



City of Cornwall

Nick Kaneb Drive Extension Environmental Assessment (EA) Study

Project File

March 2014

Prepared by:



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1.0 PROJECT SUMMARY

1.1 Introduction and Background

Over the last several years, the City of Cornwall has undertaken several Environmental Assessments and construction projects in the eastern portion of the City to deal with increased development and traffic. The following projects have been recently completed:

- Nick Kaneb Drive Extension (from Second Street northerly to Marleau Avenue) – Construction completed in 2009;
- Marleau Avenue Widening and Improvements EA (from Marlborough Street to Glenview Boulevard) – EA completed in 2012;
- Industrial Park Drive Extension – Construction completed in 2012; and
- Cornwall Business Park Transportation Master Plan – EA completed in 2013.

This project will provide for the extension of Nick Kaneb Drive from Marleau Avenue northerly to the Tenth Street/Virginia Drive intersection and provide an additional north-south link for all modes of travel within the eastern portion of the City of Cornwall.

WSP (previously GENIVAR) was retained by the City of Cornwall to complete this study as a Schedule “B” Municipal Class Environmental Assessment (EA) project.

Therefore, the purpose of this EA is to define a Recommended Plan for the extension of Nick Kaneb Drive that will improve

capacity and safety, including an improved intersection at Tenth Street/Virginia Drive. The Recommended Plan will:

- Provide a new 2-lane roadway link with a sidewalk, grassed boulevards, a recreational path and a conventional intersection at Tenth Street;
- Provide improved connectivity to and from the Cornwall Business Park;
- Accommodate all modes of travel (bicycles, pedestrians, trucks, emergency vehicles and transit);
- Accommodate adjacent land development along the Nick Kaneb Drive extension; and
- Receive environmental clearance for the future detail design and construction of the roadway.

The Recommended Plan provides the City with the ability to implement a new roadway to ensure growth in travel demand is accommodated and can be addressed appropriately.

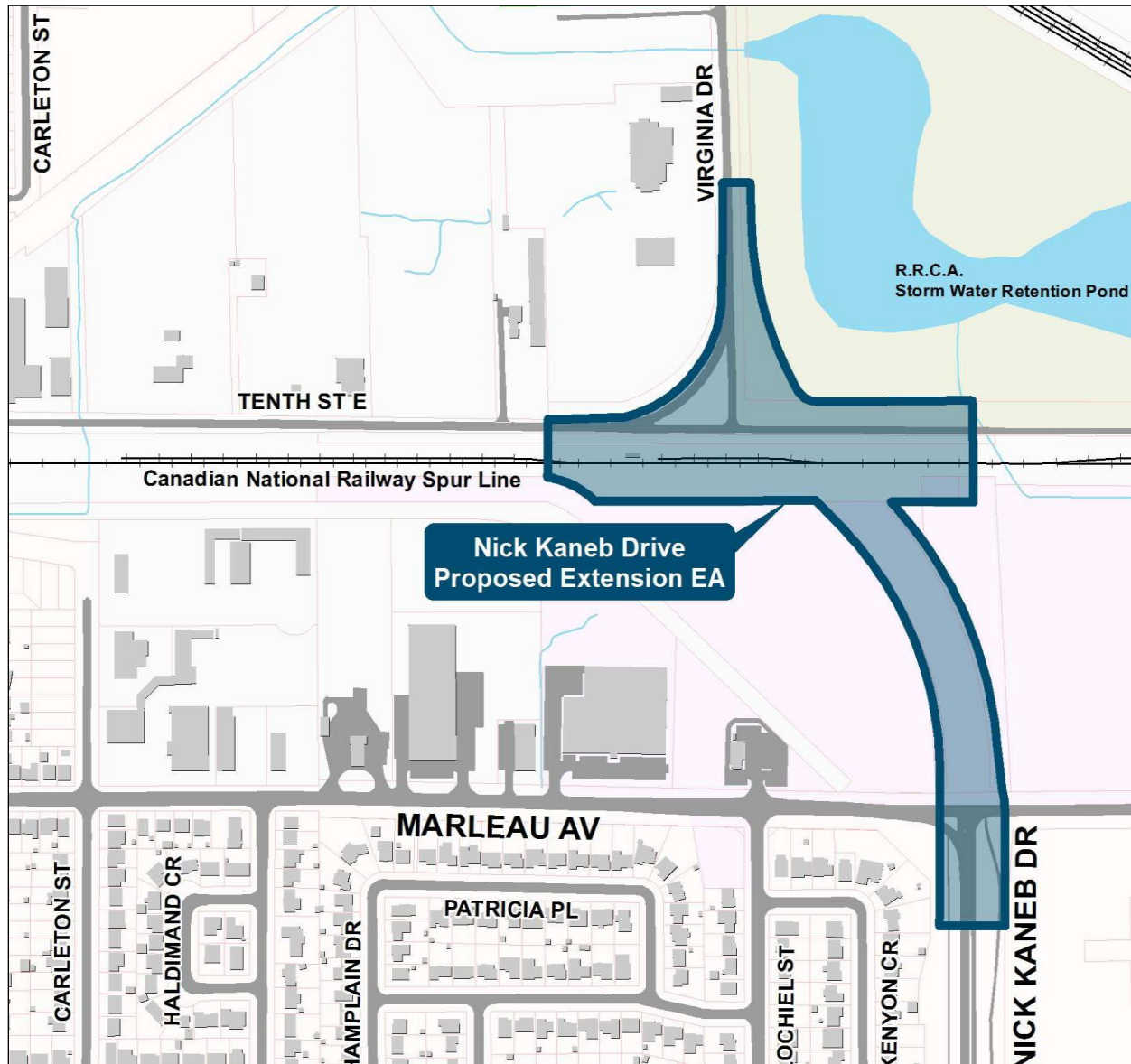
This study has been carried out in consultation with the City of Cornwall, the general public, external agencies, and consultant staff. Members of the public were invited to one (1) Public Open House which was held during the course of the study to present issues, alternatives, a Recommended Plan and to obtain public feedback. A Technical Advisory Committee was formed to undertake the technical aspects of the study and to communicate local concerns and preferences. The Technical Advisory Committee consisted of City of Cornwall staff and consultant staff from WSP.

This Project File presents to the public and review agencies a description of the Environmental Assessment (EA) study process that was undertaken and the corresponding Recommended Plan that was developed as a result of the EA process. This EA was carried out in accordance with the *'Municipal Class Environmental Assessment 2000, as amended in 2007 & 2011'* as a Schedule "B" project.

1.2 Study Area

The Study Area is located between Marleau Avenue and Tenth Street. The Study Area is illustrated in **Figure 1-1**.

Figure 1-1
Study Area



1.3 Report Organization

The EA Process was undertaken in a series of phases commencing with identifying the problem and proposed study process and culminating in the filing of this Project File. The EA process included public consultation, an evaluation of all reasonable alternatives, and selection of a Recommended Plan. The effects on the natural, social and cultural environments, as a result of the proposed recommended plan, can be mitigated. See **Chapter 7** for a summary of the effects and mitigation measures proposed.

This Project File has been divided into eight chapters that are as follow:

1. Project Summary
2. Need and Justification
3. Approach and Consultation
4. Existing Conditions
5. Analysis and Evaluation
6. Recommended Plan
7. Areas of Environmental Sensitivities and Mitigation Measures
8. Conclusions

Technical and supporting documentation is appended to this document.

1.4 Need and Justification

The need and justification for this project is to provide an efficient and effective north/south transportation link alternative to McConnell Avenue and Boundary Road to meet long term forecasted travel demand. This plan will meet the requirements of all modes of transportation (pedestrians, bicycles, transit, goods movement and vehicular traffic) and will have a goal of providing the safest facility considering the value of all competing interests. This study will define an improvement plan and receive environmental clearance for the facility that matches the land use plan. The roadway design will be selected using a traceable evaluation technique to provide a defensible case for the Recommended Plan. The Recommended Plan will provide the City with:

- An approved plan that can be constructed in 2014 or later;
- A defined cost; and
- A sustainable plan that can allow economic development of the community.

1.5 Municipal Class EA Process

This project was subject to the planning and design process of the Municipal Class Environmental Assessment (Class EA) for municipal projects (refer to **Section 3.2**). This study was completed as a Schedule “B” project and therefore required the preparation of this Project File.

The Municipal Class EA is a planning and design process developed to ensure that all

potential natural, social/cultural, and economic environments as well as property and land use effects are considered when undertaking certain projects. The Municipal Engineers Association of Ontario received approval of the most current Class EA document by the Minister of the Environment in 2000, as amended in 2007 & 2011.

The Class EA for municipal road projects provides a methodology for planning projects covered under the EA Act, including obtaining and documenting the necessary public input. It also outlines the methodology for preparing Project Files. The different phases of the process include:

1. Define project need and justification
2. Identify and evaluate alternative solutions and select the preferred solution
3. Identify and evaluate alternative design concepts and select the preferred alternative
4. Document the planning process in the form of a Project File (for Schedule B projects)
5. Construction and Monitoring

With the filing of this report, Phases 1 to 4 of the EA process have been completed. From this process, a Recommended Plan has been selected. This evolving design and final Recommended Plan has been based on meaningful dialogue with all affected stakeholders. The process included one Public Open House.

The Project File is being filed with the City for the 30 day public review period beginning on March 26, 2014.

If public concerns regarding this project cannot be resolved, any person may request a Part II Order. Should the Minister of Environment deem that this is necessary; an Individual Environmental Assessment may be directed. Should no concerns be expressed to the Minister of Environment within thirty (30) days of filing the Project File and notification thereof, the project can proceed in accordance with the recommendations of the Project File.

In summary, the planning and design process undertaken for the Nick Kaneb Drive Extension EA project addresses all the requirements for the Municipal Class EA.

1.6 Analysis and Evaluation of Alternatives

1.6.1 Alternative Planning Solutions

The analysis and evaluation of transportation alternatives was undertaken as a two-step process. Initially, alternative transportation planning solutions were assessed as required by the Class EA.

The alternative transportation planning solutions were analyzed to scope the higher level solutions that should be carried forward, then a detailed analysis was provided of various alternative designs.

The following is a list of these transportation solutions:

- *Do Nothing* (Maintain current transportation network);
- *Transportation System Management (TSM) / Transportation Demand Management (TDM)*; and
- *New Nick Kaneb Drive Extension*.

Based on a qualitative analysis of alternative transportation planning solutions (refer to **Section 5.3**) it was recommended that a *New Nick Kaneb Drive Extension* was an appropriate solution to meet the transportation needs of the study area. This recommendation was presented at the Public Open House and supported by the public and Technical Advisory Committee.

1.6.2 Preliminary Design Analysis and Evaluation

Five (5) preliminary roadway design alternatives were considered for the Nick Kaneb Drive Extension project. They included:

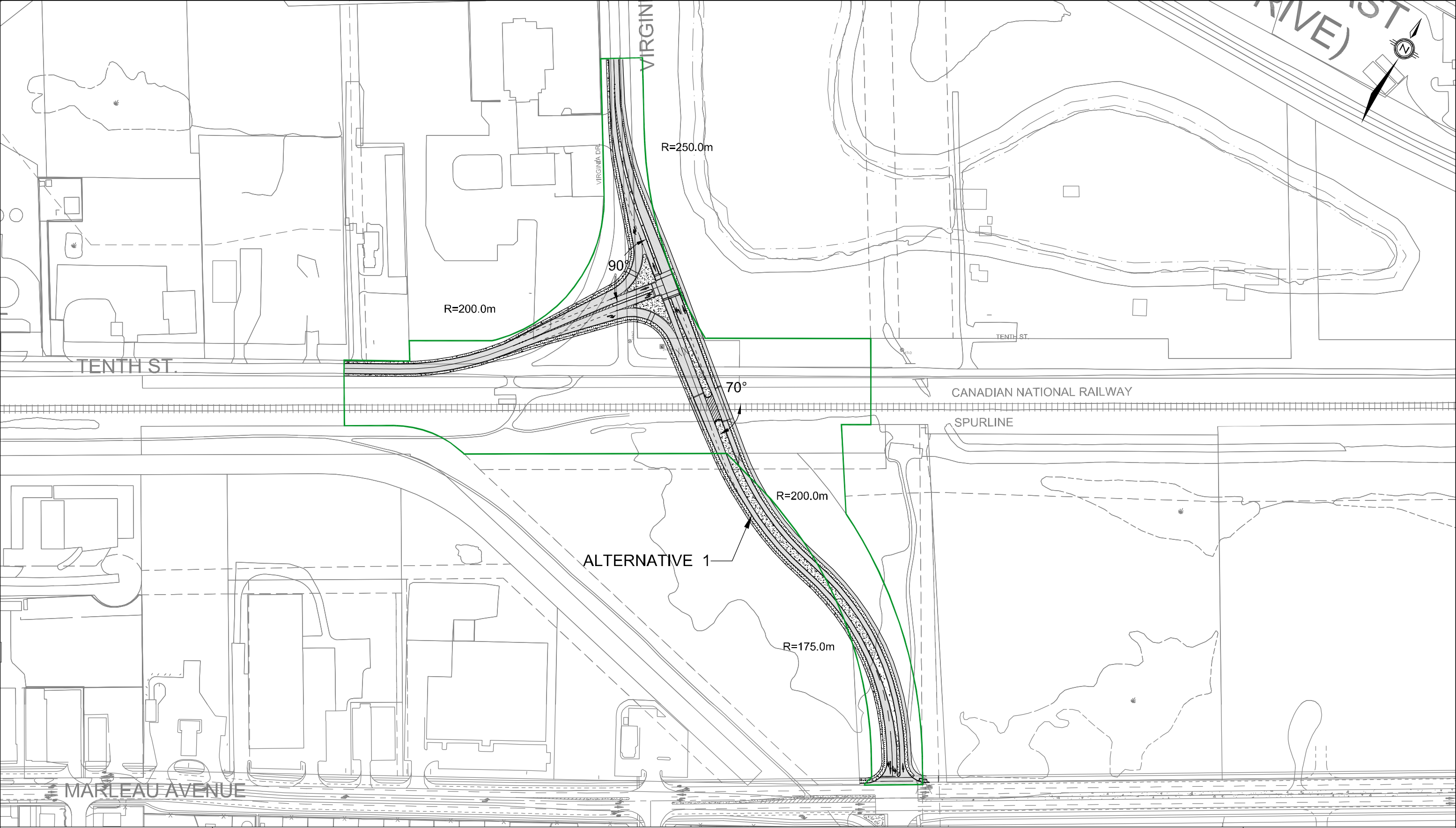
- **Alternative 1** - Roadway link from Marleau Avenue northerly to Tenth Street with a standard intersection (90° skew angle) at Tenth Street/Virginia Drive;
- **Alternative 2** - Roadway link from Marleau Avenue northerly to Tenth Street with a standard intersection (70°

skew angle) at Tenth Street/Virginia Drive;

- **Alternative 3** - Roadway link from Marleau Avenue northerly to Tenth Street with a roundabout at Tenth Street/Virginia Drive;
- **Alternative 4** - Roadway link from Marleau Avenue northerly to Tenth Street with a roundabout at Tenth Street/Virginia Drive; and
- **Alternative 5** - Roadway link from Marleau Avenue northerly to Tenth Street with a split tee intersection at Tenth Street.

