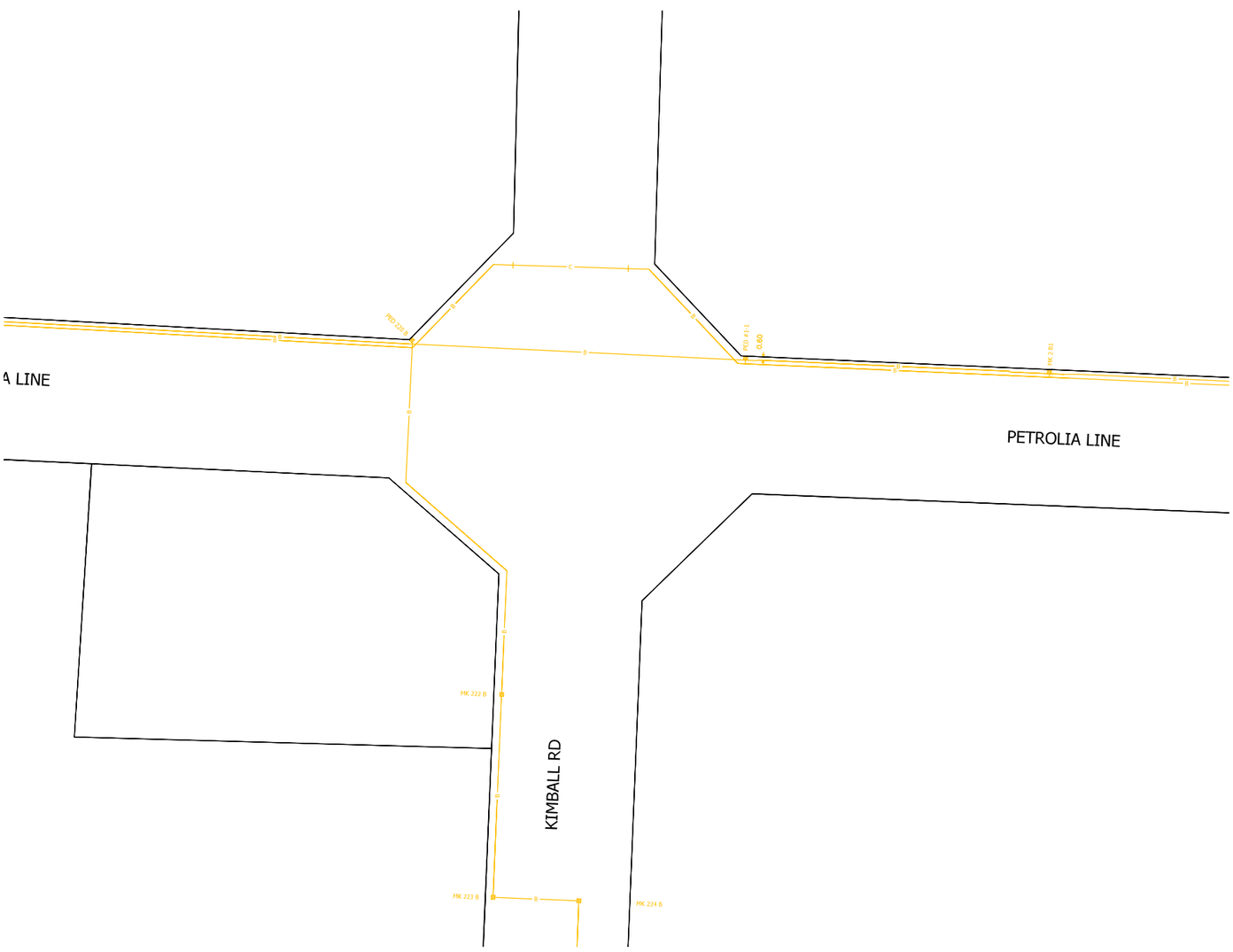
  _____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _____

  _____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):_____

  _____

Name: Intersection
Start Date: 2023/06/20

Area: 515950.18sq. m



Existing and/or proposed Bell Canada underground plant are indicated on the attached plan
Not for PUCC approval - Mark up only
Caution - Bell has plant around proposed area. Tie-in measurements are a guideline only and physical verification may be required by applicant to determine the true separation between plant. Call for locates. Maintain min 0.6m horizontal clearance and min 0.3m vertical clearance when crossing Bell. Within 1m of Bell and when crossing Bell, hand dig.

PROCEDURES TO FOLLOW:

1. Request locates prior to construction 1-800-400-2255
2. If exact location and depth are critical – test pits are recommended
3. Bell Canada plant location information is approximate
4. If the location of your proposed design changes, it will be necessary to re-apply
5. Permits expire six (6) months from approval date

Signature: **Magdaline Abel** **Date:** 2023-06-27

PLEASE NOTE:

THIS DRAWING IS FOR MARKUP ONLY - NOT FOR PERMIT TO PROCEED CONSTRUCTION. BELL CANADA PLANT LOCATION IS APPROXIMATE.

BELL CANADA

Municipal Operations Department
Floor 5 Blue, 100 Borough Drive
Scarborough, Ontario, M1P 4W2
Ph. 416-296-6929

Bell Canada Legend Info

C — Existing Conduit
B — Existing Buried Cable
☒ Existing Pedestal

CALL FOR LOCATES
1-800-400-2255

HAND DIG

HAND DIG
when crossing Bell plant

Maintain clearance of 0.6m

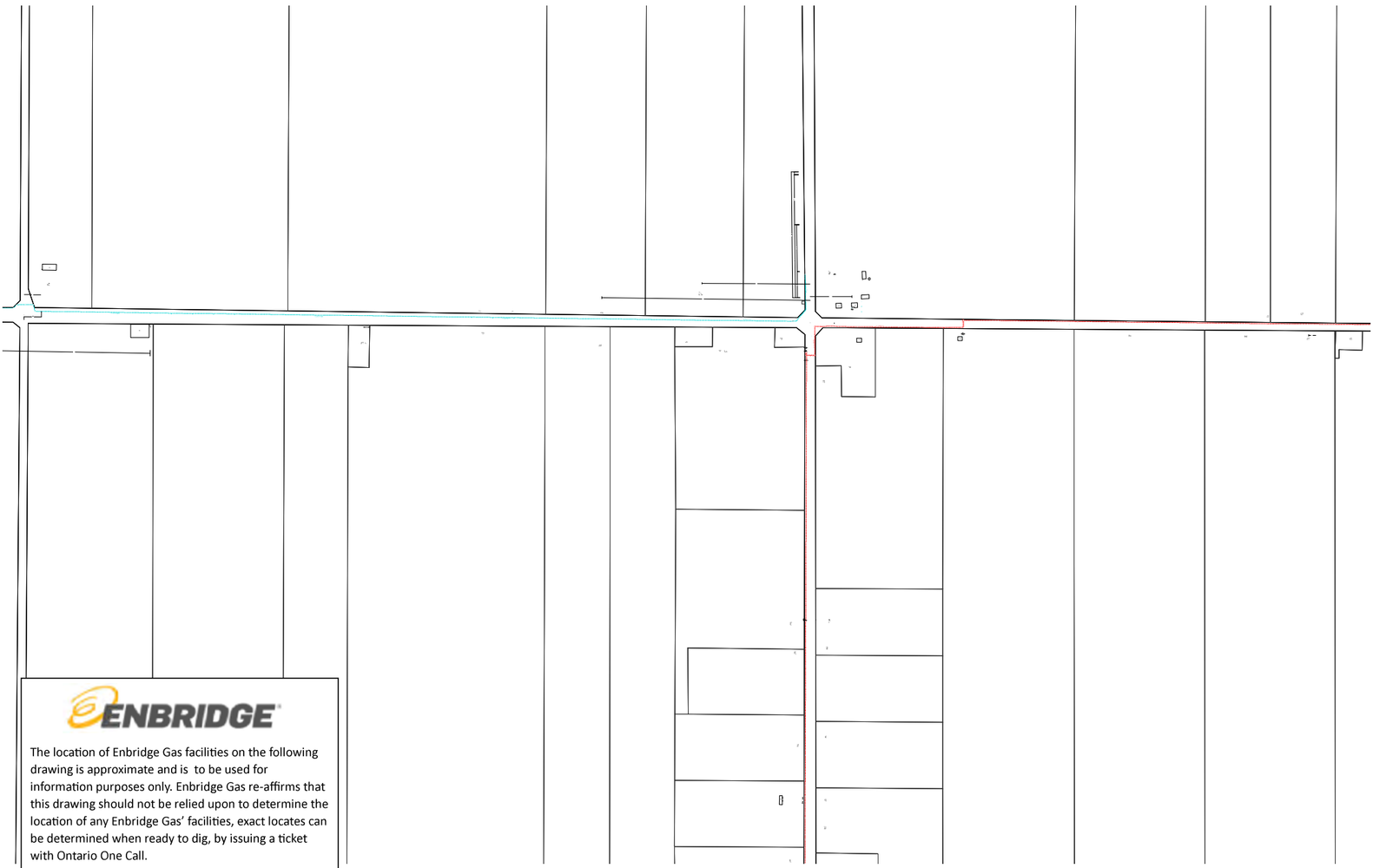
If further details required
You must acquire Locates or Test Pits

telecon design
7777 WESTON RD
VAUGHAN, ONT, CANADA L4L 0G9
TEL: (905) 569-2882

Dwg # - 1

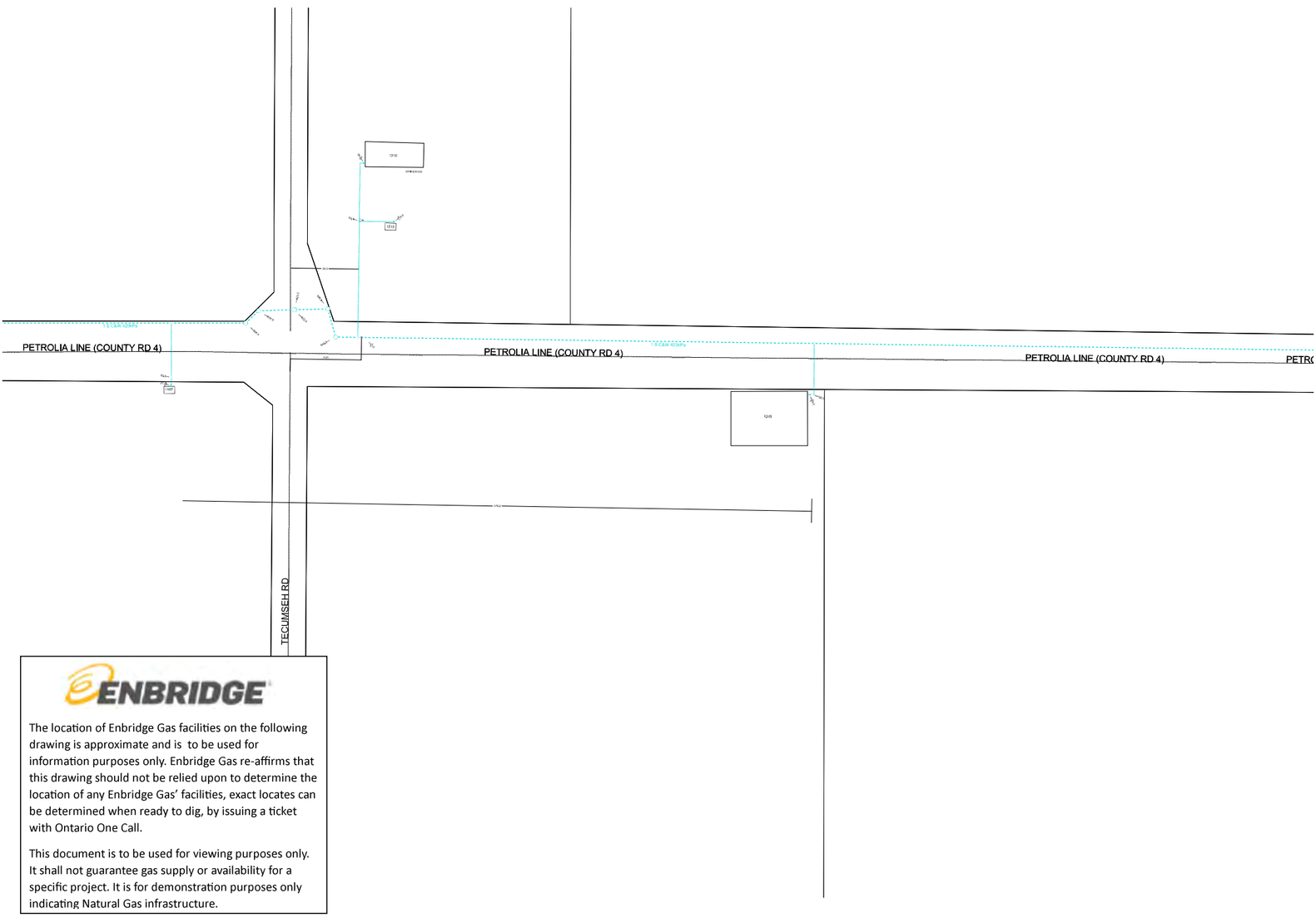
Mark Up # - 64312

CAD Tech - BIEN HUYNH



The location of Enbridge Gas facilities on the following drawing is approximate and is to be used for information purposes only. Enbridge Gas re-affirms that this drawing should not be relied upon to determine the location of any Enbridge Gas' facilities, exact locates can be determined when ready to dig, by issuing a ticket with Ontario One Call.

This document is to be used for viewing purposes only. It shall not guarantee gas supply or availability for a specific project. It is for demonstration purposes only indicating Natural Gas infrastructure.