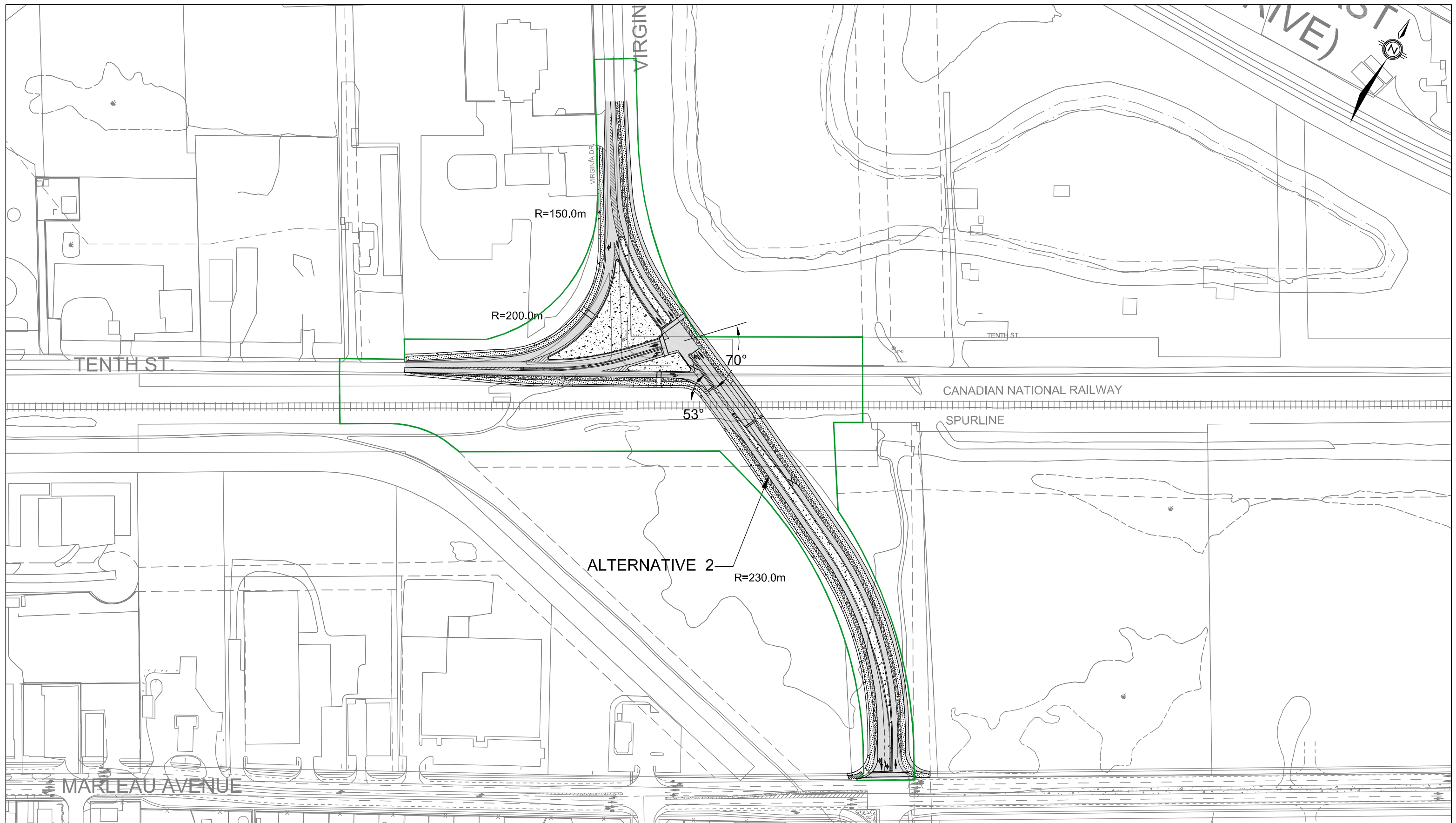
The alternatives are shown in **Figure 1-2** to **Figure 1-6**.

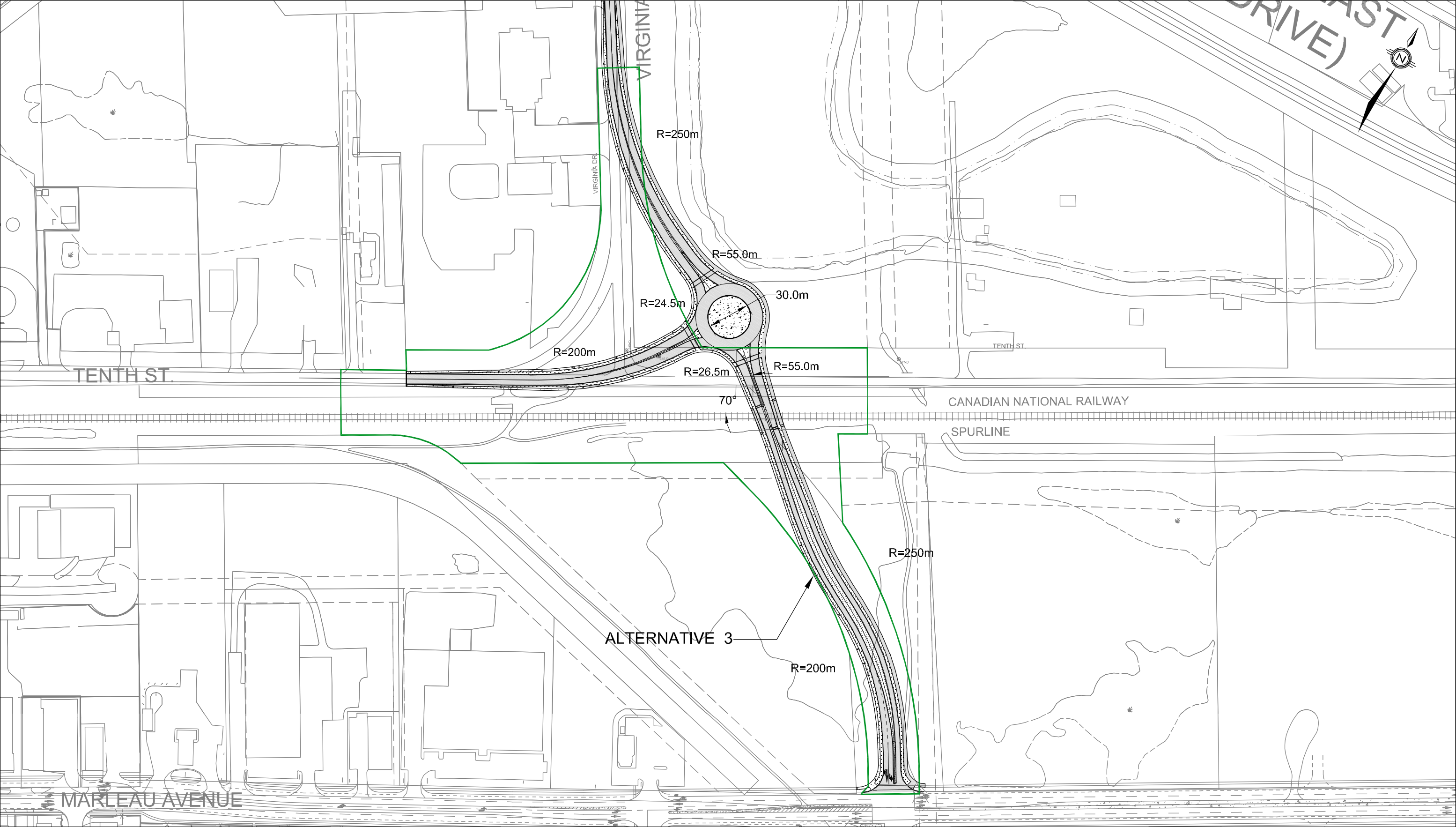
The results of the evaluation exercise indicated that **Alternative 2** was the Recommended Plan (See **Section 5.0**).



ALTERNATIVE 1 - STANDARD INTERSECTION

FIGURE 1-2



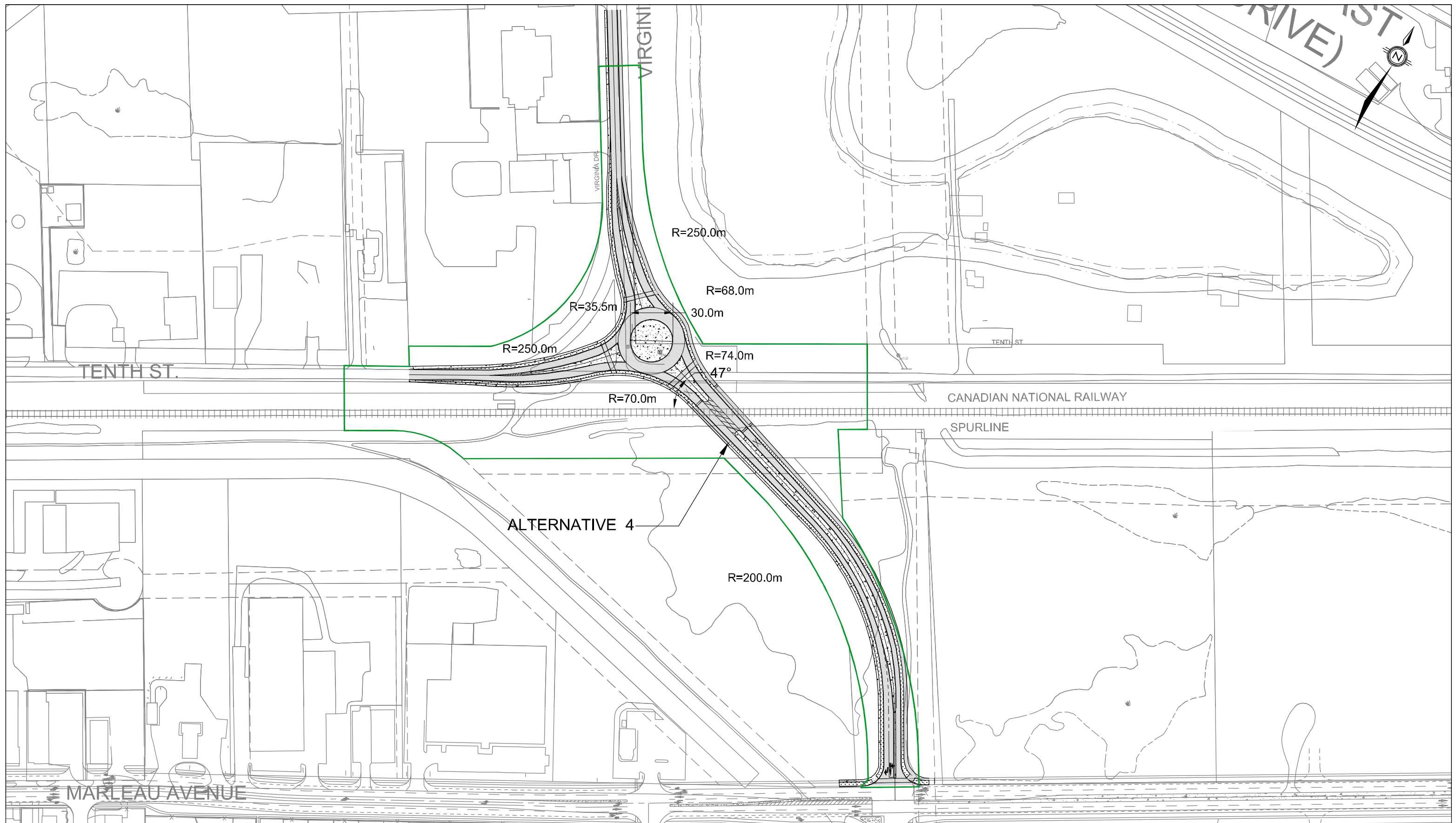


ALTERNATIVE 3 - ROUNDABOUT

NICK KANEB DRIVE EXTENSION ENVIRONMENTAL ASSESSMENT

FIGURE 1-4



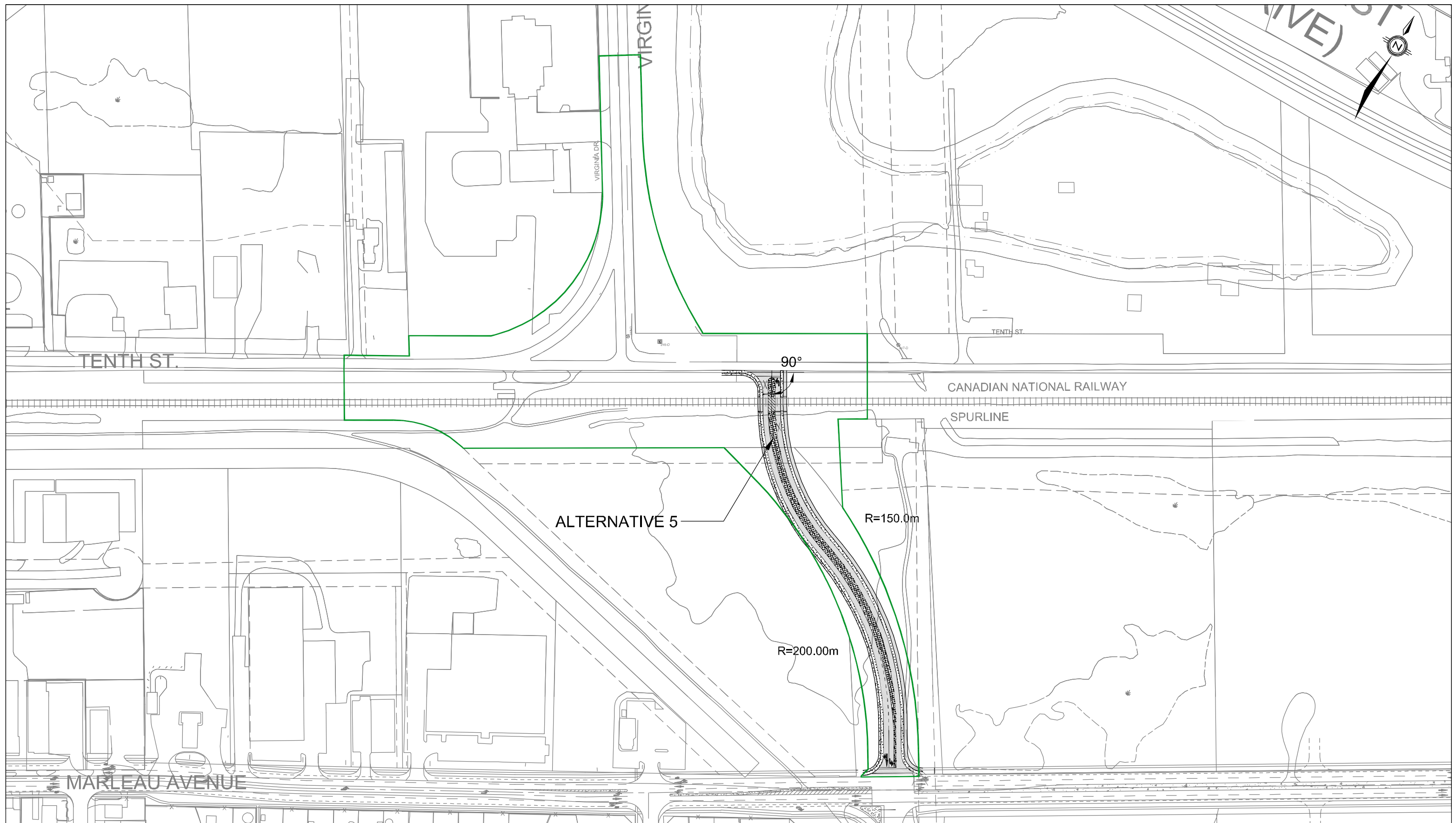


ALTERNATIVE 4 - ROUNDABOUT

NICK KANEB DRIVE EXTENSION ENVIRONMENTAL ASSESSMENT

FIGURE 1-5





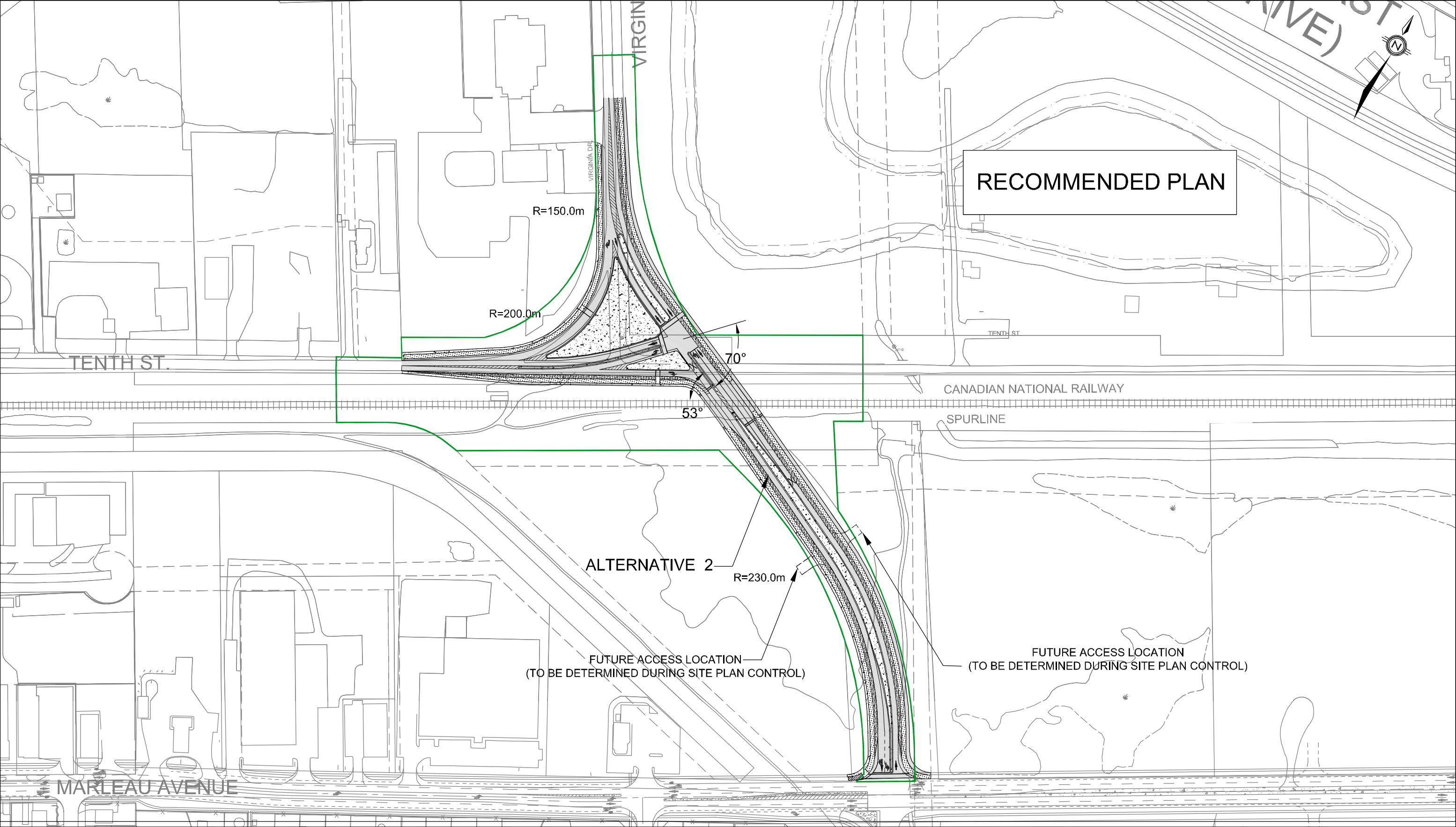
1.6.3 Recommended Plan

The Recommended Plan provides a new roadway link from Marleau Avenue northerly to Tenth Street.

The Recommended Plan is shown in **Figure 1-7** and provides a similar roadway to the existing Nick Kaneb Drive from Second Street to Marleau Avenue with the following elements:

- A northerly 2-lane extension of Nick Kaneb Drive from Marleau Avenue to Tenth Street;
- Sidewalk on the west side of the road;
- Grassed boulevards on both sides of the road;
- A recreational path on the east side of the road;
- A conventional non-signalized intersection at Tenth Street (can be signalized when warranted); and
- Provides a new link and improved connectivity to and from the Cornwall Business Park.

The Recommended Plan, as shown in **Figure 1-7**, was presented to the public at the Public Open House.



1.7 Consultation

1.7.1 Public Consultation

The Nick Kaneb Drive Extension EA Study was carried out in accordance with the *Municipal Engineer's Association Class EA Process for Municipal Road Projects 2000, as amended in 2007 & 2011* as a Schedule "B" project. Throughout the duration of the study, regular progress meetings were held with the Technical Advisory Committee to seek input, direction and concurrence on the study findings and recommendations.

The following is a list of consultation activities for this study:

- Notification of Study Commencement/ Public Open House to public, agencies and stakeholders – October 9, 2013;
- Public Open House – October 16, 2013; and
- Notification of Study Completion to public, agencies and stakeholders – March 26, 2014.

The public consultation efforts for this study were successful. At the conclusion of the study, the majority of comments received from members of the public were positive, in support of the recommendations to construct a new roadway within the Study Area.

1.7.2 Technical Advisory Committee (TAC)

The Technical Advisory Committee (TAC) included City of Cornwall (proponent) staff

and consultant staff (WSP (previously GENIVAR)). The TAC was organized to complete the technical aspects of the study and to communicate local concerns and preferences.

1.8 Construction Costs and Implementation

The preliminary cost estimate to complete the construction of the Recommended Plan is approximately \$2.0 million (See **Section 7.6**). Implementation of the roadway would only take place when funding is available to the City of Cornwall.

1.9 Conclusions

Based on the findings of this study, the Recommended Plan for the Nick Kaneb Drive Extension EA recommends the extension of Nick Kaneb Drive northerly as a 2-lane divided arterial roadway from Marleau Avenue to Tenth Street.

These conclusions were achieved through the application of the Class Environmental Assessment (EA) for Municipal Projects. The public and government agencies have contributed to the findings of the report through their active participation throughout the course of the study.

2.0 NEED AND JUSTIFICATION

2.1 Study Purpose

The need and justification for this project is to provide an efficient and effective north/south transportation link alternative to McConnell Avenue and Boundary Road to meet long term forecasted travel demand. This plan will meet the requirements of all modes of transportation (pedestrians, bicycles, transit, goods movement and vehicular traffic) and will have a goal of providing the safest facility considering the value of all competing interests. A Traffic Analysis Memorandum was completed and is found in **Appendix A**.

This study will define an improvement plan and receive environmental clearance for the facility that matches the land use plan. The roadway design will be selected using a traceable evaluation technique to provide a defensible case for the Recommended Plan. The Recommended Plan will provide the City with:

- An approved plan that can be constructed in 2014 or later;
- A defined cost; and
- A sustainable plan that can allow economic development of the community.

3.0 STUDY APPROACH AND CONSULTATION

3.1 Background

This section of the Project File presents a discussion of the following:

- Environmental Assessment requirements;
- Study process and tasks involved in the completion of the project; and
- The study organization including:
 - Technical Advisory Committee membership;
 - Involvement of external agencies and interest groups; and
 - Public participation program.

3.2 Environmental Assessment Requirements

This project has been undertaken as a Schedule “B” Class EA as outlined in the *“Municipal Class Environmental Assessment 2000, as amended in 2007 & 2011”*. This document specifies the procedures required for road planning and servicing projects. The study process for a Schedule “B” project is illustrated in **Figure 3-1, Municipal Class EA Planning and Design Process**.

The study followed the Ministry Of Environment’s (MOE’s) 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; and
- Provide clear and concise documentation of the decision-making process and public consultation program.

These principles are described in the following sections.

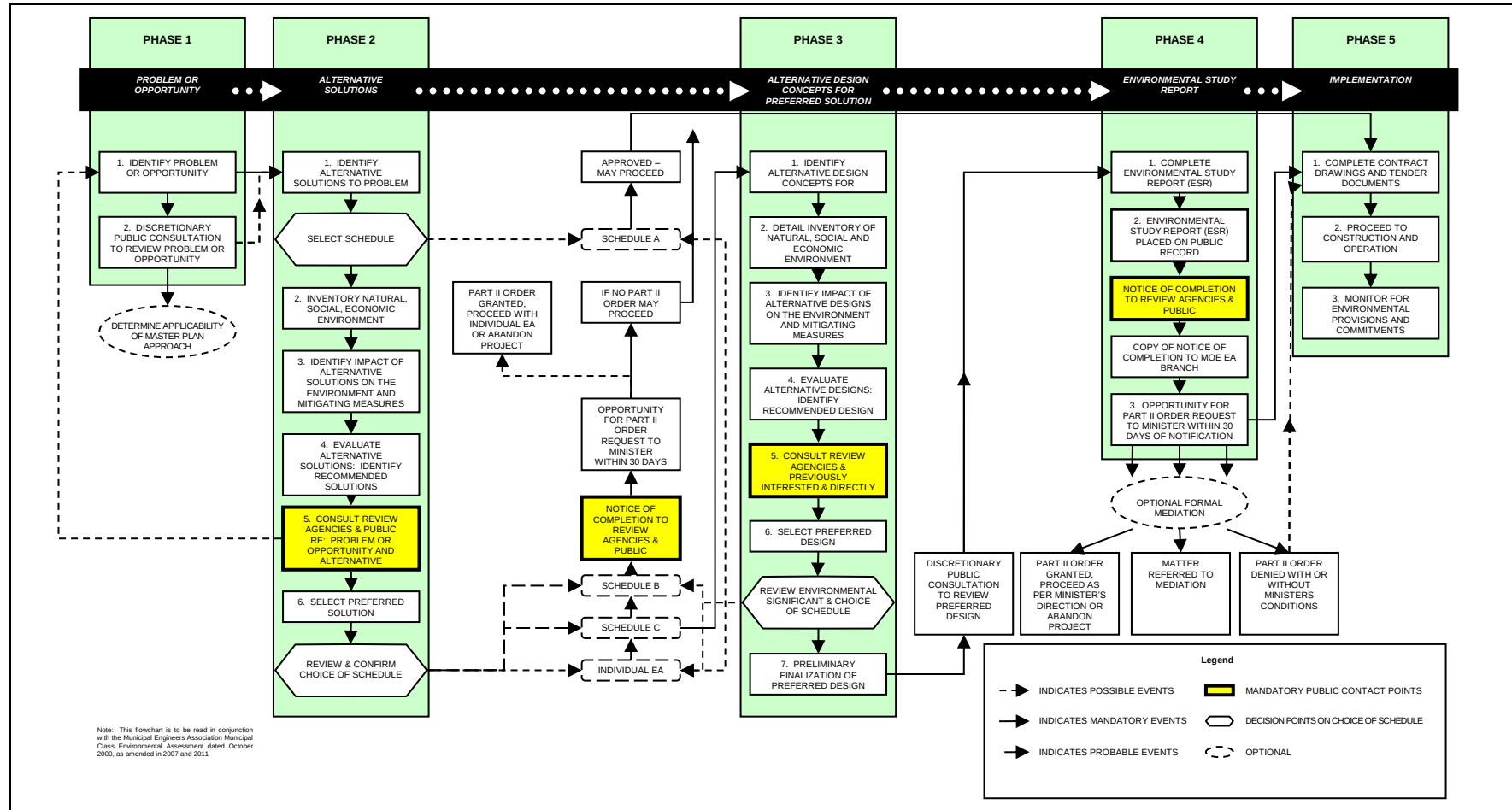
3.3 Study Process

The study process for the Nick Kaneb Drive Extension EA project was carried out in a series of steps commencing with study need and culminating in the filing of this Project File. The steps in the study process are as follow:

- | | |
|--------------|--|
| Phase 1: | Identification of the problem and opportunity |
| Phase 2 & 3: | Environmental Inventories, review and Confirmation of the Alternative Planning Solutions considered and generation and assessment of design alternatives |
| Phase 4: | Documentation/ Project File |

The project included effective and meaningful public consultation in each phase of the process.