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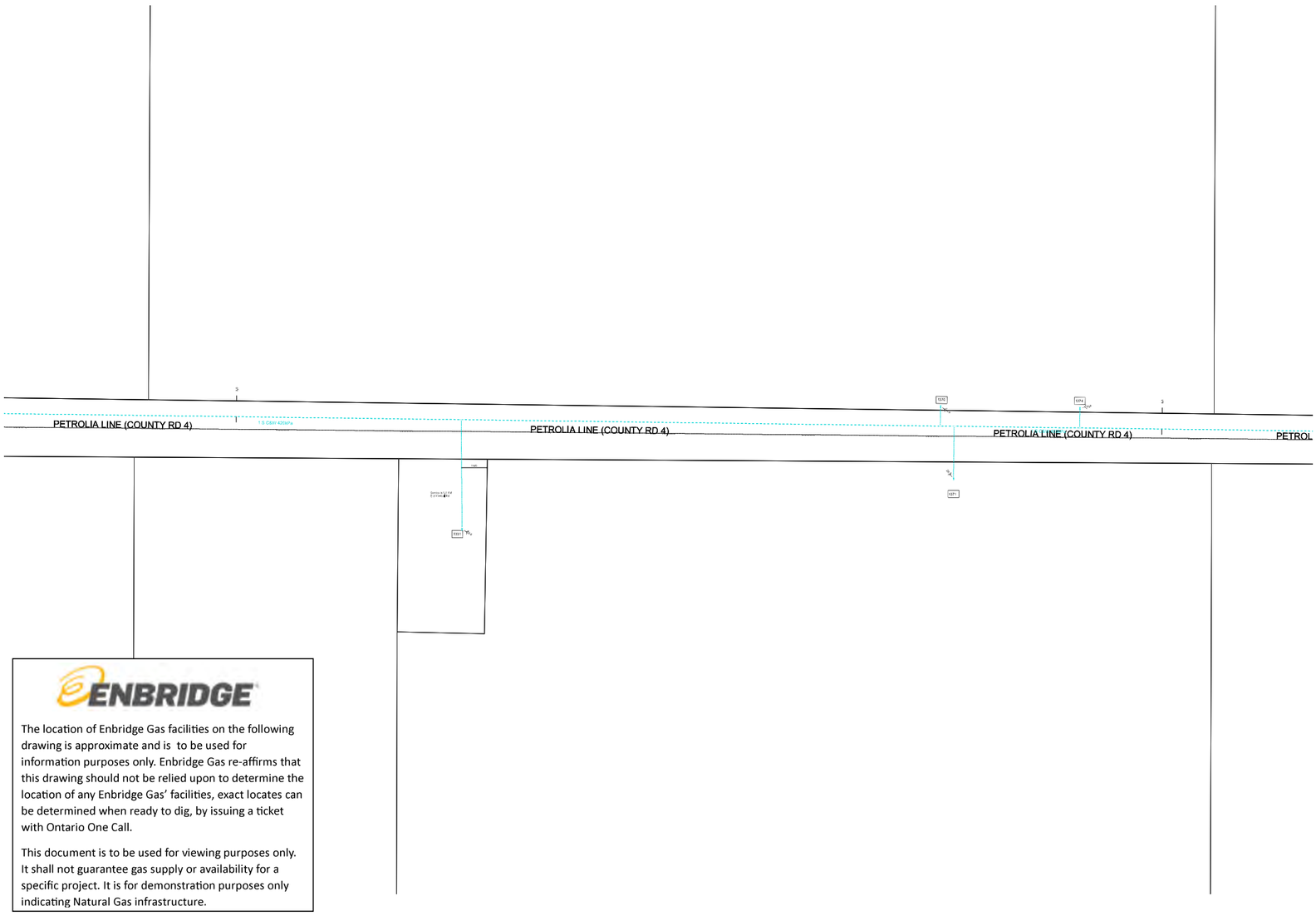

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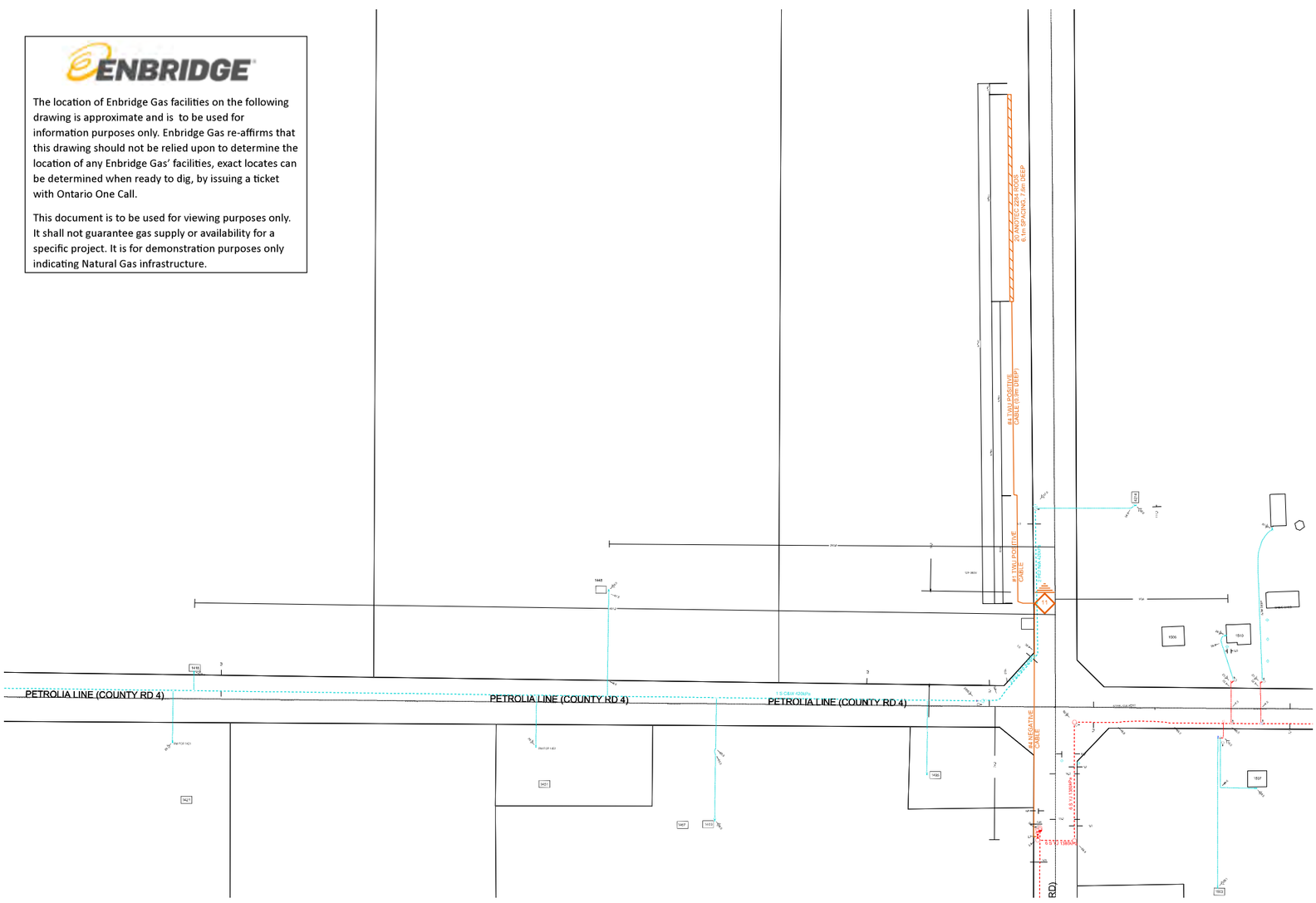

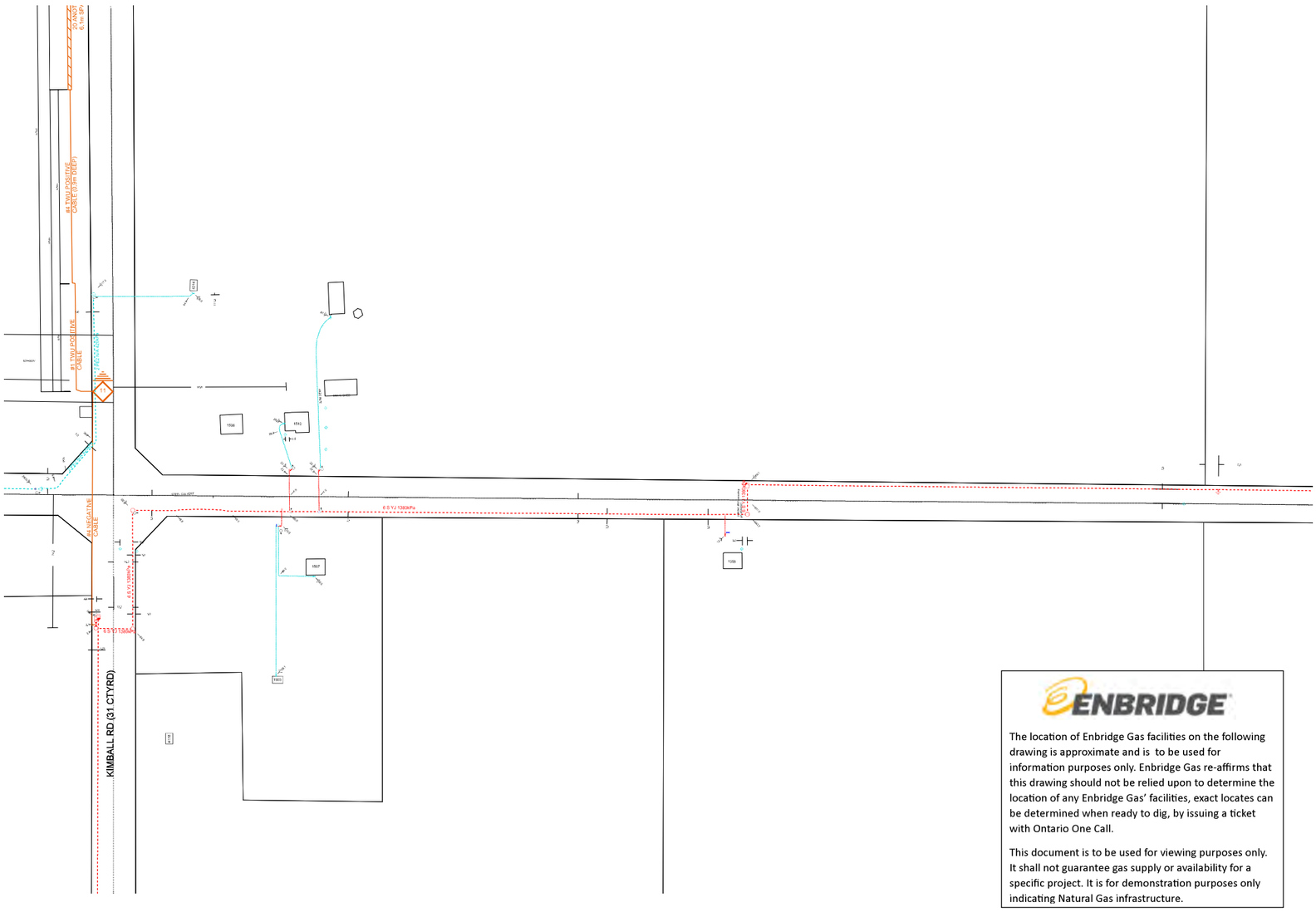

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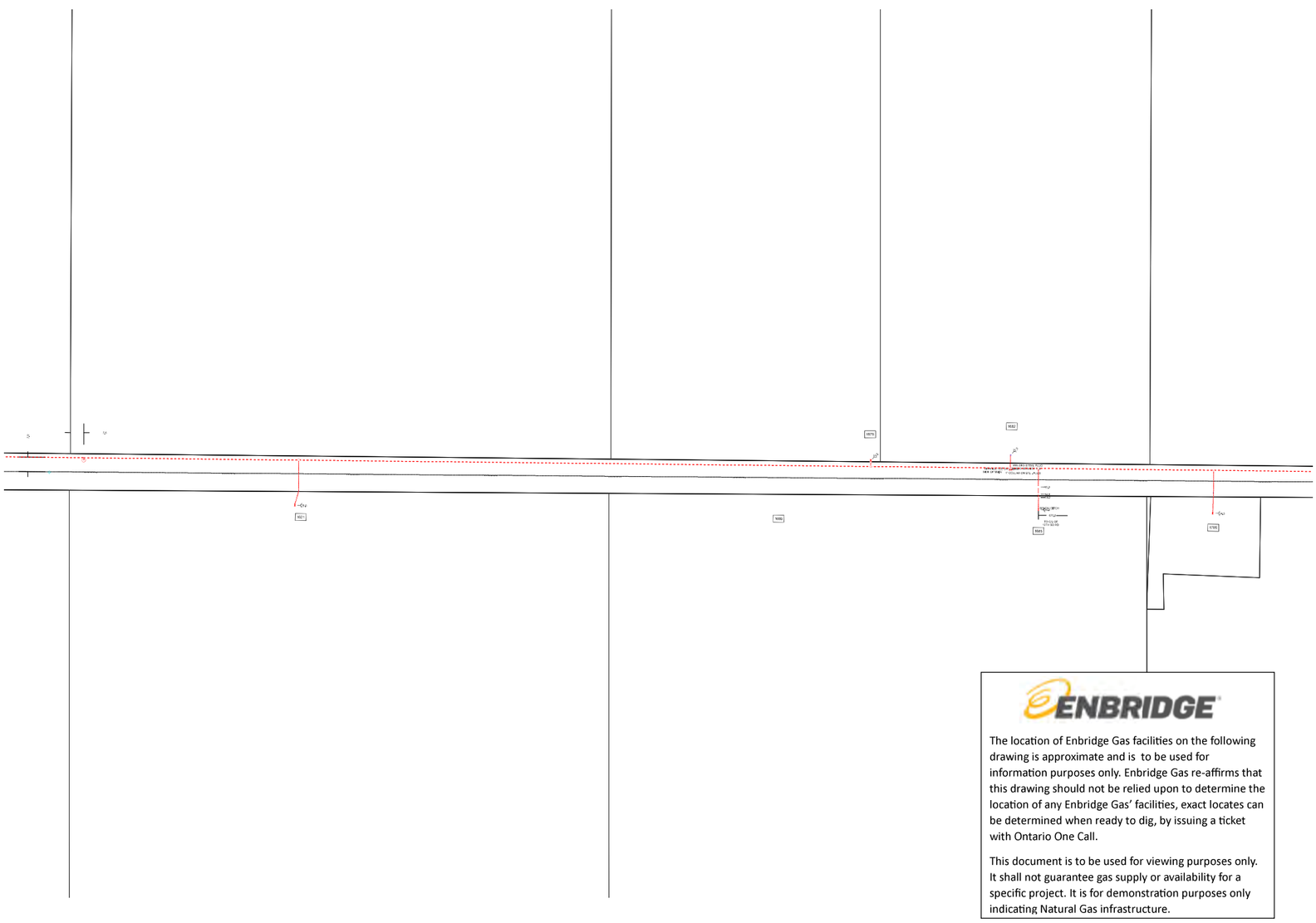

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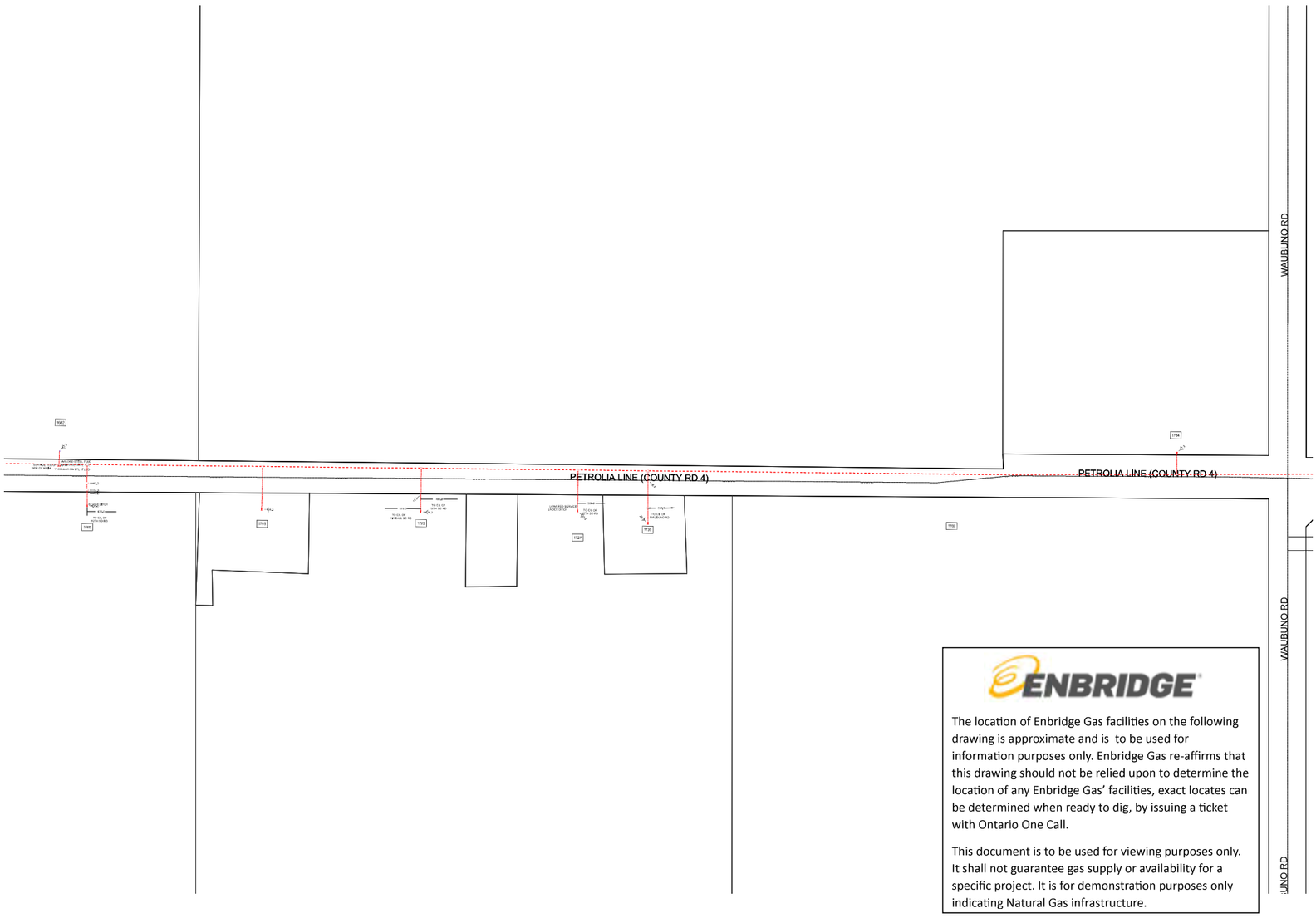