Figure 3-1
Municipal Class EA Planning and Design Process



3.4 Study Organization

The City of Cornwall provided overall direction for the study, including technical advice and assistance relating to transportation needs, roadway element design, property, and other infrastructure elements. In addition, the City provided coordination and liaison with municipal representatives, external agencies, elected representatives, interest groups, property owners, and the public.

The specific activities for each element of the study are described in the following sections.

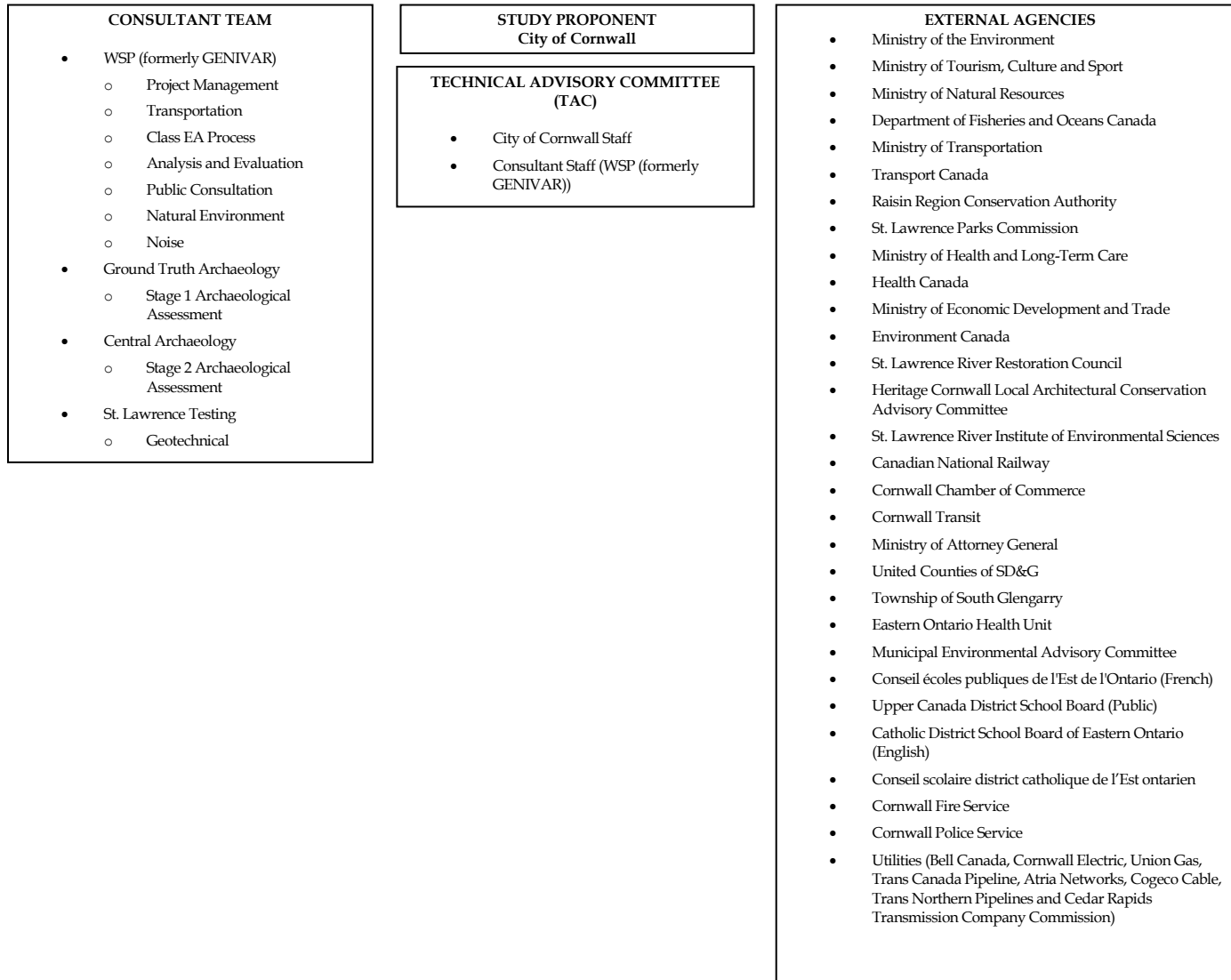
Figure 3-2 summarizes the study organization including the external agencies, study partners, project team, and Technical Advisory Committee.

3.4.1 Technical Advisory Committee (TAC)

Direction and consultation for the study was provided by a Technical Advisory Committee (TAC). The role of the TAC was to complete the technical aspects of the study and to communicate local concerns and preferences. Membership on the TAC was from the following organizations:

- City of Cornwall staff; and
- Consultant Staff (WSP (previously GENIVAR))

**Figure 3-2
Study Organization**



3.4.2 Consultant Team

WSP (previously GENIVAR) was retained to provide transportation and project management expertise and conduct specialty services related to:

- Project Management;
- Transportation;
- Class EA Process;
- Analysis and Evaluation;
- Public Consultation;
- Natural Environment; and
- Noise.

The services of several sub-consultants were also retained to provide expert advice in required areas as follows:

- Ground Truth Archaeology – Stage 1 Archaeological Assessment;
- Central Archaeology – Stage 2 Archaeological Assessment; and
- St. Lawrence Testing - Geotechnical

3.4.3 Special Interest Groups and Other Agencies

Throughout the project, a consultative approach was used with external agencies and interest groups. All agencies/groups that either may have had information to contribute to the study, or could be affected by study proposals, were contacted.

Organizations were consulted during numerous stages of the study including data collection, development of alternatives, preparation and screening of evaluation

criteria, review of the assessment of alternatives and the development of appropriate mitigation plans.

3.5 Public Open House

A Public Open House (POH) was held during the course of the study. The POH was held at the City of Cornwall's Infrastructure and Municipal Works Building on Wednesday, October 16, 2013 between the hours of 4:00 and 7:00 pm.

Announcements were placed in local newspapers prior to the Open House. All property owners and businesses within the Study Area were invited to the Open House through individual notices.

The Public Open House permitted all members of the public and interest groups to view the presentation material and to discuss the project with City and consultant representatives. The purpose of the POH was to introduce the study and present the EA process, existing conditions, preliminary alternatives, the evaluation of preliminary design alternatives and the Recommended Plan for the project.

In total, twenty (20) persons registered at the Public Open House. Each person was provided with a comment form and encouraged to submit their written comments in the box provided or by fax/email within the 2-week comment period. In total, six (6) comment sheets /letters/e-mails were returned during the Open House and the subsequent 2-week response period. A summary of the POH is

found in **Appendix B, Public Open House Summary Report**.

3.6 Summary of Public Consultation

One of the key objectives of any Environmental Assessment is to provide the public, interested parties and affected agencies with the opportunity for meaningful input. In order to ensure that this objective is met, a public and agency notification program was undertaken for the Nick Kane Drive Extension EA. The program included several communication mechanisms as described in succeeding sections.

3.6.1 Individual Property Owner Contacts

All property owners within the Study Area were included on a study mailing list, as provided by the City, and mailed individual notices inviting them to attend the Public Open House that was held during the course of the project. In addition, all members of the public who participated in the study and/or were included on the mailing list received notification of the 30-day public review period of this document.

3.6.2 Newspaper Notices

Notices of the Study Commencement/Public Open House and Study Completion were placed in the Cornwall Standard-

Freeholder and the Journal de Cornwall prior to the scheduled date of the Open House and the conclusion of the project. The newspaper notices can be found in **Appendix B, Public Open House Summary Report**. Advertisements were placed in the aforementioned newspapers on the following dates:

- October 9, 2013 – Notice of Study Commencement and Public Open House; and
- March 26, 2014 – Notice of Study Completion.

3.6.3 Agency Contacts

In addition, correspondence with the following agencies and interest groups was made to solicit their input in the study:

Public

- Area residents/business owners/property owners

Agencies

- Ministry of the Environment
- Ministry of Culture
- Ministry of Natural Resources
- Department of Fisheries and Oceans Canada
- Ministry of Transportation
- Transport Canada
- Raisin Region Conservation Authority
- St. Lawrence Parks Commission
- Ministry of Health and Long-Term Care
- Health Canada

- Ministry of Economic Development and Trade
- Environment Canada
- St. Lawrence River Restoration Council
- Heritage Cornwall Local Architectural Conservation Advisory Committee
- St. Lawrence River Institute of Environmental Sciences
- Canadian National Railway
- Cornwall Chamber of Commerce
- Cornwall Transit
- Ministry of Attorney General
- United Counties of SD&G
- Township of South Glengarry
- Eastern Ontario Health Unit
- Municipal Environmental Advisory Committee
- Conseil écoles publiques de l'Est de l'Ontario (French)
- Upper Canada District School Board (Public)
- Catholic District School Board of Eastern Ontario (English)
- Conseil scolaire district catholique de l'Est ontarien
- Cornwall Fire Service
- Cornwall Police Service
- Utilities
 - Bell Canada
 - Cornwall Electric
 - Union Gas
 - Trans Canada Pipeline
 - Atria Networks
 - Cogeco Cable

- Trans Northern Pipelines
- Cedar Rapids Transmission Company Commission

3.6.4 First Nations Contacts

A notification program was undertaken to contact First Nations Groups and organizations for this study. Letters were sent to the following First Nations group and organizations at the study commencement, public open house and study completion stages to solicit their interest or non-interest in the study:

- Indian and Northern Affairs Canada
- Ministry of Aboriginal Affairs
- Mohawk Council of Akwesasne

4.0 EXISTING CONDITIONS

Existing condition inventories and site assessments/inspections were undertaken between April 2013 and November 2013 to review the present environmental conditions of the Study Area. Consultation with the Ministry of Natural Resources (MNR) and Raisin Region Conservation Authority (RRCA) was undertaken as well. The City of Cornwall also provided information regarding social and cultural environments and land use & property information. The inventory and site assessment provides the background information required for the evaluation of alternatives and the determination of impacts by the proposed modifications. The level of detail accounted for in each assessment reflects the complexity of the site features.

The following sections provide an overview of the information collected and provided to the Study Team throughout the Study Area. The information is divided into the following sections:

- **Section 4.1** Natural Environment Features;
- **Section 4.2** Social and Cultural Environments; and
- **Section 4.3** Land Use and Property.

4.1 Natural Environment Features

The following sub-sections summarize natural environmental features and identify the significant features to be taken into consideration and requirements for mitigation.

The Environmental Inventory Report can be found in **Appendix C**.

WSP (previously GENIVAR) staff conducted a site survey on July 18, 2013, in order to observe and document existing terrestrial and aquatic conditions. During the field visit, the Site was evaluated with respect to presence of dominant vascular plants, site topography, wetland areas, incidental wildlife contact, herpetofauna and aquatic and terrestrial habitat potential.

4.1.1 Terrestrial Environment

The terrestrial environment along the proposed alignment has been largely disturbed by human activity. The southern end of the Site occurs along Nick Kaneb Drive, crossing Marleau Avenue, and extending north to just south of the railroad tracks is a hydro right-of-way (ROW) running approximately north/south. Pedestrian paths are present along Nick Kaneb Drive south of Marleau Road, and the ROW running north/south contains a gravel access road and a fenced enclosure just south of some railway tracks running east/west south of Tenth Street East. The existing vegetation in this area is dominated by manicured grasses.

A fairly dense Silver maple (*Acer saccharinum*) dominated forest with extensive areas of Sensitive fern (*Onoclea sensibilis*) in the understory occurs immediately east of this area and extends north to Tenth Street East. Grasses, Red-osier Dogwood (*Cornus sericea*) and an unidentified fruit tree (*Prunus* spp.) were observed in the edge areas around the forest. This area likely holds water in small, isolated pools during the spring thaw.

Tall grasses line the western edge of this area. A large cattail stand containing standing water at the time of the site visit occurs immediately west of the tall grass.

This north/south ROW intersects another ROW that runs east/west approximately 250 m north of the intersection of Nick Kaneb Drive and Marleau Avenue. The existing vegetation in this ROW was dominated by common species such as: Staghorn sumac (*Rhus typhina*), Goldenrod (*Solidago* spp.), Wild Red Raspberry (*Rubus idaeus*), Queen Anne's Lace (*Daucus carota*), Wild Grape (*Vitis* spp.), Wild Parsnip (*Pastinaca sativa*), Jewel Weed (*Impatiens capensis*), and seedling Manitoba Maple (*Acer negundo*) with occasional Milkweed (*Asclepias* spp.).

The road ROW along Tenth Street East and Virginia Drive contained well maintained, manicured grasses. North of Tenth Street East was a large fenced area surrounding the Fly Creek Storm Water Retention Pond. The vicinity of the storm water retention pond was largely meadow type conditions containing grasses, Wild Parsnip, sapling

Ash (*Fraxinus* spp.) and Manitoba Maple. Mature White cedar (*Thuja occidentalis*) trees lined the north side of Tenth Street East near the intersection of Virginia Drive. A row of mature Silver Maple trees occurred behind the cedars and extended along the east side of Virginia Drive to the northern end of the study area.

A commercial property was located along the north/west edge of the site with occasional areas of cattails (*Typha* spp.) and wet loving grasses throughout.

The railroad tracks occurred south of Tenth Street East with a narrow strip of common trees and meadow species running along the north and south sides of the tracks consists mainly of common.

The results of a search of MNR Natural Heritage Information Centre (NHIC 2013), Ontario Breeding Bird Atlas (Bird Studies Canada 2005), the Distribution at Risk maps for RRCA and the Ontario Reptile and Amphibian Atlas (Ontario Nature 2011) identified 6 Species at Risk and species of concern that may occur within or adjacent to the study area:

Avian

- Barn Swallow (*Hirundo rustica*),
- Bobolink (*Dolichonyx oryzivorus*); and,
- Eastern Meadowlark (*Sturnella magna*).

Herpetofauna

- Snapping Turtle (*Chelydra serpentina*); and,

- Western Chorus Frog (*Pseudacris triseriata* pop. 2).

Flora

- Butternut Tree (*Juglans cinerea*),

No Species at Risk (SAR) or species of concern were observed during the site visit.

4.1.2 Aquatic Environment

A small watercourse feature flowed along the east side of the east/west ROW and turned north within the proposed road extension alignment, under the railroad tracks, under Tenth Street East, just east of Virginia Drive. The watercourse appears to be permanent and drains into the Fly Creek Storm Water Retention Pond. The watercourse was densely vegetated with grasses and cattails between the railroad tracks and Tenth Street East and become dominated by cattails north of Tenth Street East to the retention pond.

Wetlands are defined in the PPS as lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface (MMAH 2005). There are four major wetland types; swamps, marshes, bogs, and fens. An unevaluated wetland is defined as an area identified as provincially significant by the Ministry of Natural Resources using evaluation procedures established by the province, as amended from time to time (MMAH 2005).

A review of Lands Information Ontario (LIO) geospatial data using a Geographic Information System (GIS) depicts no provincially significant wetlands within 120 m of the proposed development site.

The RRCA was contacted on August 14, 2013 via email regarding the location of the Site in relation to the RRCA enforcement area as per O.Reg 175/06. RRCA indicated that the Site is not located in the RRCA enforcement area for wetlands. During the Site visit, a potential seasonal watercourse was observed north of the Site running southeast.

The following fish species have been identified by the MNR as potentially occurring in the vicinity of the Site:

- Bluntnose Minnow (*Pimephales notatus*),
- Brook Stickleback (*Culaea inconstans*),
- Brown Bullhead (*Ameiurus nebulosus*),
- Iowa Darter (*Etheostoma exile*),
- Notropis sp.; and,
- White Sucker (*Catostomus commersonii*).

None of these species are identified as being at Risk according to SARA and SARO searches and the Distribution of Fish Species at Risk maps Raisin River Conservation Authority, 2013 (Fisheries and Oceans Canada 2013) shows that the watercourse running east-west through the SWM pond and along Tenth Street East is

not designated as containing Special Concern Species.

4.2 Social and Cultural Environments

4.2.1 Stage 1 Archaeological Assessment

A Stage 1 Archaeological Assessment of the study area was conducted in accordance with the *Ontario Heritage Act (2005)* and the Ontario Ministry of Culture's (MCL) 2011 *Standards and Guidelines for Consultant Archaeologists*. The Stage 1 archaeological assessment involved a background study to provide detailed documentary research providing a record of the archaeological and land use history and present conditions of the study area. Specifically, the background study provides information about previous archaeological fieldwork around the study area, its geography and history, and current land conditions.

The study area consists of several street right-of-ways, a section of railway right-of-way and an undeveloped stretch of woodland located on the northeast edge of the City of Cornwall. Specifically, the study area encompasses part of Lots 4 and 5 of the First Concession and part of Lot 4 of the Second Concession, in the Township of Cornwall in Stormont County.

Several factors must be taken into consideration when determining the potential for the existence of archaeological sites in a given area (MTC 2011). Archival

research indicated that the lots were patented from the Crown in the late eighteenth and early nineteenth centuries and it is likely that settlement occurred shortly thereafter. Late nineteenth century mapping shows that buildings were located along the southern edge of the second concession lots, both on Lot 4 and on Lot 3 to the east and Lot 5 to the west. The original settler cabins may also have existed along the concession road at the south end of the second concession lots (within the study area). Additionally, the study area is located within 200 m of a minor watercourse. The archival evidence combined with the proximity to a creek indicates that the study area has a moderate to high potential for the presence of archaeological sites (MTC 2011).

As a result of the Stage 1 archaeological assessment and in concordance with the 2011 *Standards and Guidelines for Consultant Archaeologists*, the following recommendations in regards to the Nick Kaneb Drive Extension have been made:

- The subject property has moderate to high potential for the presence of archaeological resources. A Stage 2 archaeological assessment is required for the subject property prior to ground disturbance;
- As the subject property is either treed or semi-developed (street and railway right-of-way) and is not suitable for ploughing the appropriate approach for the Stage 2 assessment is a test pit survey at 5m intervals;

- The Stage 2 archaeological assessment must adhere to the requirements of the 2011 Standards and Guidelines for Consultant Archaeologists (MTC 2011);
- Should deeply buried archaeological remains be found on the property during development activities, the Ministry of Tourism, Culture and Sport (416-314-7148) should be notified immediately; and
- In the event that human remains are encountered during development, the proponent should immediately contact local law enforcement, then Michael D'Mello, Cemeteries Regulation Unit, Ministry of Small Business and Consumer Services, 416-326-8404, and the Ministry of Tourism, Culture and Sport.

Please refer to **Appendix D, Stage 1 Archaeological Assessment.**

4.2.2 Stage 2 Archaeological Property Survey

A Stage 2 property survey for the proposed extension of Nick Kane Drive in the City of Cornwall was undertaken on October 12, 2013. The purpose of the work was to ensure that cultural heritage interests and concerns were addressed and also to determine if there were significant heritage resources within the subject lands that may be impacted by the proposed development.

This Stage 2 property survey was undertaken as a result of the recommendations in the Stage 1

archaeological assessment previously undertaken.

The project area was assessed by way of test pit survey at five metre intervals as well as a visual assessment of the entire project area and outlying properties.

The Stage 2 archaeological assessment did not recover any material culture during excavation activities. Consequently, significant pre-contact and historic First Nations or historic Euro-Canadian archaeological sites are unlikely to be found in any undisturbed ground within the project area. Therefore, there are no significant archaeological concerns associated with the remainder of this project and it is recommended that the development area be cleared of archaeological concerns.

Notwithstanding the results and recommendations presented in this study, that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. Therefore, in the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the Ministry of Tourism, Culture and Sport should be immediately notified.

Please refer to **Appendix D, Stage 2 Archaeological Property Survey.**

4.2.3 Noise

Future sound levels within the Study Area will be a function of the traffic generated by

development. As such, the need for noise mitigation for all new development will be the responsibility of the developers of each of these sites. No noise sensitive residential receiver sites were present in the study area. The Noise Analysis Memorandum is found in **Appendix E**.

4.3 Land Use and Property

The Study Area is located east of the commercial area along Marleau Avenue. A Hydro corridor is located east of the Study Area. The land the Study Area is located on is currently vacant. The vacant land is designated (Zoning By-law) as Manufacturing.

5.0 ANALYSIS AND EVALUATION

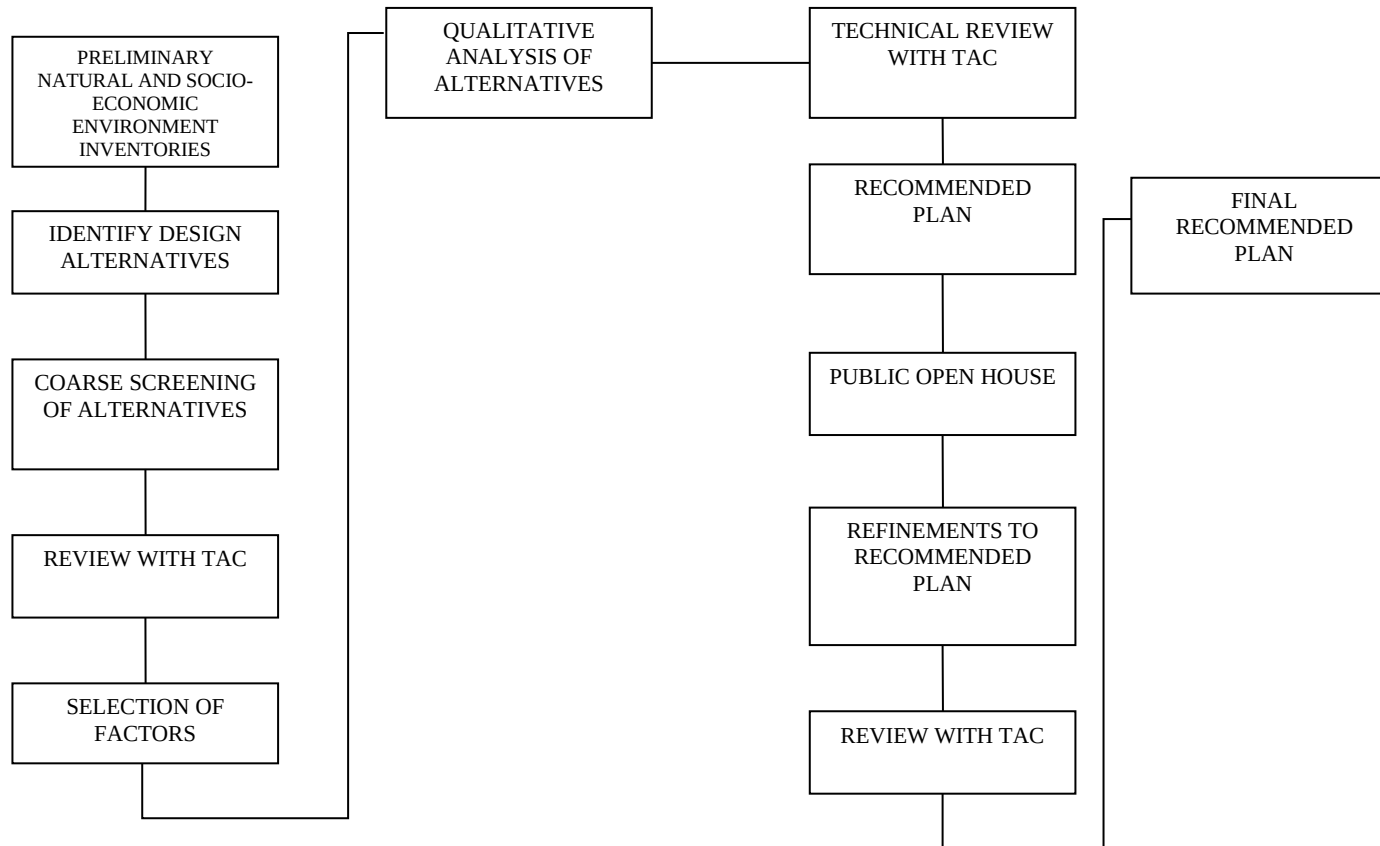
This Chapter describes the approach used to develop, analyze and evaluate roadway alternatives for the Nick Kane Drive Extension EA Study. The information collected and documented is applied not only to the planning and design, but also to the mitigation of impacts associated with construction, operation, and maintenance.

The assessment and evaluation of alternatives must be traceable, defensible and documented.

5.1 Evaluation Process

This study's evaluation process is illustrated in **Figure 5-1, Evaluation Flowchart**. The following sections describe the methodology, analysis and evaluation and the resulting Recommended Plan.

Figure 5-1
Evaluation Flowchart



5.2 Evaluation Methodology

This section documents in detail the formal evaluation approaches used in this study as the primary tool for selecting the Recommended Plan for the project.

5.2.1 Qualitative Assessment

There are numerous methods available for the assessment and evaluation of alternatives, each with a variety of advantages and disadvantages. In situations where there are a limited number of alternatives to be compared or few measurable differences between the alternatives, the qualitative method is an acceptable evaluation approach. The use of simple qualitative and narrative assessments is an accepted methodology for the evaluation of alternatives where there are few alternatives and there is substantial agreement for the study recommendations. In this study, the Technical Advisory Committee (TAC) reviewed the alternatives being evaluated and endorsed when the qualitative approach would be followed.

For the alternatives being compared, a long-list of assessment factors and sub-factors is considered for each set of alternatives. Those factors and sub-factors, which have meaningful differences among the alternatives, are then carried forward for use in the evaluation.

For the qualitative approach, the long list of criteria (including factors and sub-factors)

allow for the identification of all benefits and impacts. The alternatives are evaluated by relative comparison to each other, using the rating scale and symbols as illustrated on **Table 5-1**. There is no absolute measure of effect but rather the effects are categorized into one of three levels.

The selection of a preferred alternative is based on a subjective comparison of the alternatives and ranking of options which generally have good performance for most sub-factors where there are differences among alternatives. This also includes a qualitative assessment of any sub-factors which are considered the most important in the decision-making process.

Table 5-1
Qualitative Evaluation Rating Symbols

Relative Rating	Symbol
Good in comparison	✓
Neutral in comparison	—
Poor in comparison	✗

For this study the qualitative evaluation approach was used for the evaluation of planning solutions and the analysis and evaluation of preliminary design alternatives.

5.3 Alternative Planning Solutions

The assessment of Planning Solutions is found below. The results of the assessment

recommended carrying forward a 'Basket' of Transportation Planning Solutions (or Alternatives to the Project). These recommendations were endorsed by the public at the Public Open House. Planning Solutions included:

- *Do Nothing* (Maintain current transportation network);
- *Transportation System Management (TSM) / Transportation Demand Management (TDM)*; and
- *New Nick Kaneb Drive Extension* - Carried forward as the preferred planning solution.

It was recommended that the "*New Nick Kaneb Drive Extension*" be carried forward as the preferred transportation strategy to meet travel and safety needs. The preferred Planning Solution (or "Alternative to" the undertaking) will be described as the "Undertaking".