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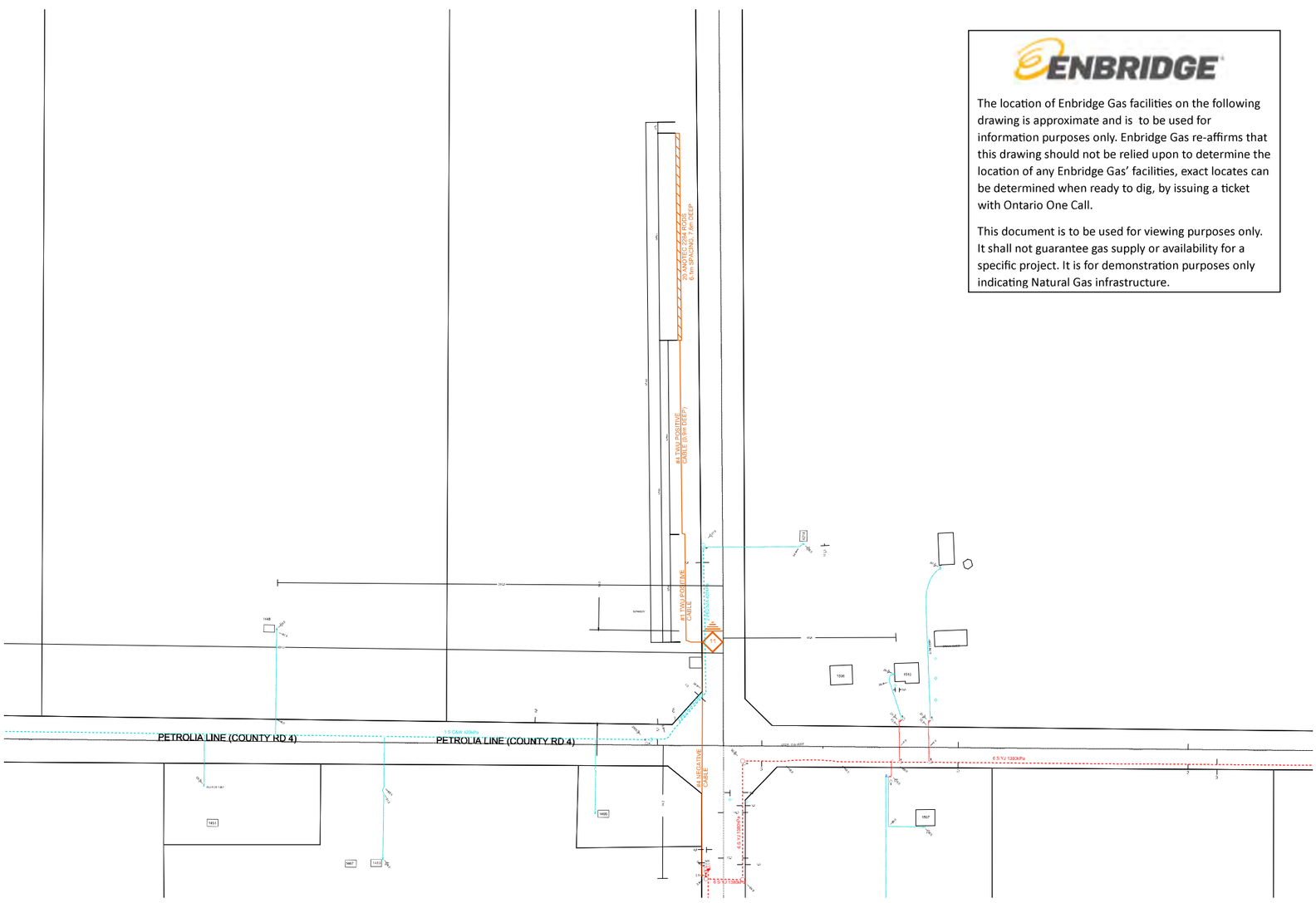

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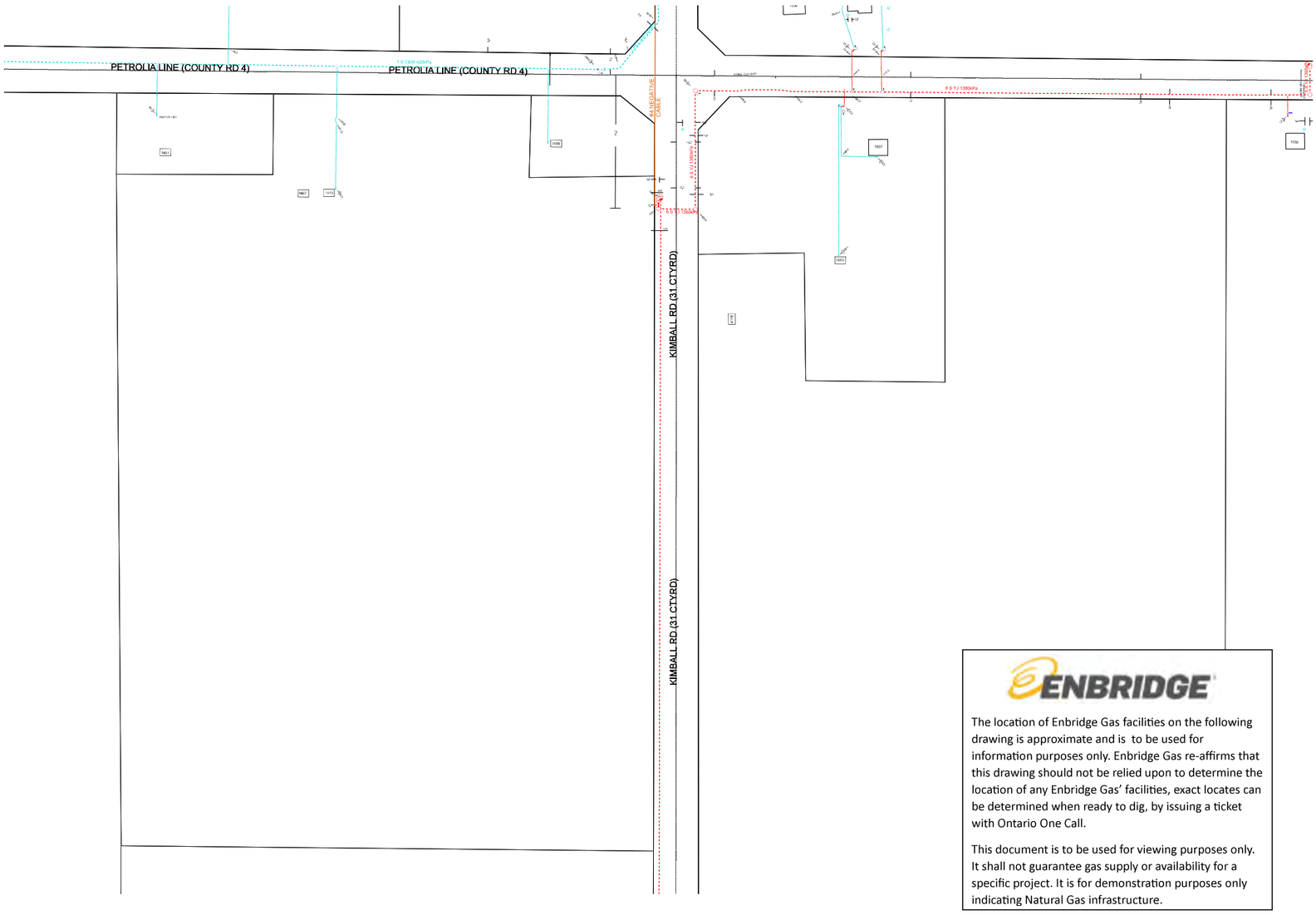
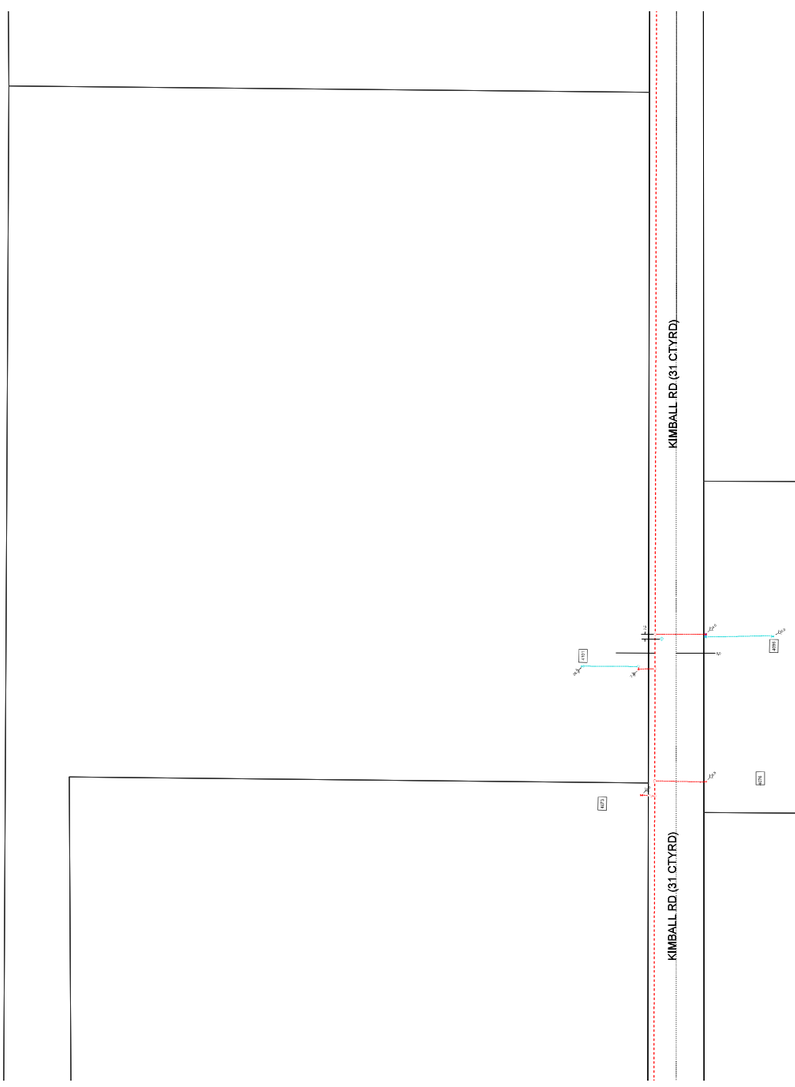


ENBRIDGE

The location of Enbridge Gas facilities on the following drawing is approximate and is to be used for information purposes only. Enbridge Gas re-affirms that this drawing should not be relied upon to determine the location of any Enbridge Gas' facilities, exact locates can be determined when ready to dig, by issuing a ticket with Ontario One Call.

This document is to be used for viewing purposes only. It shall not guarantee gas supply or availability for a specific project. It is for demonstration purposes only indicating Natural Gas infrastructure.



ENBRIDGE

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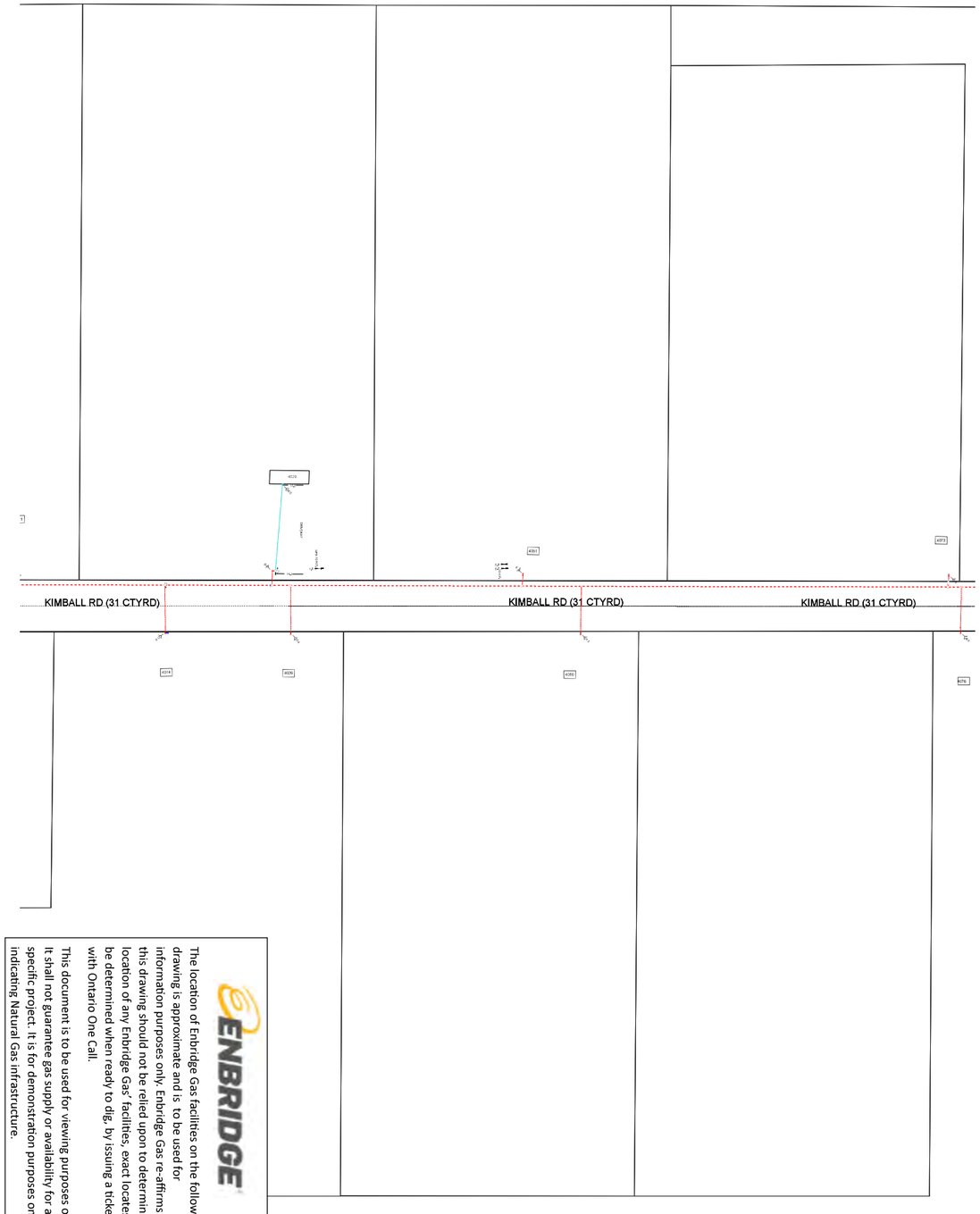
This document is to be used for viewing purposes only. It shall not guarantee gas supply or availability for a specific project. It is for demonstration purposes only indicating Natural Gas infrastructure.

Symbology Legend

- Dist Segment Line - In-service
- Trans Pipe Segment Line - In-service
- High Pressure Segment Line - In-service
- Dist Segment Line - Proposed
- Srv Segment Line - In-service
- End Fitting
- Fitting - Reducer
- Fitting - Transition
- Fitting - Elbow
- Branch Fitting - Tee
- EF — Fitting - Excess Flow Valve
- 123 — Structure/Address
- Tapping CVT
- Emergency Valve - Activated
- Valve- Deactivated
- Valve - Activated
- Service Connector
- Test Box
- Station
- Chainage Start
- Chainage End
- Chainage Point



G-tel Engineering Inc.