5.4 Preliminary Design Alternatives

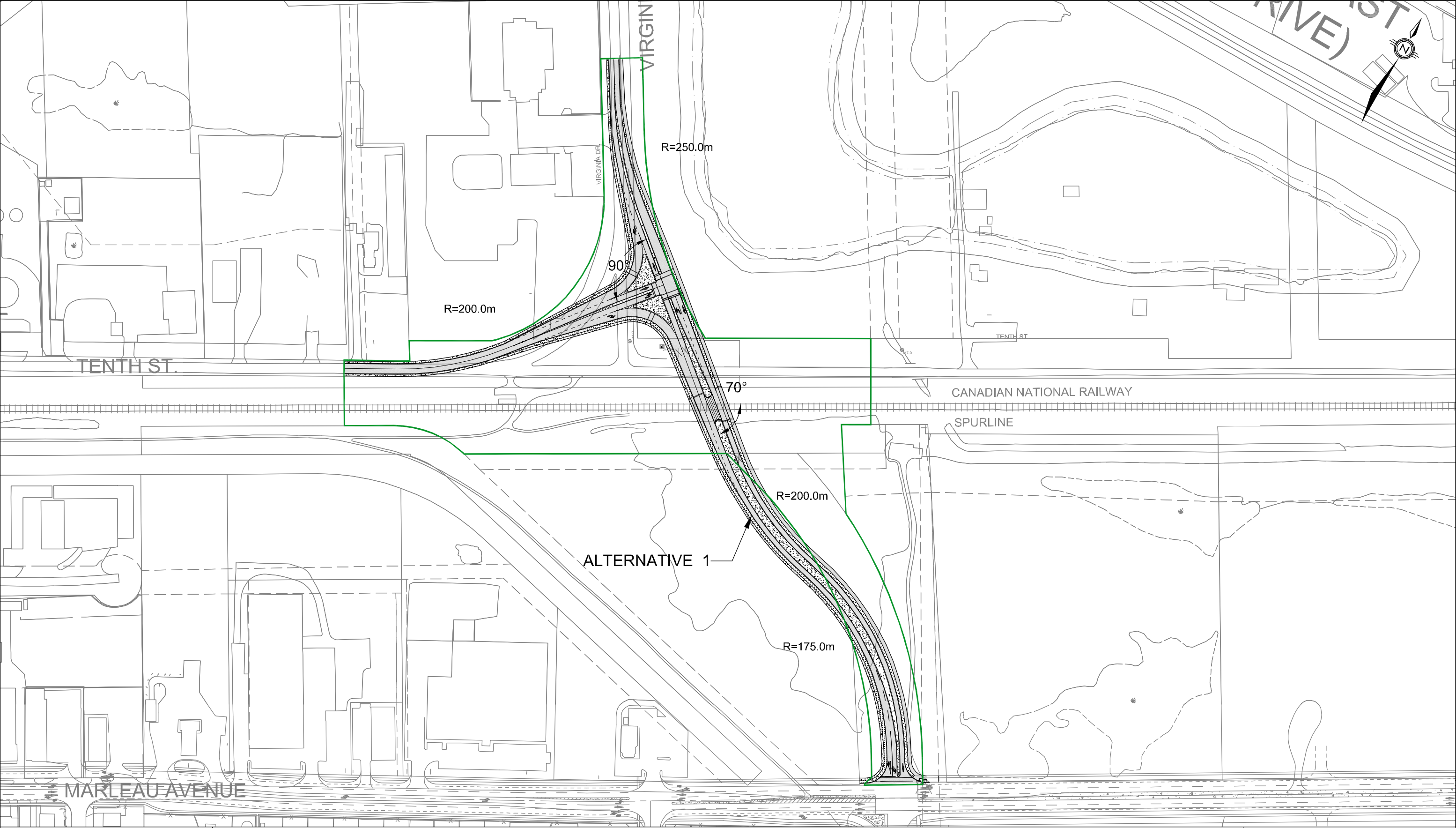
The following five (5) preliminary design alternatives were considered for the study:

- **Alternative 1** - Roadway link from Marleau Avenue northerly to Tenth Street with a standard intersection (90° skew angle) at Tenth Street/Virginia Drive;
- **Alternative 2** - Roadway link from Marleau Avenue northerly to Tenth Street with a standard intersection (70°

skew angle) at Tenth Street/Virginia Drive;

- **Alternative 3** - Roadway link from Marleau Avenue northerly to Tenth Street with a roundabout at Tenth Street/Virginia Drive;
- **Alternative 4** - Roadway link from Marleau Avenue northerly to Tenth Street with a roundabout at Tenth Street/Virginia Drive; and
- **Alternative 5** - Roadway link from Marleau Avenue northerly to Tenth Street with a split tee intersection at Tenth Street.

These alternatives are illustrated in **Figure 5-2** to **Figure 5-6**.