1150 Frances St 2nd Floor
London, Ontario
N5W 5N5

Planning Request For: Enbridge Planning - Sarnia Region (ENPSAR),

---

Ticket #: 20232320113

Issued By: **G-tel Lookup Dept.**

Date: 06/09/2023

Time: 17:01:26

Requester: WASIM ALDABBAGH

Requester's Email: wasim.aldabbagh@bteng.ca

Requesting Company: BT ENGINEERING INC.

Fax #:

Ticket Request Type: **Design And Planning**

Location: 1469 PETROLIA LINE (COUNTY ROAD 4)

Locate Details:

I WOULD LIKE TO GET THE LOCATION OF UTILITIES IN THE SELECTED AREA OF THE INTERSECTION OF COUNTY ROAD 4 AND COUNTY ROAD 31 (PETROLIA LINE AND KIMBALL ROAD). THE INTERSECTION IS CURRENTLY UNDERGOING AN ENVIRONMENTAL

Remarks:

I WOULD LIKE TO GET THE LOCATION OF UTILITIES IN THE SELECTED AREA OF THE INTERSECTION OF COUNTY ROAD 4 AND COUNTY ROAD 31 (PETROLIA LINE AND KIMBALL ROAD). THE INTERSECTION IS CURRENTLY UNDERGOING AN ENVIRONMENTAL ASSESSMENT, AND WE ARE IN THE PROCESS OF PREPARING A PRELIMINARY DESIGN.

Comments To Excavator:

If you have any questions or concerns regarding your planning request, please call G-tel Engineering at 1-866-692-0208, dial 0 and request the lookup department.

CAUTION: The details provided are to be used solely for planning your design and not for excavation. You must call Ontario One Call at 1-800-400-2255 at least 1 week prior to excavation to obtain a physical locate.

See disclaimer document for further details.

ENBRIDGE
Life Takes Energy

Planning Information Request Disclaimer

The drawing(s) that were forwarded to you are to assist you in reviewing your project and are not to be altered or used for any other purpose other than for reference only.

While all efforts have been made to construct the main/service as drawn, the exact location, configuration and/or materials used may have been altered prior to installation. Enbridge Gas Inc. affirms that the pipeline locations indicated for excavation should not be relied upon for construction purposes as being exact.

Should you feel that there may be a conflict with Enbridge Gas' gas main(s), please email the contact below for the area where work is to proceed. A field supervisor will contact you as soon as possible.

Windsor-Chatham *(ENPWIN, ENPCHT)*	WindServ@uniongas.com
London-Sarnia *(ENPLDN, ENPSAR)*	SarnServ@uniongas.com
Waterloo-Brantford *(ENPWAT, ENPBRA)*	WateServ@uniongas.com
Hamilton *(ENPHAM)*	HamiServ@uniongas.com
Halton *(ENPHAL)*	HaltServ@uniongas.com
Kingston *(ENPEST)*	KingServ@uniongas.com
Northeast (Sudbury, North Bay, Sault Ste. Marie, Orillia) *(ENPNTH)*	SudbServ@uniongas.com
Northwest (Thunder Bay, Timmins and Satellites)*(ENPWST)*	ThunServ@uniongas.com

Enbridge Gas Inc. assumes no liability to third parties for the incorrect use of these maps.

Please note that the attached maps do not include Enbridge Gas Storage and Transmission line information. To obtain information regarding those lines, please contact Enbridge Gas Storage and Transmission directly at: Stacey Smith (**Stacey.Smith@enbridge.com**) and Janice Langstaff (**Janice.Langstaff@enbridge.com**)

By using this service it is understood that third party locates must be obtained through **Ontario One Call (OntarioOneCall.ca** or **1-800-400-2255)** to confirm all pipeline locations prior to excavation.

Plant Damage Prevention Department

Enbridge Gas Inc.

How to Obtain Authorization and Complete Your Activity Safely

Activities that occur near pipelines without appropriate notification or consent can cause catastrophic damage and pose a risk to public safety.

This is why it is important for third parties – including landowners, contractors, utility companies, municipalities, or anyone who is proposing to conduct any ground disturbance activity for any purpose, to understand how to conduct their activities safely.

Safety is a top priority for Plains Midstream Canada (PMC) so we work with third parties to ensure they understand the process of placing a One-Call when their proposed activity will disturb the ground. We will then work with the third party to obtain a written agreement when required. PMC will assess the proposed activity to ensure it is completed in a safe manner and will not pose a risk of damage to the pipeline. The consent is provided in a written form, and contains conditions that outline how PMC will protect our pipelines from the activity taking place.

What is ground disturbance?

Any work, operation or activity on or under the existing surface resulting in a disturbance or displacement of the soil of ground cover.

When to request an agreement

The following activities require a written agreement from PMC:

- Facility construction or ground disturbance across, on, along or under the pipeline right-of-way (ROW)
- Ground disturbance within 30 metres of the centreline of pipeline
- Operation of a vehicle or mobile equipment across the pipeline or within the ROW, outside the travelled portion of a highway or public road, excluding normal agricultural vehicles

If you are uncertain if your vehicle requires a written agreement to cross the pipeline please contact *crossingrequests@plainsmidstream.com*

PLAINS MIDSTREAM CANADA

CROSSINGS, PROXIMITIES AND ENCROACHMENT

PMC defines "Non-Routine Projects" as any of the following criteria:

- A request where parallel construction is planned within 5 metres of a PMC ROW for an area greater than 500 metres
- Construction activity will exceed 90 days
- Where the same type of activity is being requested in more than five geographical locations
- Activity that requires the potential re-location of the PMC pipeline
- Activities such as mining, quarrying, etc.

PMC will work closely with those who are planning a Non-Routine Project to mitigate potential risks and hazards in order to expedite consent and avoid conflicts. Collaboration prior to the commencement of the project ensures the requestor has the information required to work safely.

**If your project does not meet the above criteria it is considered to be a routine project. Please follow the crossing requests application process.*

Crossing requests application process:

If you require a written agreement from PMC, the following process should be followed:

1. The applicant must visit *www.plainsmidstream.com* to obtain the applicable application form and review the Technical Guidelines for Construction near Pipelines.
2. The applicant prepares and submits the application documents to PMC via email at *crossingrequests@plainsmidstream.com*.
3. The application information is reviewed and assessed, and conditions for safe work are identified.*
4. PMC's Damage Prevention representative processes the application and sends the Agreement to the applicant for signature.
5. The applicant signs the Agreement and returns to PMC for execution.
6. A fully executed Agreement is sent to the applicant.
7. The applicant notifies PMC a minimum of three (3) working days prior to the start of work by calling the provincial One-Call system or visiting clickbeforeyoudig.com.
8. The PMC inspector arranges a site meeting, locates the pipeline and inspects the construction or ground disturbance activities.
9. If required, the PMC inspector will issue a Locate and Stakeout Form and a Ground Disturbance Form.

**No activity having the potential to damage a pipeline shall proceed until such time as the continued safe operation of the pipeline can be assured by PMC.*

Agricultural activity not requiring an agreement:

The operation of an agricultural vehicle or mobile equipment across the pipeline does not require a written agreement if the following conditions are met:

- The loaded axle weight and tire pressures of the vehicle or mobile equipment are within the manufacturer's approved limited and operating guidelines
- The point of crossing has not been the subject of a notification from the pipeline company that crossing at that location could impair the pipeline's safety or security

This applies to vehicles or mobile equipment used for agricultural activities in the production of crops and the raising of animals and includes pasturing and cultivation activities such as tillage, plowing, disking and harrowing.

Contact PMC to be sure

If you are unsure whether agricultural activity could jeopardize the safe and secure operation of the pipeline, please contact *crossingrequests@plainsmidstream.com* before proceeding with the activity. PMC will assist you with any information and also ensure you receive consent or agreement in a timely manner to not jeopardize your project timing.

If you have any questions about any of the information on this or any other PMC fact sheet, please reach out to us at: *publicawareness@plainsmidstream.com*

Plains Midstream Canada
Suite 1400, 607 - 8 Avenue S.W. Calgary, Alberta T2P 0A7
Telephone: 403.298.2100 Toll Free: 1.866.343.5182
www.plainsmidstream.com

24 HR EMERGENCY NUMBER:
1.866.875.2554

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Imagery provided by Valtus.com
Base features provided by multiple vendors and sources.
Please contact Plains Midstream Canada for more detailed information.

Printed from PALM

Legend

- export - 2023-06-08T131744 - Occ Dig Area

PMC Active Pipeline - Simple View - By Commodity

- HVP-NGL
- OTHER

PMC Inactive Pipeline - Simple View

GIS Plains Asset Location Map

0.2 0.1 0 0.2 0.4 0.6 0.8 km

Coordinate System:
WGS 1984 Web Mercator Auxiliary Sphere

N

Plains Midstream Canada
1400 - 607 - 8th Ave SW
Calgary, AB, T2P 0A7
+1 (403) 298-2100

PLAINS MIDSTREAM CANADA

CREATE	PALM
DATE	08 Jun 2023

Appendix C

Petrolia Line and Kimball Road Review Memorandum

509 Talbot Street
London, ON N6A 2S5
519-672-2222

TECHNICAL MEMORANDUM

TO:	File	**DATE:**	June 13, 2023
FROM:	Stephen Brook, P.Eng.	**PROJECT #:**	23-018
PROJECT:	Lambton County, County Roads 4/31 Intersection Improvements EA		
SUBJECT:	Petrolia Line and Kimball Road Review		

Background

BTE was retained by Lambton County to review the intersection of Petrolia Line (County Road 4) and Kimball Road (County Road 31), located south of Sarnia between Corunna and Petrolia, shown in **Figure 1.** The objective of the review is to identify recommended measures to improve traffic operations and address historic safety concerns at the intersection of these two rural arterial roads.

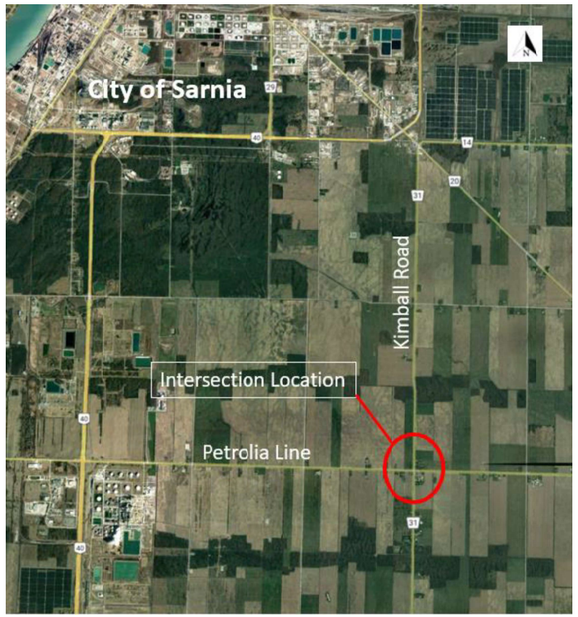


Figure 1: Intersection Location

Existing Conditions

A site visit, to review the existing intersection, was completed by BTE on Saturday May 6, 2023. The posted speed limit 80 km/h on Kimball Road is and 90 km/h on Petrolia Line and is reduced to 70 km/h within approximately 300 m of the intersection. The existing intersection has single-lane approaches (left/through/right) on all 4 legs of the intersection, as shown in **Figure 2**. Kimball Road is controlled with stop signs. The adjacent stop locations on Kimball Road are the traffic signals at Plank Road, 5.4 km to the north and 8.1 km to the south at Courtright Line. Sightlines are unrestricted for motorists stopped at the intersection; however, existing trees in the northeast corner of the intersection and trucks parked in the southeast quadrant can limit the visibility of approaching Kimball Road traffic for westbound motorists on Petrolia Line.

Figure 2: Existing Intersection

Oversized stop signs with red and white tiger tails for extra visibility, stop ahead signs and Petrolia Line 300m signs are all in place to identify the intersection for northbound and southbound Kimball Road motorists. To provide additional warning for the stop control, rumble strips have been placed on Kimball Road approaching the intersection and a flashing beacon has been placed overhead in the centre of the intersection visible on all approaches, as shown in **Photo 1**.

Photo 1: Existing Intersection (Looking North)

Kimball Road is signed as No Trucks (Except Local Deliveries); however, Kimball Road (north and south of the intersection) and Petrolia Line (west of the intersection) are designated as Oversized Load Corridors. To avoid constraints for any oversized vehicles, existing hydro transmission lines crossing the roadway transition between aerial and underground in the northeast, northwest and southwest quadrants of the intersection.

The McGillvary Municipal Drain flows westbound on the south side of the intersection crossing Petrolia Line, shown in **Photo 2**, and flows north along the east side of Kimball Road. It is our understanding that plans are in place to enclose the drain adjacent to Kimball Road to better accommodate the oversized loads.

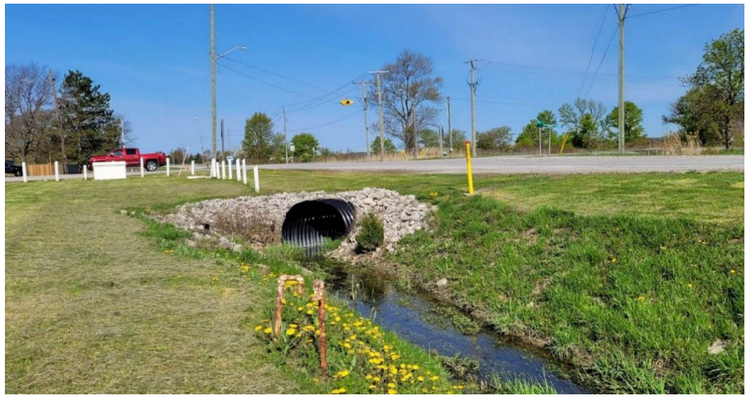


Photo 2: Existing McGillvary Municipal Drain

Subject: Petrolia Line and Kimball Road Review
Project: BTE 23-018, Lambton County, County Roads 4/31 Intersection Improvements EA
Date: June 13, 2023

Collision History

Safety at the intersection has been identified as a major concern. From 2017 to 2022, a total of 13 collisions were reported at the intersection, as shown in **Figure 3**, which resulted in 2 fatalities and approximately one third of the collisions involved were either an injury or a fatality.

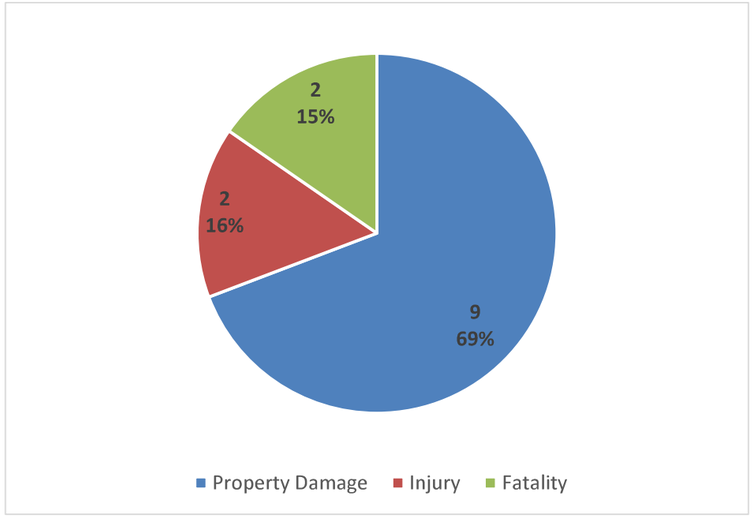


Figure 3: Collision Classification (2017-2022)

The majority of those collisions were right angled crashes, as shown in **Figure 4,** which contributes to the seriousness of the injuries that were sustained. Almost all of the crashes (92%), shown in **Figure 4 and in Figure 5**, were related to motorists not stopping on Kimball Road by either failing to yield the right-of-way to traffic on Petrolia Line or rear-ending a vehicle that had stopped at the intersection.

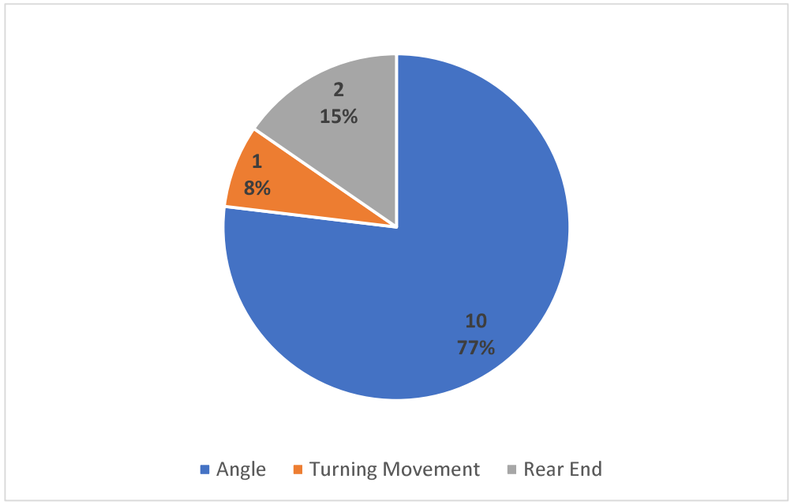


Figure 4: Collision Type (2017-2022)

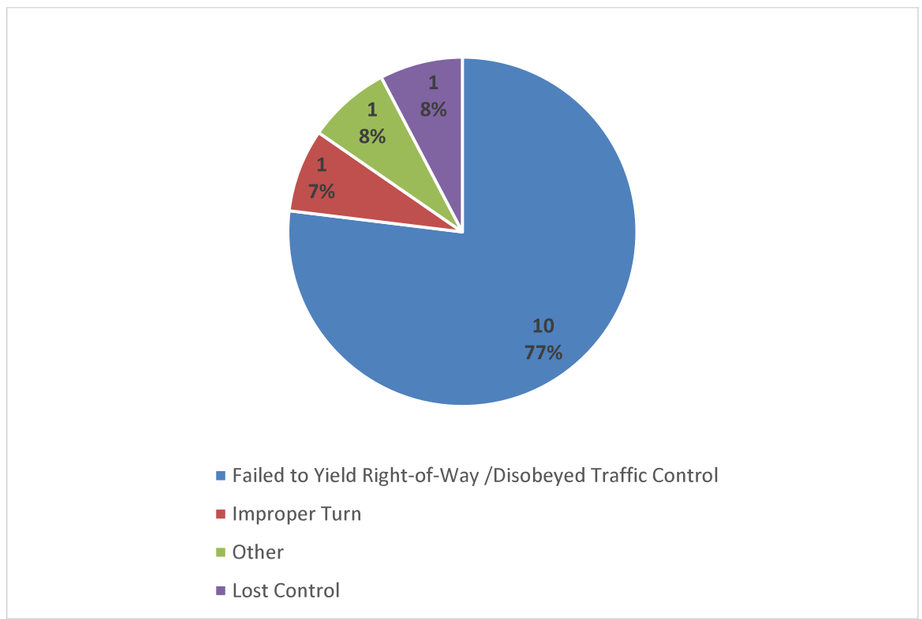


Figure 5: Driver Actions (2017-2022)

The collision data that are available only include reported crashes. There is no record of unreported collisions or near misses at the intersection. During a site visit, some Kimball Road motorists were observed who slowed as they approached the intersection but continued through without stopping .

Traffic Demands and Operations

An updated turning movement count, attached in **Appendix A**, was recorded at the intersection on Tuesday May 9, 2023. AM and PM peak hour traffic volumes are presented in **Figure 6**. Kimball Road was observed to carry marginally higher traffic volumes than Petrolia Line. The capacity of the existing intersection was analyzed using Synchro 11 as summarized in **Table 1**: Existing Intersection Operations. Copies of the analysis reports are attached in **Appendix B**. The intersection currently operates within its capacity with a lower level of service (LOS B/C) during the pm peak hour.

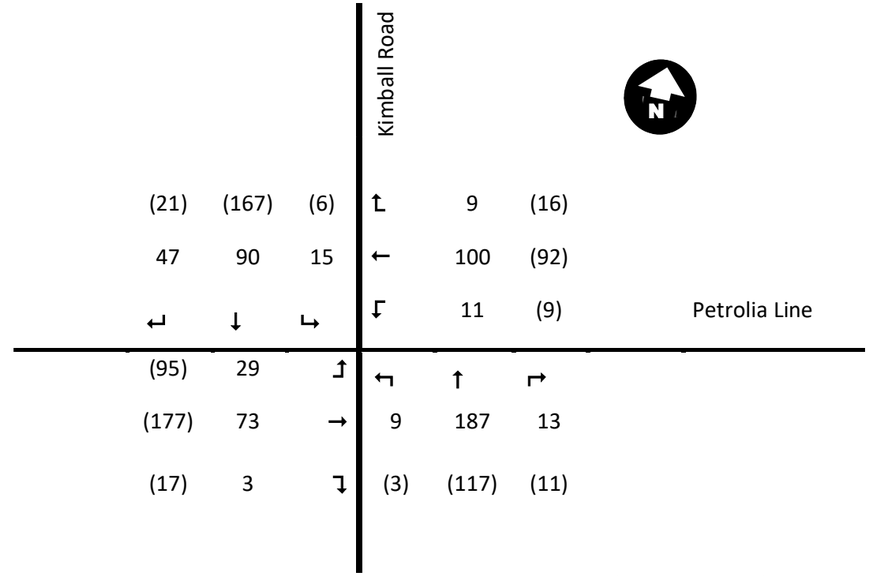


Figure 6: Existing Traffic Demands - AM Peak Hour (PM Peak Hour)

Table 1: Existing Intersection Operations

Intersection	Approach	AM Peak Hour				PM Peak Hour			
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)
CR 4 and CR 31	EB	0.02	2.3	A	0.5	0.07	2.9	A	1.7
	WB	0.01	0.7	A	0.2	0.01	0.7	A	0.2
	NB	0.38	14.7	B	13.5	0.34	18.0	C	11.3
	SB	0.26	9.8	B	8.0	0.49	21.1	C	20.1
	Overall		**9.1**	**A**			**10.1**	**B**	

The historical traffic growth on the adjacent section of Highway 40, presented in **Figure 7,** is representative of area traffic growth. Over the 20-year period from 1999 to 2019, the Average Annual Daily Traffic (AADT) on Highway 40 increased by approximately 0.8 % annually. A higher traffic growth (approximately 2% annually) was reported during the summer months.

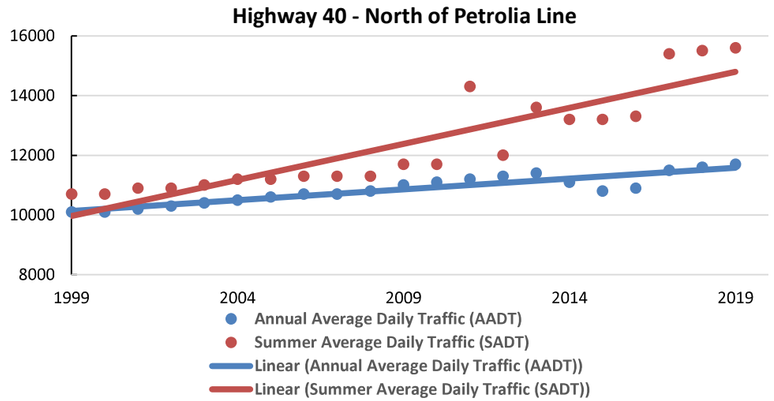


Figure 7: Historical Area Traffic Growth

MTO identifies the traffic pattern on Highway 40 to be Commuter/Tourist/Recreation. Petrolia Line and Kimball Road should typically be less likely to attract tourist traffic, therefore, the growth in average annual daily traffic is assumed to be more representative of the traffic at the intersection. On that basis, as a worst-case scenario, a 1% annual growth in traffic at the intersection has been assumed. The resulting 10-year (2033) traffic projection is summarized in **Figure 8**:.

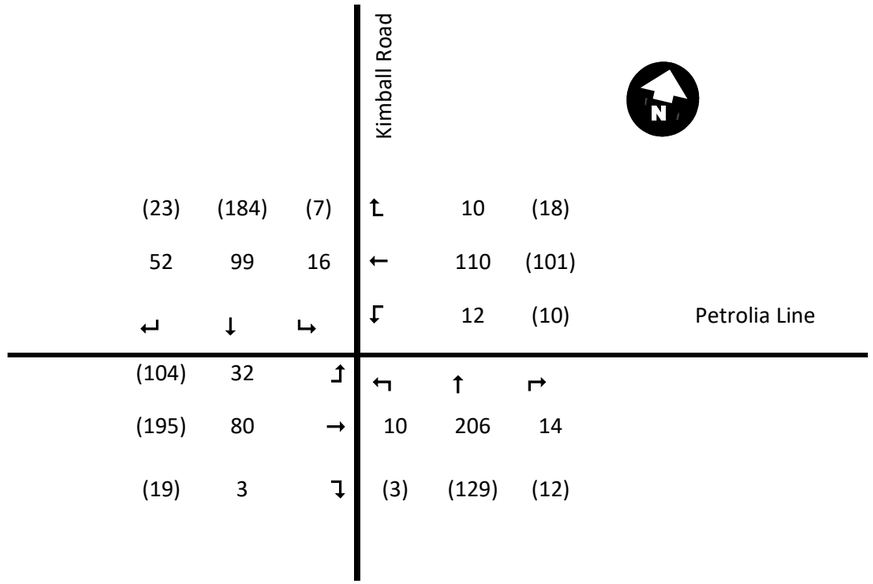


Figure 8: Projected 2033 Traffic Demands – AM Peak Hour (PM Peak Hour)

The predicted operation of the intersection in 2033 was analyzed using Synchro 11, as summarized in **Table 2**. Copies of the analysis reports are attached in **Appendix B**. Without improvements, by 2033 traffic operations on Kimball Road are expected to deteriorate to level of service D during the PM peak hour.

Table 2: 2033 Projected Peak Hour Traffic Operations (Existing Geometry)

Intersection	Approach	AM Peak Hour				PM Peak Hour			
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)
CR 4 and CR 31	EB	0.02	2.3	A	0.6	0.08	3.0	A	1.9
	WB	0.01	0.7	A	0.2	0.01	0.7	A	0.2
	NB	0.44	14.7	C	16.9	0.41	21.0	C	15.0
	SB	0.30	9.8	B	9.7	0.58	26.1	D	27.3
	Overall		**9.8**	**A**			**12.0**	**B**	

Improvement Alternatives

Potential improvement alternatives include:

1) Provision of an All-way Stop;
2) Installation of Traffic Signals;
3) Provision of a Roundabout; or
4) Do-nothing.

Alternative 1 - Provision of an All-Way Stop

A traffic volume warrant to consider the provision of an All-Way Stop on a rural arterial road is described in the Ontario Traffic Manual Book 5 to be a minimum of 375 vehicles/hour for each of the highest 8 hours of the day. Based on the traffic volumes recorded at the intersection on May 9, 2023, the intersection is approaching the warrant to consider provision of an all-way stop but the warrant is not fully satisfied. The current volumes represent 96% of the minimum vehicle warrant. With the current rate of area traffic growth, it is anticipated that it could be 10 years or more (2032) before off-peak traffic volumes increase sufficiently to consider all-way stop control.

The provision of an all-way stop will typically result in an increase in vehicle collisions. Most commonly, it is the number of rear-end collisions that typically increase with a lower percentage of rear-end collisions resulting in injury. While this is identified as an intersection improvement alternative, it should be recognized that the safety concerns at this location could potentially be exacerbated with the provision of an all-way stop. The most common cause of the reported collisions is the failure of northbound and southbound motorists approaching the stop signs to yield to crossing traffic. An all-way stop would create a similar condition for east/west traffic on Petrolia Line.

Alternative 2 - Installation of Traffic Signals

The provision of traffic signals at the intersection would require the widening of Petrolia Line and Kimball Road to construct left-turn lanes on each approach. The warrants/justifications for the installation of traffic signals, attached in **Appendix C**, were examined in accordance with OTM Book 12. The existing traffic demands do not meet any of the warrants for installing traffic signals, summarized as follow:

1. Minimum Vehicle Volume 86%
2. Delay to Cross Traffic 45%
3. Combination No
4. 4-Hour Volume 48%
5. Collision Experience 33%

The provision of unwarranted traffic signals will typically result in increased traffic delays and vehicle emissions. Right angled collisions should be reduced with the installation of traffic signals, but the overall safety of an intersection will commonly be adversely affected. Traffic signals are normally not installed unless one of the warrants is fully satisfied. Based on the historical growth rate in area traffic, the installation of traffic signals is unlikely to be warranted in the next 20 years.

Subject: Petrolia Line and Kimball Road Review
Project: BTE 23-018, Lambton County, County Roads 4/31 Intersection Improvements EA
Date: June 13, 2023

Alternative 3 - Provision of a Roundabout

The use of roundabouts throughout North America is continuing to increase. Provision of a single lane roundabout would improve the safety of the intersection while improving traffic operations. The potential for high-speed right-angled crashes that have resulted in injuries and fatalities would be virtually eliminated.

The geometry of a roundabout can be designed to accommodate oversized vehicles.

Alternative 4 - Do Nothing

The environmental assessment process requires Do Nothing to be considered as an alternative for any project. This will not address the safety concerns at the intersection which have resulted in 2 fatalities and other injuries in the last 5 years.

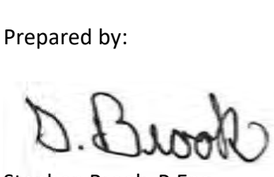
Conclusions and Recommendations

The collision history at the intersection of Petrolia Line and Kimball Road which includes 2 fatalities and at least 3 individuals injured over a 5-year period demonstrates a major safety deficiency. Countermeasures including enhanced signage, the provision of transverse rumble strips on Kimball Road in advance of the intersection and an overhead flashing beacon in the centre of the intersection have been unsuccessful in addressing these concerns.

From a traffic perspective, the provision of a roundabout is recommended to address the existing safety concerns and improve traffic operations at the intersection.
Based on historical area traffic growth, the traffic demands will not warrant the installation of traffic signals for 20 or more years. The provision of unwarranted traffic signals is not recommended. Unwarranted traffic signals will increase delays and will adversely impact the overall safety of the intersection.

The provision of an all-way stop was considered and is not recommended. The type of collisions indicates that some drivers on Kimball Road are not expecting to be required to stop at Petrolia Line. An all-way stop can be expected to exacerbate the existing safety concerns at the intersection by adding an unexpected stop for Petrolia Line traffic.

Prepared by:



Stephen Brook, P.Eng.