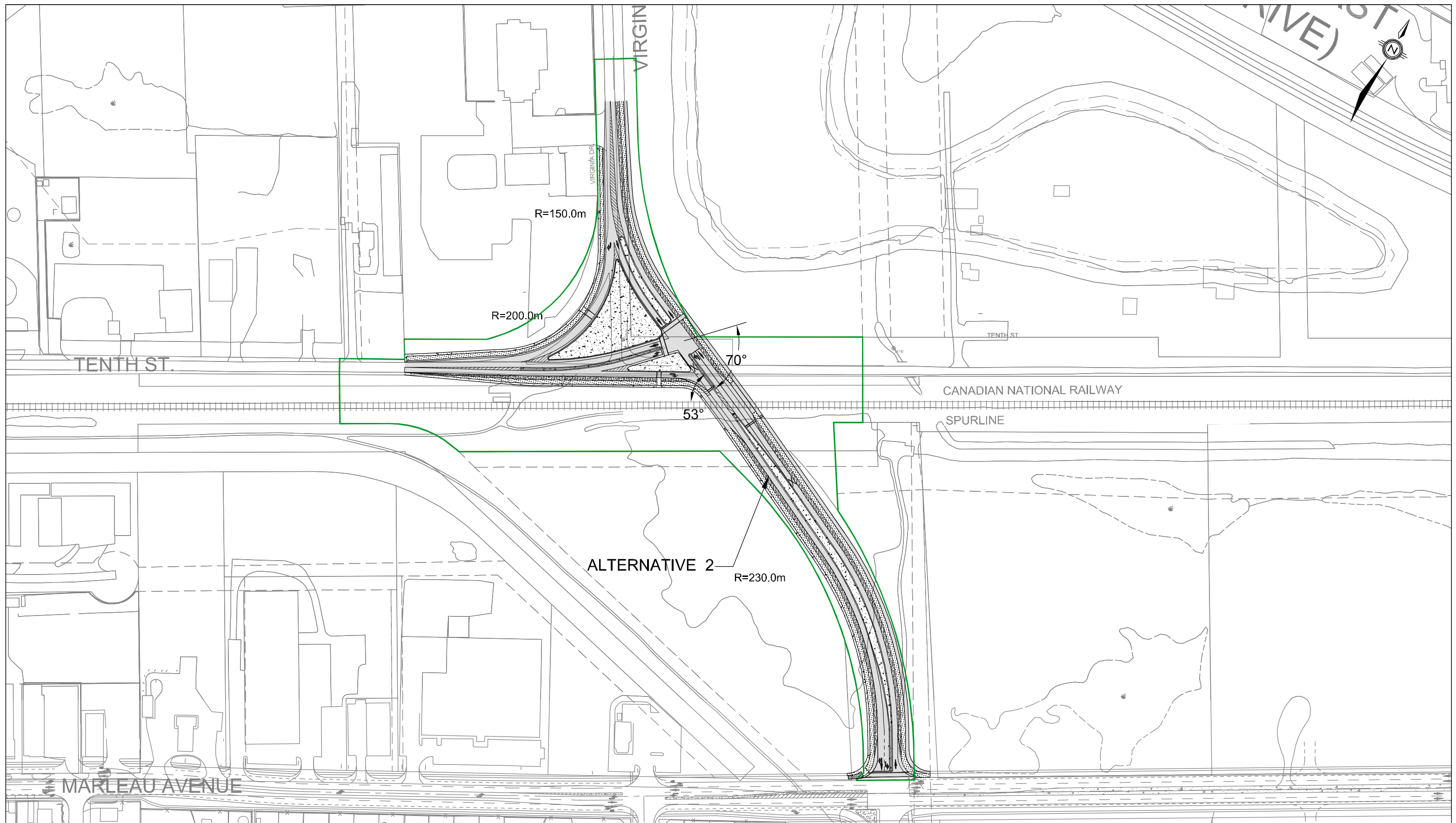


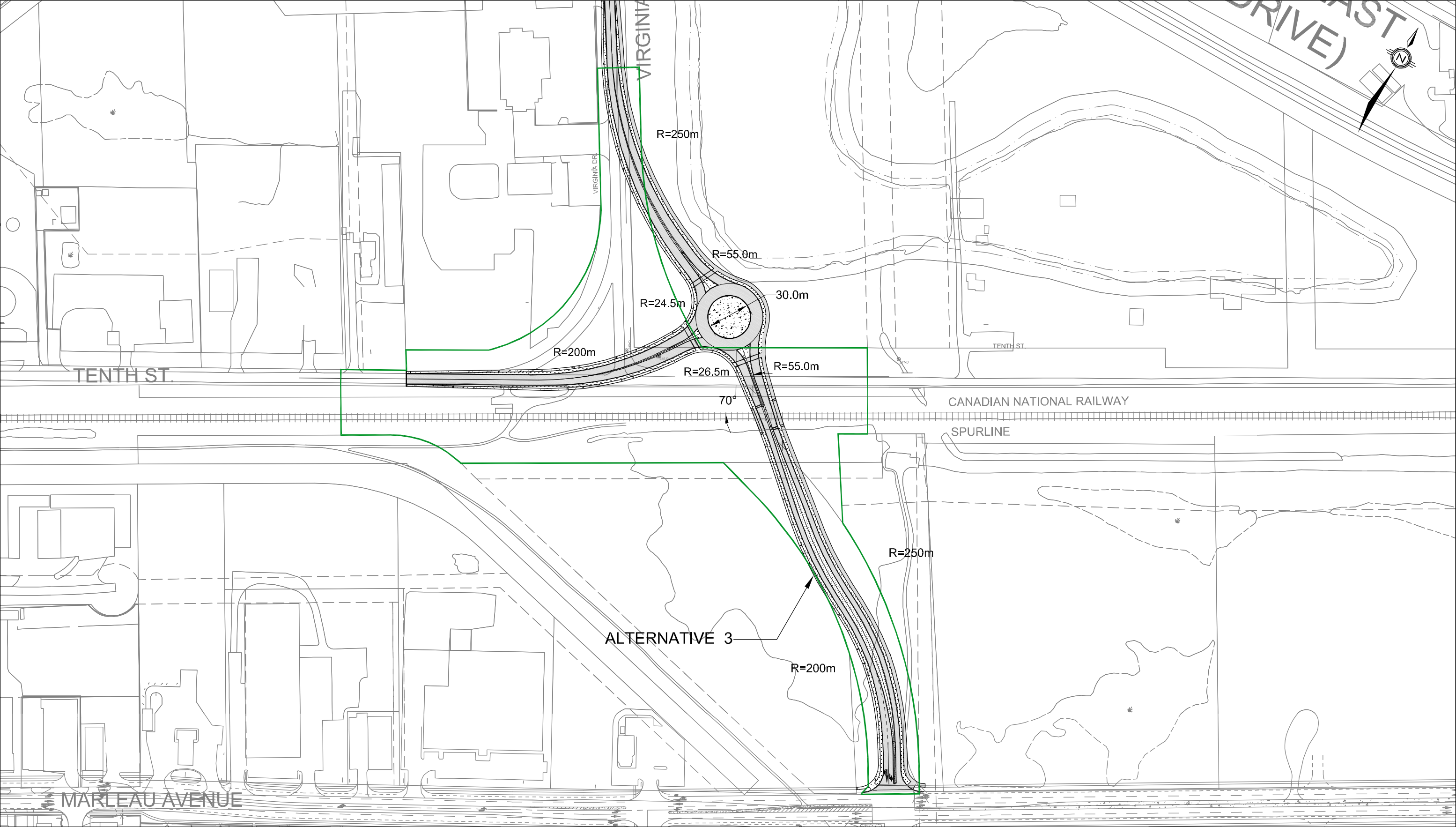
ALTERNATIVE 1 - STANDARD INTERSECTION

NICK KANEB DRIVE EXTENSION ENVIRONMENTAL ASSESSMENT

FIGURE 5-2





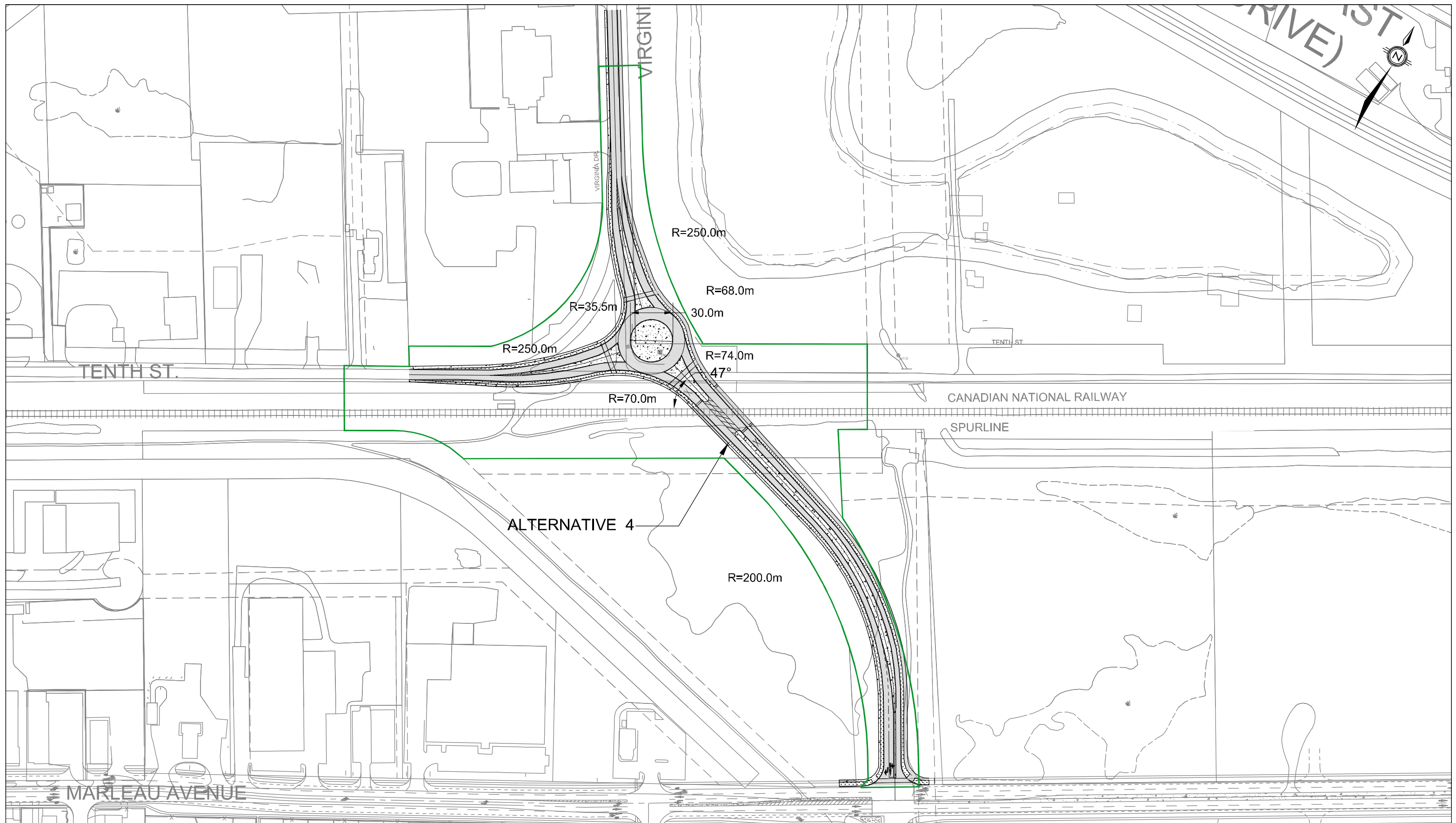


ALTERNATIVE 3 - ROUNDABOUT

NICK KANEB DRIVE EXTENSION ENVIRONMENTAL ASSESSMENT

FIGURE 5-4



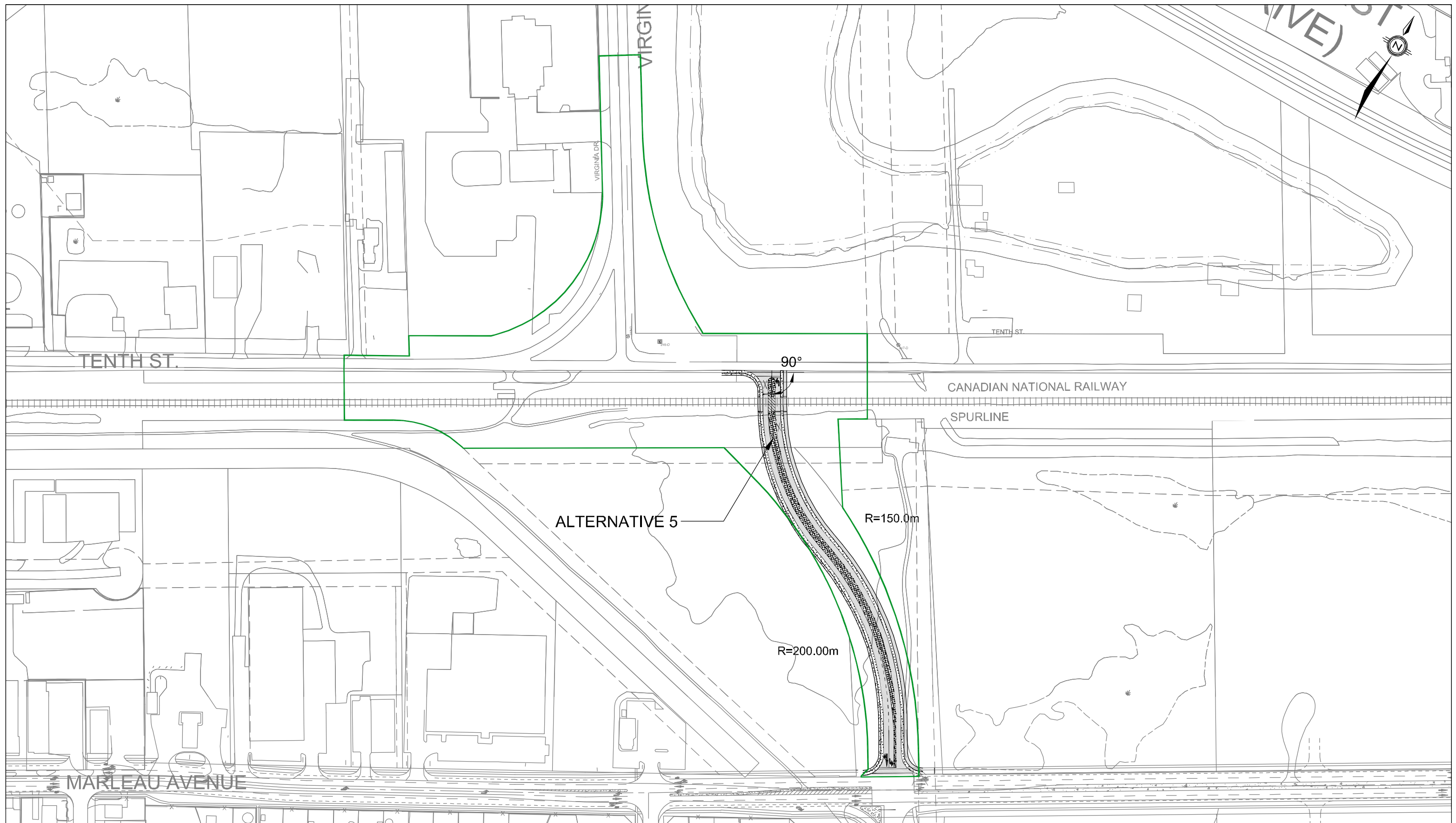


ALTERNATIVE 4 - ROUNDABOUT

NICK KANEB DRIVE EXTENSION ENVIRONMENTAL ASSESSMENT

FIGURE 5-5





5.5 Analysis and Evaluation of Preliminary Design Alternatives

Preliminary Design Alternatives were evaluated utilizing the qualitative approach. **Table 5-2** illustrates the assessment of alternatives for the Nick Kaneb Drive Extension project.

The following global factors and sub-factors were utilized in the qualitative analysis of alternatives for the Study Area:

- **Transportation**
 - Roadway Capacity
 - Roadway Continuity
 - Truck Turning Movement
 - Skew Angle (Tenth St./Virginia Dr. Intersection)
- **Land Use and Property**
 - Utilizes Existing Cornwall Right-of-Way
 - Minimizes Impacts to Adjacent Lands
- **Cost**
 - Road Construction Cost

5.6 Recommended Plan

The Recommended Plan for the Nick Kaneb Drive Extension EA is **Alternative 2** - Roadway link from Marleau Avenue northerly to Tenth Street with a standard intersection (70° skew angle) at Tenth Street/Virginia Drive.

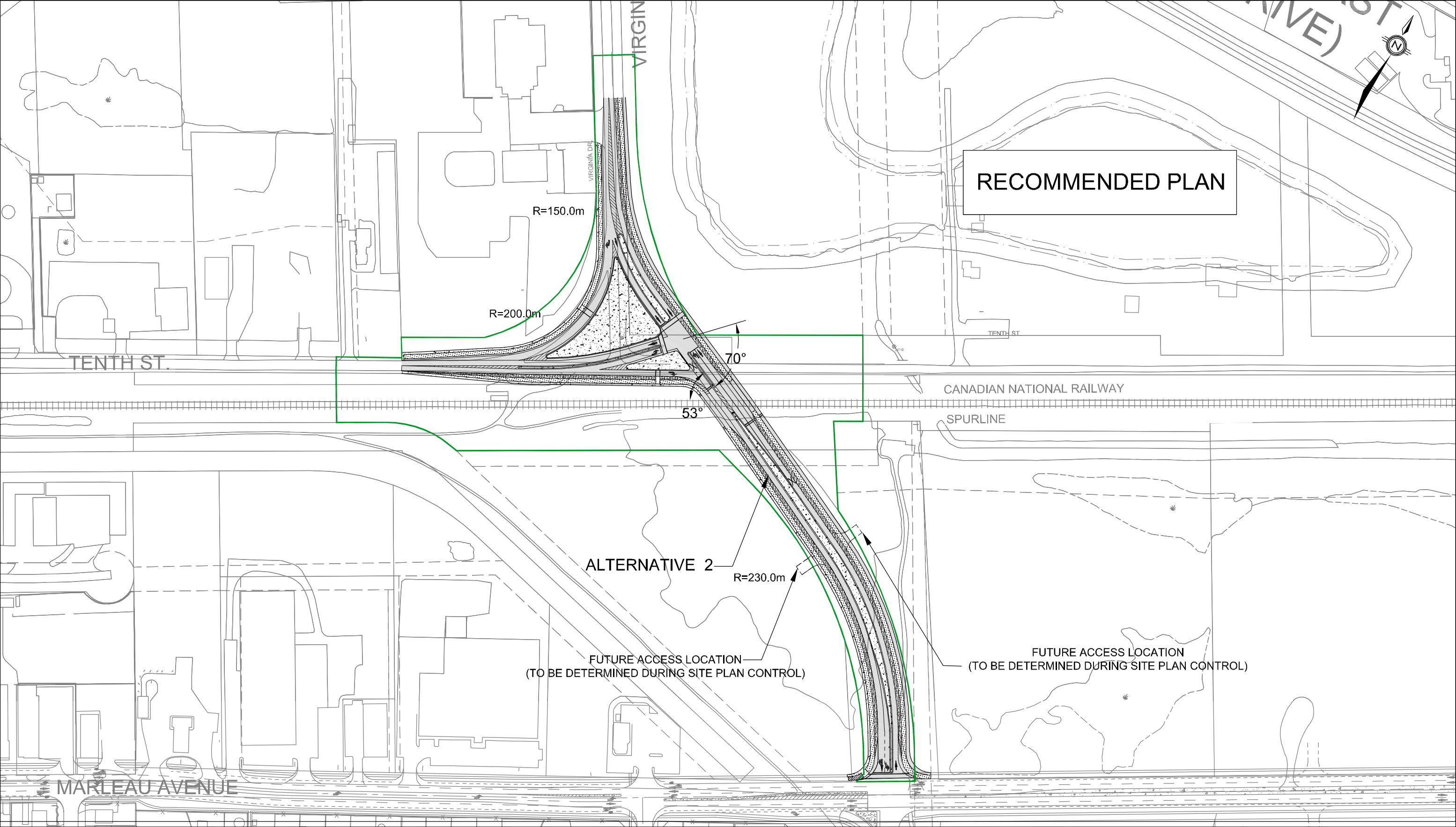
The Recommended Plan provides a new roadway link from Marleau Avenue northerly to Tenth Street.

The Recommended Plan is shown in **Figure 5-7** and provides a similar roadway to the existing Nick Kaneb Drive from Second Street to Marleau Avenue with the following elements:

- A northerly 2-lane extension of Nick Kaneb Drive from Marleau Avenue to Tenth Street;
- Sidewalk on the west side of the road;
- Grassed boulevards on both sides of the road;
- A recreational path on the east side of the road;
- A conventional non-signalized intersection at Tenth Street (can be signalized when warranted); and
- Provides a new link and improved connectivity to and from the Cornwall Business Park.

Table 5-2
Analysis and Evaluation of Preliminary Nick Kaneb Drive Roadway/Intersection Design Alternatives

Nick Kaneb Drive Extension EA (✓ Good in comparison, ▢ Neutral in comparison, ✗ Poor in comparison)					
Criteria	Alternative 1 Standard Intersection	Alternative 2 Standard Intersection	Alternative 3 Roundabout	Alternative 4 Roundabout	Alternative 5 (Tee Intersection at Tenth Street)
Transportation					
• Provides adequate capacity for traffic volumes and minimum intersection offset (30 m) from CNR rail line	✓	✓	✓	✓	✗
• Provides roadway continuity of Nick Kaneb Drive between Marleau Avenue and Industrial Park Drive	✓	✓	✓	✓	✗
• Provides sufficient truck turning movement	✓	✓	✓	✓	✓
• Meets minimum skew angle of Nick Kaneb Dr./Tenth St. intersection	✓	✓	✓	✓	✓
Land Use & Property					
• Utilizes the existing City of Cornwall right-of-way	-	✓	✗	✓	✓
• Minimizes impacts to adjacent lands	-	-	✗	✓	✓
Cost					
• Preliminary Construction Cost	- (\$1.75 million)	- (\$2.0 million)	✗ (\$2.6 million)	✗ (\$2.6 million)	✓ (\$0.65 million)
Overall Summary	✗ This alternative requires additional property and impacts adjacent lands	✓ This alternative has minimal impact on adjacent lands. Carried forward as the Recommended Plan	✗ This alternative requires additional property and impacts adjacent lands and has a high cost	✗ This alternative has a high cost	✗ This alternative does not provide roadway continuity between Marleau Avenue and Industrial Park Drive



6.0 RECOMMENDED PLAN

The Recommended Plan for the Nick Kaneb Drive Extension EA was finalized following comments received from the Public Open House. The Recommended Plan for the roadway improvements is therefore based on both the Technical Advisory Committee's evaluation and public and stakeholder comments.

6.1 Summary of Recommended Plan

Alternative 2 was selected and endorsed by the Technical Advisory Committee as the Recommended Plan.