Attachments: Appendix A - Turning Movement Count
Appendix B - Capacity Analysis Reports
Appendix C - Warrants/Justifications for the Installation of Traffic Signals

Appendix A

Turning Movement Count

BT ENGINEERING

Petrolia Line @ Kimball Rd

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:00:00
To: 8:00:00

Municipality: Lambton
Site #: 0000000001
Intersection: Petrolia Line & Kimball Rd
TFR File #: 1
Count date: 9-May-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

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

Major Road: Petrolia Line runs W/E

North Leg Total: 377
North Entering: 152
North Peds: 0
Peds Cross: ⋈

Heavys	3	7	3	13
Trucks	1	3	0	4
Cars	43	80	12	135
Totals	47	90	15	

Heavys	14
Trucks	7
Cars	204
Totals	225

East Leg Total: 221
East Entering: 120
East Peds: 0
Peds Cross: ⧖

Kimball Rd (CR 31)

Heavys	Trucks	Cars	Totals
14	1	141	156

Petrolia Line (CR 4)

Heavys	Trucks	Cars	Totals
5	2	22	29
4	2	67	73
1	0	2	3
10	4	91	

Cars	Trucks	Heavys	Totals
7	0	2	9
90	0	10	100
10	0	1	11
107	0	13	

N
W E
S

Petrolia Line (CR 4)

Cars	Trucks	Heavys	Totals
90	3	8	101

Kimball Rd (CR 31)

Peds Cross: ⧖
West Peds: 0
West Entering: 105
West Leg Total: 261

Cars	92
Trucks	3
Heavys	9
Totals	104

Cars	8	175	11	194
Trucks	0	5	1	6
Heavys	1	7	1	9
Totals	9	187	13	

Peds Cross: ⋈
South Peds: 0
South Entering: 209
South Leg Total: 313

Comments

Petrolia Line @ Kimball Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:30:00
To: 13:30:00

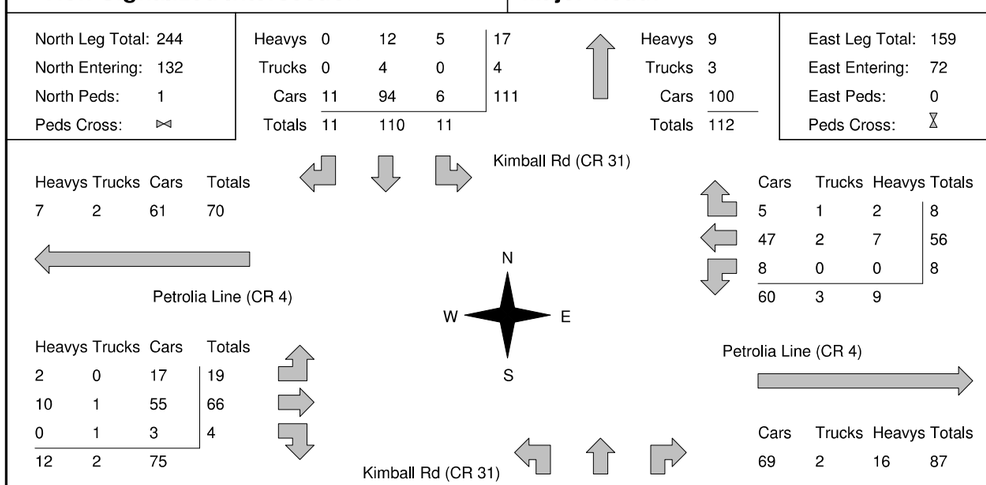
Municipality: Lambton
Site #: 0000000001
Intersection: Petrolia Line & Kimball Rd
TFR File #: 1
Count date: 9-May-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

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

Major Road: Petrolia Line runs W/E



Comments

Petrolia Line @ Kimball Rd

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:30:00
To: 16:30:00

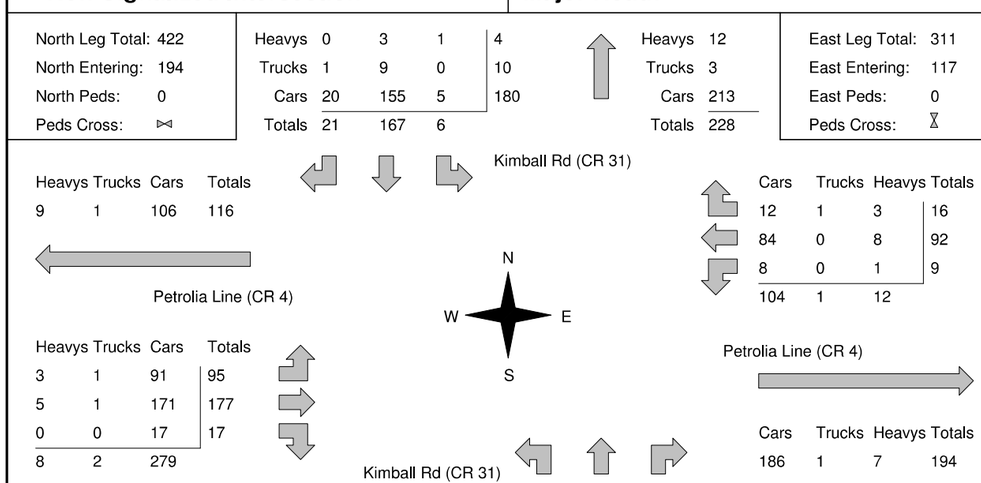
Municipality: Lambton
Site #: 0000000001
Intersection: Petrolia Line & Kimball Rd
TFR File #: 1
Count date: 9-May-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

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

Major Road: Petrolia Line runs W/E



Comments

Petrolia Line @ Kimball Rd

Total Count Diagram

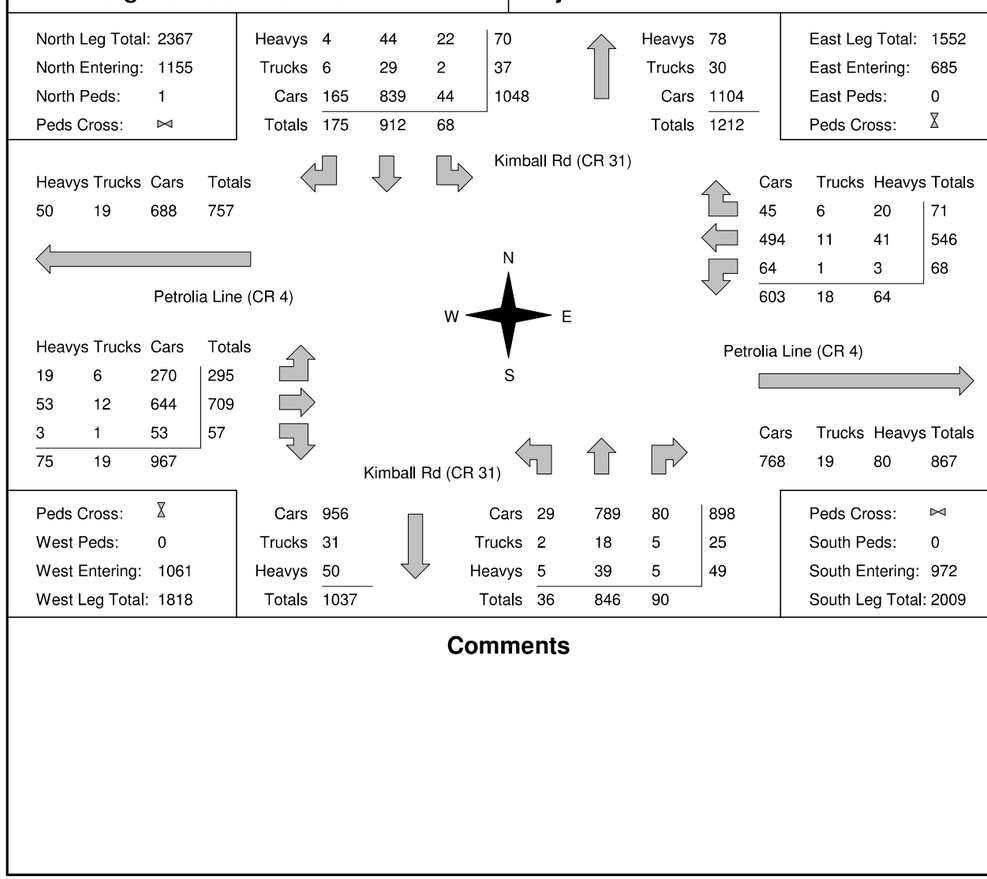
Municipality: Lambton
Site #: 0000000001
Intersection: Petrolia Line & Kimball Rd
TFR File #: 1
Count date: 9-May-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

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

Major Road: Petrolia Line runs W/E



Comments

Appendix B

Capacity Analysis Reports

BT ENGINEERING

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	29	73	3	11	100	9	9	187	13	15	90	47
Future Vol, veh/h	29	73	3	11	100	9	9	187	13	15	90	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	32	79	3	12	109	10	10	203	14	16	98	51

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	119	0	0	82	0	0	358	288	81	391	284	114
Stage 1	-	-	-	-	-	-	145	145	-	138	138	-
Stage 2	-	-	-	-	-	-	213	143	-	253	146	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.2	6.6	6.3	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Follow-up Hdwy	2.29	-	-	2.29	-	-	3.59	4.09	3.39	3.59	4.09	3.39
Pot Cap-1 Maneuver	1421	-	-	1466	-	-	583	609	957	554	612	917
Stage 1	-	-	-	-	-	-	839	762	-	846	767	-
Stage 2	-	-	-	-	-	-	771	763	-	734	761	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1421	-	-	1466	-	-	469	589	957	390	592	917
Mov Cap-2 Maneuver	-	-	-	-	-	-	469	589	-	390	592	-
Stage 1	-	-	-	-	-	-	819	744	-	826	760	-
Stage 2	-	-	-	-	-	-	629	756	-	513	743	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.7	14.7	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	597	1421	-	-	1466	-	-	629
HCM Lane V/C Ratio	0.381	0.022	-	-	0.008	-	-	0.263
HCM Control Delay (s)	14.7	7.6	0	-	7.5	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0	-	-	1.1

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	95	177	17	9	92	16	3	117	11	6	167	21
Future Vol, veh/h	95	177	17	9	92	16	3	117	11	6	167	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	10	10	10	6	6	6	2	2	2
Mvmt Flow	103	192	18	10	100	17	3	127	12	7	182	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	117	0	0	210	0	0	638	544	201	606	545	109
Stage 1	-	-	-	-	-	-	407	407	-	129	129	-
Stage 2	-	-	-	-	-	-	231	137	-	477	416	-
Critical Hdwy	4.13	-	-	4.2	-	-	7.16	6.56	6.26	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.29	-	-	3.554	4.054	3.354	3.518	4.018	3.318
Pot Cap-1 Maneuver	1465	-	-	1314	-	-	384	441	830	409	446	945
Stage 1	-	-	-	-	-	-	613	590	-	875	789	-
Stage 2	-	-	-	-	-	-	763	776	-	569	592	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1465	-	-	1314	-	-	229	403	830	285	407	945
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	403	-	285	407	-
Stage 1	-	-	-	-	-	-	564	543	-	805	783	-
Stage 2	-	-	-	-	-	-	567	770	-	395	545	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.6	18.2	21.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	414	1465	-	-	1314	-	-	428
HCM Lane V/C Ratio	0.344	0.07	-	-	0.007	-	-	0.493
HCM Control Delay (s)	18.2	7.6	0	-	7.8	0	-	21.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.5	0.2	-	-	0	-	-	2.7

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	29	73	3	11	100	9	9	187	13	15	90	47
Future Vol, veh/h	29	73	3	11	100	9	9	187	13	15	90	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	35	87	4	13	120	11	11	224	16	18	108	56

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	131	0	0	91	0	0	393	316	89	431	313	126
Stage 1	-	-	-	-	-	-	159	159	-	152	152	-
Stage 2	-	-	-	-	-	-	234	157	-	279	161	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.2	6.6	6.3	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Follow-up Hdwy	2.29	-	-	2.29	-	-	3.59	4.09	3.39	3.59	4.09	3.39
Pot Cap-1 Maneuver	1406	-	-	1455	-	-	552	587	947	521	589	903
Stage 1	-	-	-	-	-	-	825	751	-	832	757	-
Stage 2	-	-	-	-	-	-	751	753	-	710	750	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1406	-	-	1455	-	-	431	566	947	346	568	903
Mov Cap-2 Maneuver	-	-	-	-	-	-	431	566	-	346	568	-
Stage 1	-	-	-	-	-	-	804	731	-	810	749	-
Stage 2	-	-	-	-	-	-	597	745	-	472	731	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.7	16.1	13.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	573	1406	-	-	1455	-	-	599
HCM Lane V/C Ratio	0.436	0.025	-	-	0.009	-	-	0.303
HCM Control Delay (s)	16.1	7.6	0	-	7.5	0	-	13.6
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	11.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	95	177	17	9	92	16	3	117	11	6	167	21
Future Vol, veh/h	95	177	17	9	92	16	3	117	11	6	167	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	10	10	10	6	6	6	2	2	2
Mvmt Flow	114	212	20	11	110	19	4	140	13	7	200	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	129	0	0	232	0	0	704	601	222	669	602	120
Stage 1	-	-	-	-	-	-	450	450	-	142	142	-
Stage 2	-	-	-	-	-	-	254	151	-	527	460	-
Critical Hdwy	4.13	-	-	4.2	-	-	7.16	6.56	6.26	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.29	-	-	3.554	4.054	3.354	3.518	4.018	3.318
Pot Cap-1 Maneuver	1451	-	-	1290	-	-	347	409	808	371	414	931
Stage 1	-	-	-	-	-	-	581	565	-	861	779	-
Stage 2	-	-	-	-	-	-	742	765	-	535	566	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1451	-	-	1290	-	-	182	369	808	239	373	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	182	369	-	239	373	-
Stage 1	-	-	-	-	-	-	529	514	-	784	772	-
Stage 2	-	-	-	-	-	-	530	758	-	349	515	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.6	21.2	26.6
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	377	1451	-	-	1290	-	-	392
HCM Lane V/C Ratio	0.415	0.078	-	-	0.008	-	-	0.592
HCM Control Delay (s)	21.2	7.7	0	-	7.8	0	-	26.6
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	2	0.3	-	-	0	-	-	3.7

Appendix C

Warrants/Justifications for the Installation of Traffic Signals

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision | GO TO Justification:

Intersection: Petrolia Line/Kimball Road Count Date: 2023-05-09

Summary Results

Justification		Compliance	Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A Total Volume	86 %	☐	☑
	B Crossing Volume	100 %		
2. Delay to Cross Traffic	A Main Road	45 %	☐	☑
	B Crossing Road	100 %		
3. Combination	A Justificaton 1	86 %	☐	☑
	B Justification 2	45 %		
4. 4-Hr Volume		48 %	☐	☑
5. Collision Experience		33 %	☐	☑
6. Pedestrians	A Volume	Justification not met	☐	☑
	B Delay	Justification not met		

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision | GO TO Justification:

Intersection: Petrolia Line/Kimball Road Count Date: 2023-05-09

Justification 1: Minimum Vehicle Volumes

Free Flow Rural Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☑	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☐	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00		
1A	480	720	600	900	586	385	308	322	386	663	653	570		
	COMPLIANCE %				100	80	64	67	80	100	100	100	692	86
1B	120	170	120	170	361	238	186	184	224	269	357	308		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100

Free Flow Signal Justification 1:

Both 1A and 1B 100% Fulfilled each of 8 hours — Yes ☐ No ☑

Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☑ No ☐

Justification 2: Delay to Cross Traffic

Free Flow Rural Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☑	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☐	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00		
2A	480	720	600	900	225	147	122	138	162	394	296	262		
	COMPLIANCE %				47	31	25	29	34	82	62	55	364	45
2B	50	75	50	75	211	109	90	96	119	148	196	149		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100

Free Flow Signal Justification 2:

Both 2A and 2B 100% fulfilled each of 8 hours — Yes ☐ No ☑

Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimum Vehicle Volume	YES ☑	NO ☐	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach	Required Value	Average % Compliance	Overall % Compliance
		X	Y (actual)	Y (warrant threshold)		
Justification 4	8:00	225	209	433	48 %	48 %
	16:00	394	161	341	47 %	
	17:00	296	220	393	56 %	
	18:00	262	174	412	42 %	

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	20 %	33 %
	13-24	40 %	
	25-36	40 %	

Appendix D

Intersection Control Review

BT ENGINEERING

509 Talbot Street
London, ON N6A 2S5
519-672-2222

TECHNICAL MEMORANDUM

TO:	File	**DATE:**	June 8, 2023
FROM:	Steve Taylor, P.Eng., M.Eng., P.E.	**PROJECT #:**	23-018
PROJECT:	Lambton County, County Roads 4/31 Intersection Improvements EA		
SUBJECT:	Intersection Control Review		

1.0 INTRODUCTION

The following comments are provided for the information of Council, based on BTE's experience with the planning, design and operation of traffic signals and the planning and design of approximately 100 roundabouts in Canada, USA and internationally. BTE is registered with MTO in the specialties of traffic engineering, preliminary and detail design of highways and freeways and has acted as expert peer reviewers of roundabouts implemented in Ontario. BTE designed the first roundabout on a provincial highway (Picton, Prince Edward County, Ontario), and has designed roundabouts for other counties including heavy truck/oversize vehicle routes and MTO emergency detour routes.

1.1 Purpose

This technical memorandum is to provide advice to Lambton County in support of an Environmental Assessment (EA) considering improvements to improve the safety of the existing intersection.

This review is 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 intersection Study Area is illustrated in **Figure 1**.

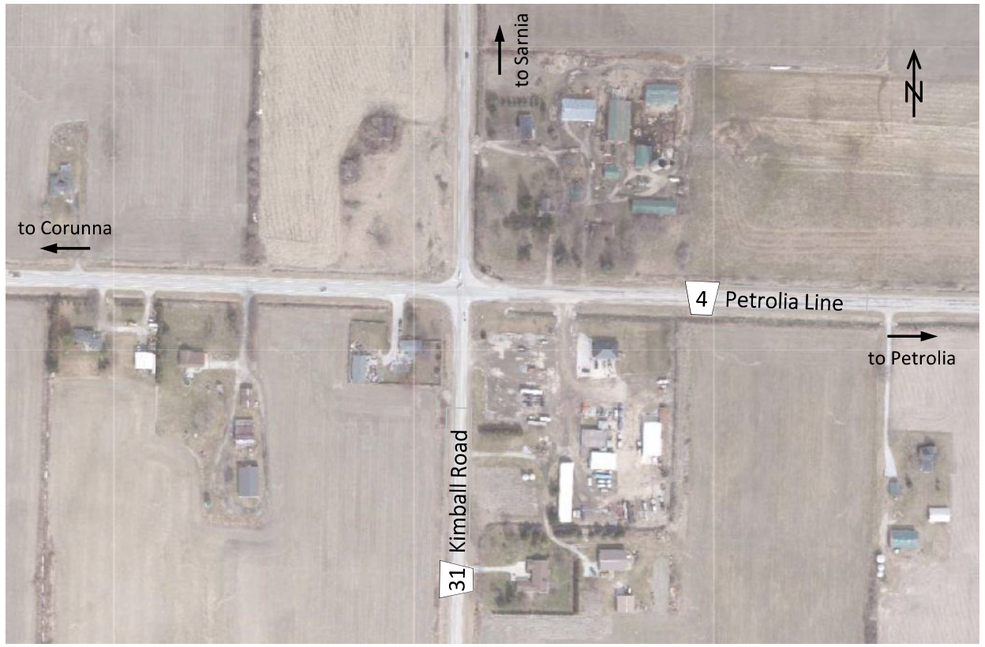


Figure 1: Study Area

The technical review is considering the type of intersection improvements that could be implemented to reduce the collision frequency and severity of crashes that have occurred at this intersection of two higher-speed arterial roads in the County.

1.2 Background

The existing intersection has experienced elevated rates of collisions. The recent collision experience is summarized in **Appendix A**. The societal costs of these collisions may be reduced by introducing controls at the intersection to reduce speeds and accommodate turning movements. It is believed that crashes are occurring when drivers on the stop sign controlled leg of the intersection (north-south road) do not expect to have to yield/stop for drivers at this intersection.

Any changes to the intersection will need to meet the requirements of the Municipal Class EA (Amended 2023). Subject to the effects of the study recommendations, requirements may include consultation with interested property owners and users of the road.

At this intersection, constraints include hydro and communications utilities. At this location, the hydro has been buried through the intersection. We note that this route is identified by the County as a heavy vehicle truck route, which may be why the overhead services have been buried to provide for vertical clearance.

1.3 Alternatives

The alternatives for improving safety can include countermeasures ranging from low scale improvements such as lighting and advance rumble strips to larger physical control of vehicles including traffic signals and roundabouts. Based on the County's initial consideration and implementation of the small-scale improvements, this review will only consider the use of larger-scale physical countermeasures (intersection and roundabout control).

1.4 Traffic

The traffic within the study area was collected in May 2023. This time period is considered generally to be post COVID and to reflect normal travel patterns. The traffic demand is illustrated in **Figure 2**.

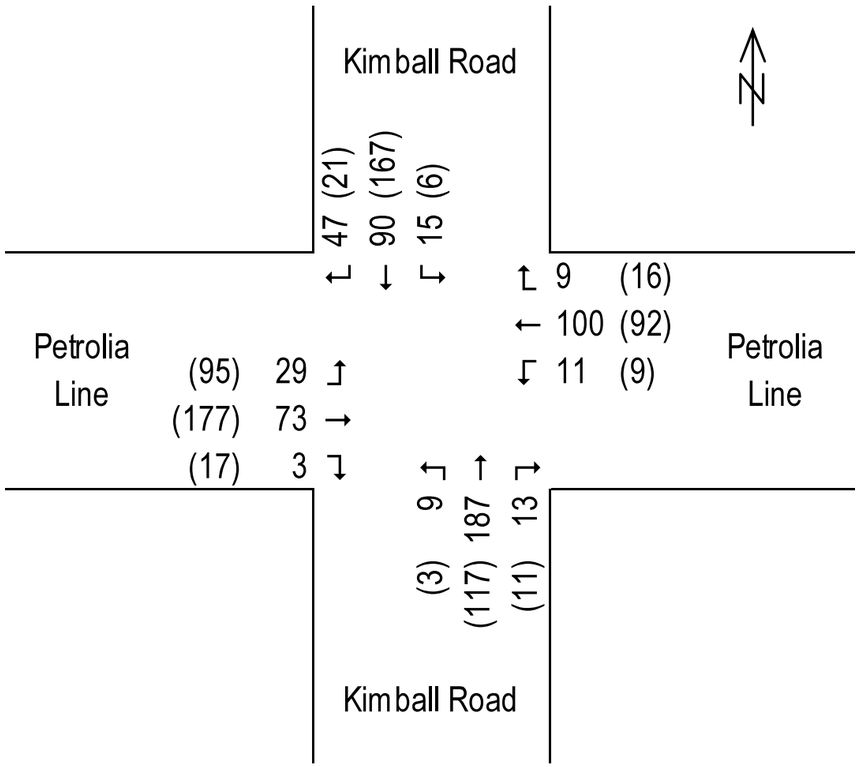


Figure 2: Existing (2023) Turning Movement Volumes, Morning (Afternoon) Peak Hour

2.0 TECHNICAL ASSESSMENT OF INTERSECTION CONTROL ALTERNATIVES

When assessing intersection control, most road authorities in North America have now recognized that there are benefits to the use of roundabout control where feasible and cost effective and will only install traffic signals where a roundabout is not feasible. It is now Provincial (MTO) policy to always review roundabouts for any new signalized intersection.

Based on our experience, the following are the trade-offs that must be considered at the intersection.

Traffic Operation (favours roundabout control): Traffic signals provide a more conventional operation for drivers but would result in longer delays for most of the traffic on the east and west legs of the intersection. Signalization would provide inferior traffic operation at this location compared to roundabout traffic control. Roundabouts share all available gaps to all drivers arriving at the intersection.

Design Consistency/Driver Familiarity (favours traffic signal control): Providing design consistency on a roadway improves its safety due to driver familiarity. Typically, this would favour a signalized intersection; however, many roundabouts are being planned in southern Ontario.

Traffic Safety (favours roundabout control): From a traffic safety perspective, roundabout control involves significantly fewer conflict points and is forecast to have 67% less collisions and 75% less severity with these collisions. Any collisions involve low speed property damage only as opposed to the higher speed collisions (injury and fatal type collisions) that can occur at signalized intersections.

Pedestrian and Cyclist Safety (favours roundabout control): With regard to pedestrians, roundabouts have generally been proven to be safer than conventional intersections. Traffic signals can potentially reduce the risk of vehicle-pedestrian conflicts by allowing only a few movements at any time, but conflicts still exist with red light running (illegal), right turn on red (usually legal) and left/right turn on green (legal). Data from the Region of Waterloo assessing safety of signalized and roundabout control intersections (with 1.2 million pedestrian crossings) has indicated that roundabout control results in fewer collisions. Bicycle-related conflicts can be associated with vehicle-to-vehicle or vehicle-to-pedestrian conflicts, depending on whether the cyclist remains in the shared traffic lane through the intersection or uses the adjacent pathway and crossings.

Large Agricultural Equipment and Transport Trucks (equal): A design standard can be developed to accommodate both large transport trucks and large agricultural equipment. A recent BTE roundabout project in southern Ontario was designed to accommodate trucks transporting wind turbine blades. Roundabout designs to be considered at this location can include larger inscribed circle diameters (48 m) reflecting the oversized vehicles expected through the intersection.

Construction Cost (favours traffic signal control): From a cost perspective, a signalized intersection is typically approximately 10% less in cost than a roundabout control design. The higher cost is typically associated with traffic staging to construct the roundabout.

Future Longer Term Operational Costs (favours roundabout control): Future longer term operational costs typically favour roundabout control. These costs are a responsibility of the road authority and include operation, servicing, and replacement of mechanical equipment (traffic signals) and electricity. When considering total life cycle costs, the future operational costs typically offset the lower initial capital cost of a signalized intersection.

Property Impacts (favours traffic signal control): The requirements for property acquisition and impacts to property owners are often the main reasons for choosing signalized intersection control. At this rural intersection, there are adjacent properties to be considered; however, the property impacts will be minor because of the offsets to the buildings from the intersection.

3.0 TECHNICAL ADVICE AND PRELIMINARY CONCLUSIONS

From our experience, typically signals are preferred where significant property impacts are involved to implement a roundabout design and traffic warrants are met for signals. Where property is available or where no buyouts are required impacting residents, then roundabouts are preferred as they provide better traffic operations and safety advantages. At this location, the traffic demand is below the warrant threshold for traffic signals. BTE has confirmed the warrant is not met. **This signal warrant will not be met for decades and as such should not be considered.** In situations of lower traffic demand, we do not recommend traffic signals as they can have unforeseen safety issues with vehicles not obeying the signals because of delays. However, roundabout control does not have the same issue with delays as do traffic signals. It is our opinion that a roundabout can be implemented before a signal warrant is met. When a traffic signal warrant is met, a decision must be made between signals and a roundabout; however, before reaching this threshold roundabouts are an effective countermeasure for safety which introduce little or no overall delay to vehicular traffic.

A common issue with traffic signals is that they have a detrimental effect for locations with low off-peak volumes. In off-peak periods when there are low traffic demands on the approaches, the delay to traffic on all approaches is detrimental. Traffic on the major street often continues to be delayed, waiting for traffic signals to change back after often just a single vehicle has long since cleared the intersection. This can lead to driver frustration and safety concerns resulting from potential non-compliance with the signals (increased number of drivers running the amber signal). Roundabouts do not have this issue. Delays do not occur in the off-peak hours (roundabouts operate freely).

Roundabout Alternatives

Based on the review recommendation for roundabout control, BTE has developed two roundabout control alternatives for consideration of the County and for presentation to the public. The alternatives are illustrated in **Figure 3** and **Figure 4**. The preliminary costs of these alternatives are in the order of $2 to $2.5 million.

Subject: Intersection Control Review
Project: BTE 23-018, Lambton County, County Roads 4/31 Intersection Improvements EA
Date: June 8, 2023

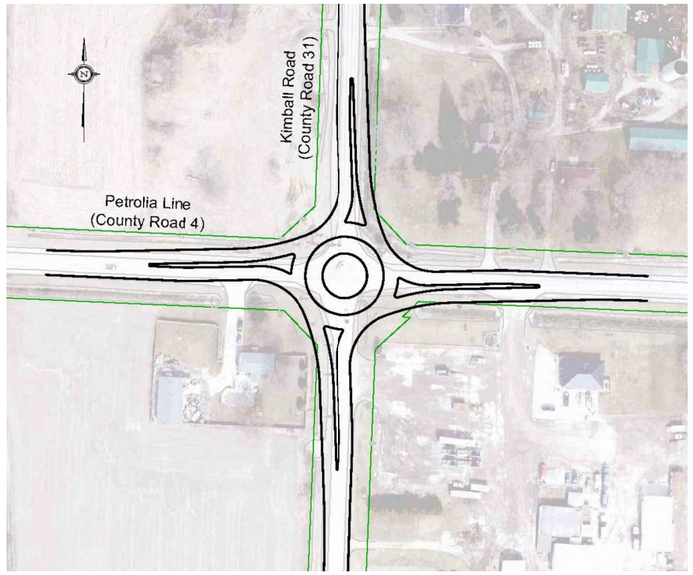


Figure 3: Roundabout Design Alternative A

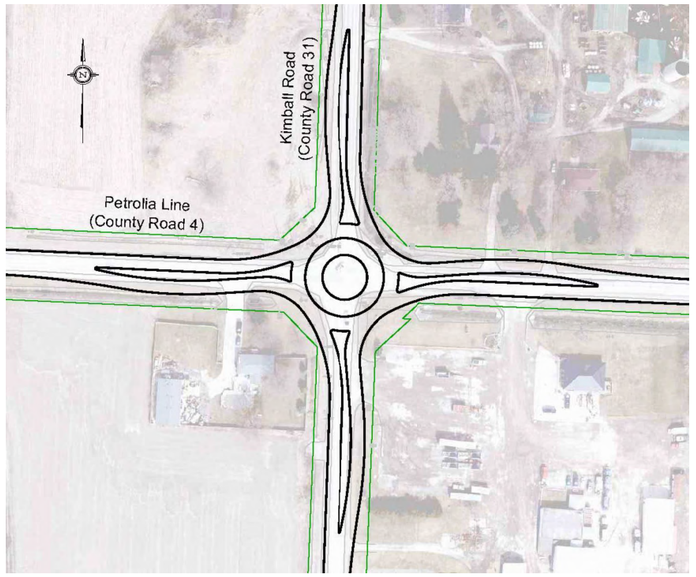


Figure 4: Roundabout Design Alternative B

The two roundabout design alternatives will provide safety benefits to the intersection. The use of splitter island bulb-outs (chicanes) is advisable for rural high-speed entries to the roundabout. If property is available, this would be the highest performing alternative. Vissim microsimulations have been completed for the roundabout designs. Both operate with a high level of service.

Based on this technical review, we recommend the two designs be presented to the public for consultation under the Class EA and that both the technical review and public comments be received for the information of Council.

Prepared by:

Steve Taylor, P.Eng., M.Eng., CVS-Life
BT Engineering Inc.

Attachments: Appendix A - Recent Collision Experience

Appendix A

Recent Collision Experience

509 Talbot Street
London, ON N6A 2S5
519-672-2222

TECHNICAL MEMORANDUM

TO:	File	**DATE:**	June 6, 2023
FROM:	Stephen Holmes	**PROJECT #:**	23-018
PROJECT:	County Road 4 at County Road 31 Intersection Improvement EA, Lambton County		
SUBJECT:	Collision Analysis		

Site Description

The County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) intersection is a rural intersection with stop control on northbound and southbound Kimball Road. The posted speed limit is 90 km/h on Petrolia Line (reduced to 70 km/h through the intersection) and 80 km/h on Kimball Road.

Collision Analysis

There are no auxiliary lanes at the intersection and sight lines are unobstructed. A summary of crashes between 2017 and 2022 is shown in **Table 1.**

Table 1: Collision Summary

Collision Date	Initial Impact	Collision Classification	Sequence of Events
06-06-2017	Angle	Property Damage Only	V1 SB proceeded into intersection and was struck by V2 WB
28-06-2017	Angle	Property Damage Only	V1 SB failed to yield and was struck by V2 WB
23-10-2017	Angle	Property Damage Only	V1 SB stopped at sign. Proceeded into intersection and hit V2 EB
07-11-2017	Angle	Non-Fatal Injury	V1 NB proceeded into intersection and collided with V2 WB
24-07-2018	Angle	Property Damage Only	V1 NB stopped at sign, proceeded into intersection and hit by V2 EB
28-02-2019	Angle	Property Damage Only	V1 NB stopped at sign, proceeded into intersection and collided with V2 EB
04-05-2020	Angle	Fatal Injury	V1 NB collided with V2 EB
21-10-2020	Angle	Fatal Injury	V1 SB failed to stop at stop sign hitting V2 EB
08-09-2021	Turning Movement	Property Damage Only	V1 EB turned left in front of V2 WB
08-10-2021	Rear End	Property Damage Only	V2 NB rear ended V1 NB at stop sign
05-11-2021	Angle	Property Damage Only	V1 proceeded SB from stop sign and hit V2 EB
08-11-2021	Rear End	Property Damage Only	V1 SB rear ended V2 SB at stop sign
11-12-2022	Angle	Non-Fatal Injury	V1 SB failed to yield and was hit by V2 EB in intersection

Right angle crashes are the most prevalent, with 10 of 13 crashes involving vehicles from Kimball Road and Petrolia Line colliding in the intersection. These crashes can be severe, with 4 of 10 crashes involving fatal or non-fatal injuries, and most involving significant vehicle damage. At least two of the crashes involving injuries or fatalities involved vehicles failing to stop on Kimball Road.

There were two rear end crashes where a stopped vehicle on Kimball Road was hit by another vehicle. During a BTE site visit, a number of Kimball Road motorists who failed to stop were observed. These crashes and site observations indicate that some drivers on Kimball Road are not expecting to stop at Petrolia Line.

An eastbound driver turned left resulting in a collision with a westbound driver, indicating that the turning driver misjudged the gap or approach speed of the westbound driver or failed to see the westbound driver.

Countermeasures

Potential countermeasures to reduce collision frequency at this intersection are shown in **Table 2**

Table 2: Countermeasures

Countermeasure	Design Intent	Efficacy
Retain existing stop control on Kimball Road, including rumble strip and flashing beacon.	Warn drivers of intersection with flashing beacon and rumble strips, and enhanced signing.	Right angle crashes and rear end crashes have continued to occur since the flashing beacon and rumble strips were installed. Changes to signing will not improve the ability of drivers entering the intersection from Kimball Road to judge the gap and approach speeds.
All-Way Stop Control	Improve the ability of drivers on Kimball Road to enter the intersection.	Rear end crashes and failures to stop on Kimball Road will continue to occur. An all-way stop will introduce failure to stop crashes on Petrolia Line. Measure would not be effective.
Traffic Signals	Improve the ability of drivers to enter the intersection without conflict.	Traffic signals are not warranted at this location. Isolated rural signals that are not warranted are not expected by drivers and can result in an increase in rear end crashes and driver frustration with unexpected stops.
Single Lane Roundabout	Lower speeds through intersection, eliminate angle crashes, and minimize delays.	Traffic entering a roundabout is forced by the roadway geometry to enter at a lower speed. Drivers will be able to judge the speed of other vehicles and enter the intersection safely. The change in roadway appearance through the introduction of a splitter island and centre island gives visual clues to the driver approaching the intersection to slow down. Rear end crashes are possible but are likely to be at lower speeds than at an unexpected traffic signal.

Average crash costs can be used to compare the relative benefits of different countermeasures. There are different methods of estimating crash costs:

Direct Human Capital Costs:
Economic costs (a.k.a. human capital costs) are the monetary impacts of crashes including goods and services related to the crash response, property damage, and medical costs.

Comprehensive Social Costs:
Comprehensive crash costs (a.k.a. societal crash costs) are the combination of tangible impacts (i.e. economic costs) and the monetized pain and suffering. Comprehensive costs are meant to capture all the impacts that result from crashes.

Crash Costs
The Ministry of Transportations 2012 Collision Costs in Engineering Analysis rates and the Region of Waterloo's 2014 Collision Estimation and Cost Calculation guide were reviewed, and Waterloo Region's rates were used to estimate the costs of the reported crashes that have occurred between 2017 and 2022 as shown in **Table 3**.

Table 3: Collision Costs

Collision Costs	Direct Human Capital Costs/ Collision	Comprehensive Societal Costs / Collision	Number of Crashes	Direct Human Capital Costs	Comprehensive Societal Costs
Fatal	$1,656,500	$13,600,000	2	$3,313,000	$27,200,000
Injury	$60,500	$82,000	2	$121,000	$164,000
Property Damage Only	$5,000	$5,000	9	$45,000	$45,000
			Totals:	$3,479,000	$27,409,000

Actual crash costs differ in every crash due to the specific circumstances related to each crash event — the damage, injuries, response, and lasting effects. Estimates of collision costs are used to evaluate the relative benefits of different treatments (countermeasures) and are not intended to represent the value of a human life.

A calibrated safety performance function was not available to compare the performance of traffic signals to a roundabout. The relative impacts of traffic signals or a roundabout on crashes can be assessed:

Traffic Signals:
Unwarranted traffic signals are expected to increase rear-end crashes as drivers do not expect to stop on Petrolia Line. Traffic signals will reduce but not eliminate the probability of right-angle crashes. An isolated rural traffic signal can also experience failure to stop collisions.

Single Lane Roundabout:
A single lane roundabout reduces the probability of an angle collision to near zero but could increase the number of sideswipe crashes. Sideswipe crashes in a roundabout are low speed and have a lower severity than right angle crashes.

Subject: Collision Analysis Technical Memo
Project: BTE 23-018, County Road 4 at County Road 31 Intersection Improvement EA, Lambton County
Date: June 6, 2023

A single lane roundabout is predicted to result in fewer injuries and fatal crashes than would have occurred with the existing road configuration or traffic signals and is the recommended treatment.

Prepared by:

Stephen Holmes, P.Eng., CVS-Life

Appendix E

Council Resolution

Report dated October 4, 2023 Regarding County Road 4/31 - Intersection Improvement Study – Schedule B Environmental Assessment Study

#8: Veen/Sageman:

a) That County Council endorse the study recommendations as presented within this report.

b) That County Council support filing the County Road 4 (Petrolia Line) and County Road 31 (Kimball Road) Intersection Improvement Study – Schedule B Environmental Assessment Study Project File Report as prepared by BT Engineering Inc. for the 30-day public review period.

Carried.

Intersection Improvements

Steven Taylor, Chief Executive Officer, BT Engineering spoke to Council regarding intersection improvements the proposed d 4 (Petrolia Line) and County Road 31 (Kimball Road).

#2: Cook/White: That the proposed intersection improvements at County Road 4 (Petrolia Line) and County Road 31 (Kimball Road), as presented, be referred to the 2024 budget.

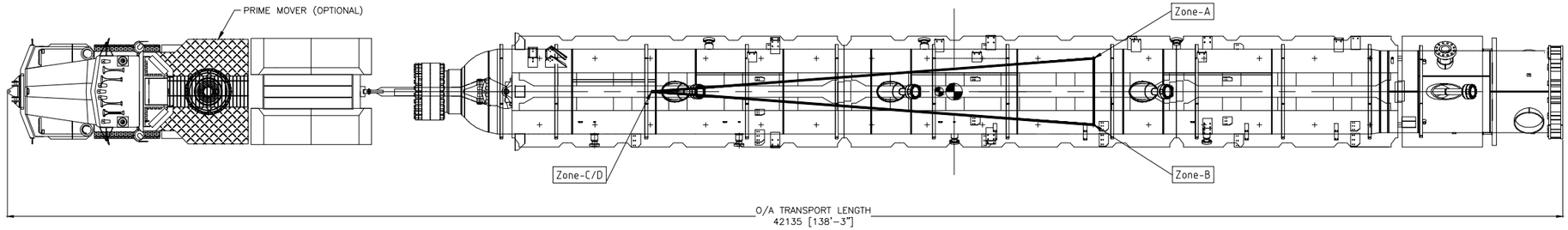
Carried.

Appendix F

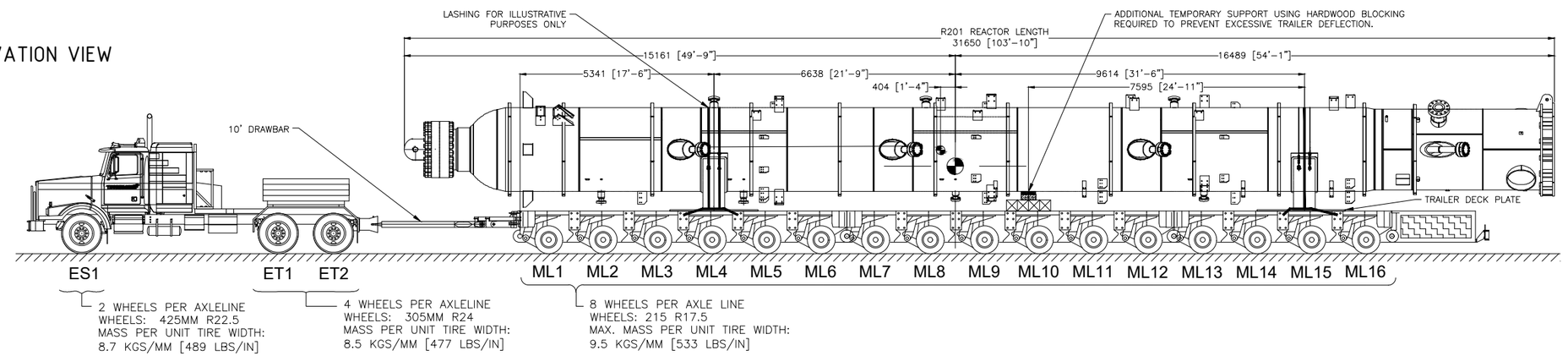
MIG Oversized Load Vehicle

BT ENGINEERING

PLAN VIEW



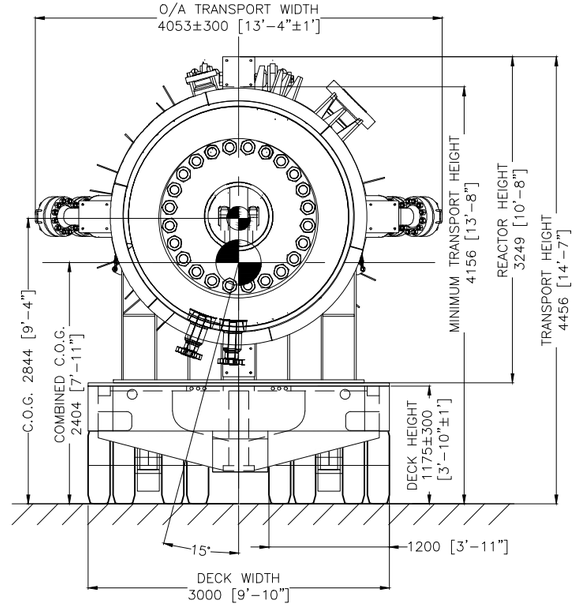
ELEVATION VIEW



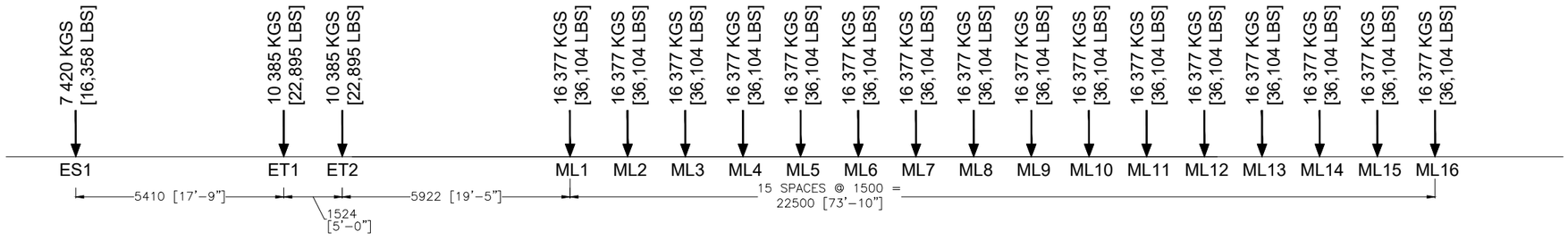
OVERALL WEIGHTS:

TRACTOR:		
PULL TRACTOR TARE WEIGHT:	14 740 KGS	32,495 LBS
PULL TRACTOR BALLAST WEIGHT	13 450 KGS	29,652 LBS
TRAILER AND EQUIPMENT:		
TRAILER TARE WEIGHT:	62 280 KGS	137,304 LBS
EQUIPMENT WEIGHT:	2 000 KGS	4,409 LBS
CARGO:		
VESSEL WEIGHT:	194 250 KGS	428,248 LBS
SADDLE WEIGHT:	3 494 KGS	7,704 LBS
TOTAL WEIGHT:	290 214 KGS	639,812 LBS

END VIEW



AXLE LOADINGS



NOTES:

1. SADDLE WEIGHT (AND 7,337 LBS +/-5%), VESSEL (R201) WEIGHT (407,855 LBS +/-5%) & C.O.G. PROVIDED BY CLIENT. REFER TO DRAWING: DWG-5741-5
2. LONGITUDINAL AND TRANSVERSE WIND IMPACT ALLOWS FOR A WIND SPEED OF 12.0 m/s.
3. THE TRAILER CONFIGURATION IS CHECKED AND APPROVED FOR SHOWN LOADINGS.
4. THE CLIENT IS RESPONSIBLE FOR THE PREPARATION OF THE TRANSPORT AREA TO ENSURE THAT IT IS CAPABLE OF ACCOMMODATING THE LOADS GENERATED BY THE TRAILERS DURING ALL TRANSPORT/LOADING/UNLOADING OPERATIONS. GROUND TO BE SUITABLE COMPACTED & LEVELED FOR SAFE & CONVENIENT TRANSPORT OPERATION.
5. THE CLIENT IS RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE LOAD TO BE TRANSPORTED.
6. THE CLIENT IS TO IDENTIFY AND CONFIRM THE SUITABILITY OF THE SUPPORT POINTS TO BE UTILIZED DURING THE TRANSPORT OF THE LOAD.
7. ALL CHAINS TO BE TIGHTENED WITH BINDERS (NOT SHOWN) ALL CAPACITIES 3 OR 5mTon.
8. 8mm ANTI SLIP MATERIAL TO BE USED BETWEEN ALL STEEL CONTACT AREAS TO PROMOTE FRICTION.
9. SECURE CARGO ONTO THE TRAILER USING LASHING MATERIAL TO PREVENT SLIDING AND/OR TIPPING OF THE LOAD. LASHING ARRANGEMENT SHOWN MAY BE ADJUSTED TO SUIT SITE CONDITIONS AT THE DISCRETION OF THE MAMMOET FIELD SUPERVISOR.

REV.	DESCRIPTION:	DATE:	DRAWN:	CHECKED:
01	REVISE LOAD LOCATION & DETAILS	25Jul23	NMor. 956703	JKem 950689
00	FIRST ISSUE	25Nov22	NMor. 956703	MGre 953191

Without authorized signatures this document is uncontrolled, not binding and for indicative purposes only.

CLIENT: *SHELL*

PROJECT: *DR-201 REACTOR TRANSPORT*

TITLE: *TRANSPORT ARRANGEMENT FOR REACTOR R201 GOLDHOFER 16L ADDRIVE (WITH PM OPTION)*

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SCALE: *NTS*	SIZE: *D*	DRAWING NUMBER					
SAP No: *7000276329*	PROJECT No: *15122244*	SUB: *P045*	DOC: *D -*	PART: *T01*	SHT. *1/1*	REV. *- 01*