The Recommended Plan provides the following beneficial elements:

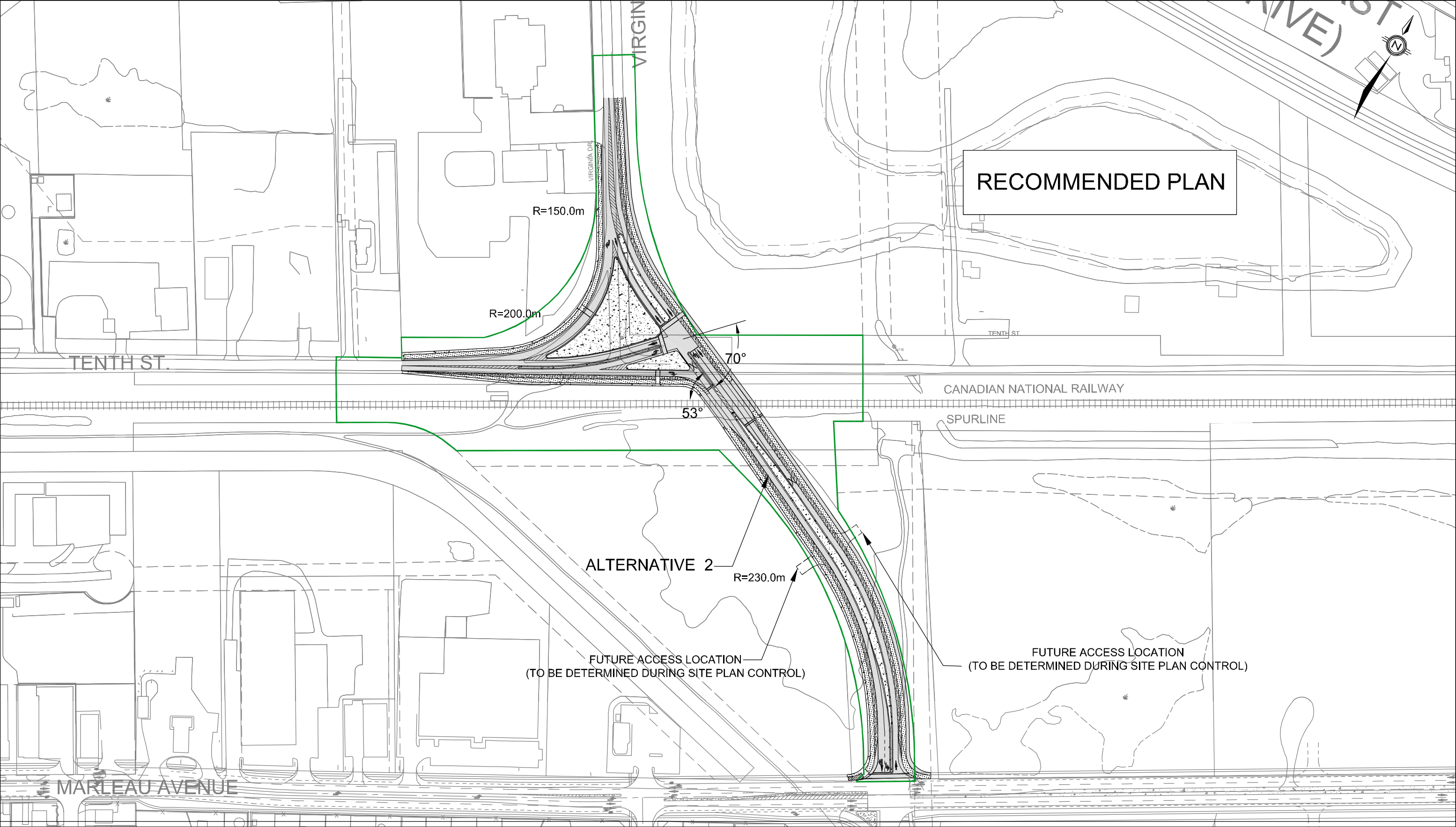
- A new roadway link extending from Marleau Avenue to Tenth Street;
- Accommodates development lands on either side of the new roadway;
- Provides a new link and improved connectivity to and from the Cornwall Business Park;
- Sidewalk on the west side of the road;
- Grassed boulevards on both sides of the road;
- A recreational path on the east side of the road;
- A conventional non-signalized intersection at Tenth Street (can be signalized when warranted); and
- Providing a shared corridor for infrastructure services (water, sewer, hydro).

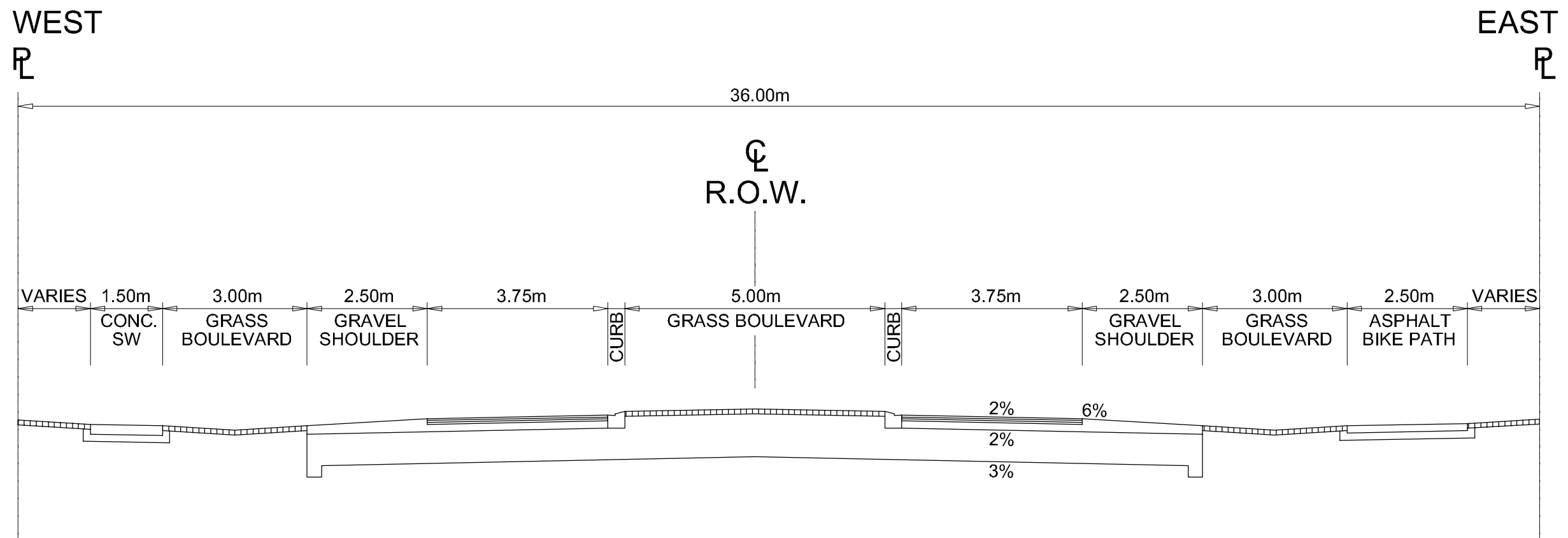
The roadway will be completed with the following characteristics:

- 36 m road allowance;
- 5 m grassed median
- 3.75 m vehicles lanes;
- 2.5 m gravel shoulders;
- 3 m grassed boulevard;
- 2.5 m recreational/bicycle path (East side); and
- 1.5 sidewalk (West side).

The Recommended Plan is shown in **Figure 6-1**. The Recommended Cross Section is shown in **Figure 6-2**.

The City of Cornwall will consider future development proposals and interests of potential businesses/industries which may develop adjacent to the roadway. Minor modifications to the future roadway alignment may be implemented to accommodate these future site development plans. Site plan approvals will be required from the City of Cornwall and other outside agencies (MNR, RRCA, CNR) for new developments adjacent to the roadway.





7.0 AREAS OF ENVIRONMENTAL SENSITIVITIES AND MITIGATION MEASURES

The remaining areas of concern, related to the Recommended Plan, will be mitigated to minimize or remove any detrimental effects. The following subsections provide a description of areas of mitigation that will be considered during the implementation phase of the project. This includes:

- Natural, social, and cultural environments;
- Land use and property;
- Construction material management;
- Implementation requirements; and
- Municipal services.

In addition, this section will discuss the following:

- Estimated construction costs;
- Downstream/cumulative impacts;
- Summary of remaining areas of concern;
- 30-Day public review; and
- Modification process.

7.1 Natural Environment Concerns

Natural environment concerns include surface water, erosion and sediment control, groundwater, and vegetation.

Surface Water

As part of the implementation of the Recommended Plan, roadside ditching will be constructed throughout the length of the new roadway to accommodate storm water run-off. The run-off will be directed to either existing or new stormwater retention ponds adjacent to the roadway.

The effective implementation of erosion and sediment control measures, spill contingencies and the implementation of best management practices during construction will be required.

Groundwater

The study area, once development is planned to begin, will be serviced by the municipal water supply. Where required, construction activities will incorporate measures to mitigate impacts to the groundwater.

Erosion and Sediment Control Plan

During the construction phase of the project, interim solutions will be required to deal with surface water run-off and corresponding offshoot effects such as erosion and sedimentation. Solutions could involve a combination of measures including:

- Providing ditching where possible until run-off can be redirected to the permanent ditching;
- Implementing erosion and sediment control measures (i.e. hay bales placed in strategic locations); and

- Pumping excess water run-off from the construction site and/or local detour routes as required and discharging into nearby ditching.

A Plan will be prepared to manage the flow of sediment into storm sewers and surface water. This plan will be based on best control management practices including the *Guideline on Erosion and Sediment Control at Urban Construction Sites*. The design elements associated with the plan will be identified in the detail design process and construction specifications. To mitigate any unforeseen areas predisposed to erosion or sedimentation, the contractor will be required to prepare an erosion and sedimentation control plan prior to commencing work on the site. The plan will be prepared to the satisfaction of the City.

Fisheries and Aquatic Habitat

The watercourse located on site likely functions as fish habitat, however the habitat is likely not rare, sensitive or supporting sensitive species. No in-water work should be undertaken within the timing restrictions set out by the MNR Kemptville District (March 15-June 30, Warmwater)

Proper functioning of the unevaluated wetland on the proposed road extension and widening site, and the ability to support aquatic and terrestrial species is dependent on both the quality and quantity of the water supplying it. A potential for increased sediment, contaminant and nutrient loading on hydrological features

may exist during clearing, grading and construction activities. Best Management Practices should be employed in the development of any stormwater, sediment and erosion control plans to minimize sediment and erosion associated impacts.

The habitat directly adjacent to the unevaluated wetland is considered a riparian/transition zone. Loss of shade due to the removal of vegetation may impact the temperature of the wetland community. Further, to ensure that the riparian wetland habitats are not negatively impacted by the proposed road extension and widening, the following mitigative measures are recommended:

- Temporary siltation fencing should be employed at the construction area boundary. Its location and installation should be completed before any work on the site begins, and removed after the threat of siltation effects have ceased. The siltation fence should reduce or eliminate the transport of sediments, nutrients, contaminants, and increased turbidity to the hydrological features.
- Vegetation removal within the unevaluated wetland should be minimized wherever possible.
- Operating, refuelling and maintenance of construction equipment and the handling and storage of toxic materials (e.g. fuel, lubricants, form oils, paints, wood preservatives, and other chemicals) must be carried out in such a way as to avoid contamination of soils, groundwater and surface waters. Temporary materials and equipment storage locations must be

approved. Measures must be in place to reduce the risk of spills and to minimize impacts of accidental spills during construction, including a contingency plan ready for immediate implementation that includes immediate reporting of incidents to MOE's Spills Action Centre. In addition, there must be adequate measures to prevent or capture and contain any debris and spills resulting from construction activities. All such measures and procedures will conform to pertinent provincial requirements.

- The implementation of stormwater quality best management practices is recommended to accommodate new pavement surface areas. As well, opportunities to retrofit existing roadway surfaces and direct runoff to new stormwater quality treatment facilities should be pursued to aid in the surface water quality improvement effort.

Natural Environment

Terrestrial

General mitigation measures related to the terrestrial environment may include:

- Reinstatement and re-stabilize banks of waterbody disturbed during construction to pre-construction configuration and condition (or better condition) using properly designed and installed stabilization measures:
 - Typically no hard engineering
 - May include vegetation, rock/stone material
 - May incorporate temporary measures (e.g. biodegradable materials, 'nurse'-

crop vegetation) to provide interim stabilization until vegetation fully established

- Wildlife may be encountered in the study area. Any wildlife observed during construction activities should be gently encouraged to leave the study area, if possible to do so safely. Photos for identification should be taken of animals observed on-site if possible.
- Vegetation clearing should be limited to the minimum area required for construction activities.
- Vegetation protection areas should be identified on contract drawings/document.
- Reinstatement of vegetation as soon as possible following completion of construction in impacted areas. All reinstatement plantings should be native species compatible with the existing or historical terrestrial ecosystem.
- Stabilize and re-vegetate (or use other materials appropriate to site conditions) all areas of soil disturbed/ exposed during construction that drain to a waterbody, which includes stabilization of new or cleaned out ditches.
- Upon completion of construction, exposed soils should be restored to its original condition. Erosion control fencing may be removed once vegetation has been established.
- Reinstatement and re-stabilize banks of waterbody disturbed during construction to pre-construction configuration and condition (or better condition) using properly designed and installed

stabilization measures, which may include temporary measures (e.g. biodegradable materials, 'nurse'-crop vegetation) to provide interim stabilization until vegetation fully established.

Breeding Birds

The Site was observed to present conditions suitable for breeding birds. As such, the Migratory Birds Convention Act, 1994, states that "[i]ncidental take is the harming of migratory bird nests due to actions such as construction activities", including vegetation clearing, tree removal, site grubbing, site access, excavation and piling of soil/fill (Canadian Wildlife Service 2012). Therefore:

- Contractor shall not destroy active nests of protected migratory birds. Removal of vegetation should not occur between April 30 and July 31 to avoid the breeding bird season. Any native plant species removed should be replanted upon completion of construction activities.
- Construction activities with the potential to harm or destroy migratory birds, such as vegetation clearing, should not take place in migratory bird habitat during the core breeding season, from May 1st to July 31st.

Construction may only take place during the breeding bird season if, prior to construction activities commencing, a qualified biologist conducts a breeding bird survey within the construction site. Active nests will be flagged and appropriate buffers (ranging from 5 to 50 m, depending

on the species observed) will be put in place during construction. These surveys must be repeated once every 3 days until the end of the breeding bird season (August 1st of any given year) or until construction is complete, whichever occurs first.

No Butternut trees were observed in the study area or within 25 m of the study area.

7.2 Social and Cultural Environment Concerns

Archaeological and Heritage

The Stage 2 archaeological assessment did not recover any material culture during excavation activities. Consequently, significant pre-contact and historic First Nations or historic Euro-Canadian archaeological sites are unlikely to be found in any undisturbed ground within the project area. Therefore, there are no significant archaeological concerns associated with the remainder of this project and it is recommended that the development area be cleared of archaeological concerns.

In the unlikely event that deeply buried archaeological deposits are discovered in the course of construction, any construction work will immediately cease and the Cultural Programs Branch, Ontario Ministry of Culture, should be contacted immediately at (416) 314-7123. In the event that human remains are encountered, the proponent should immediately cease all construction work and contact the Cultural Programs Branch, Ontario Ministry of Culture, and the Registrar of Cemeteries

Regulation Section of the Ontario Ministry of Consumer Business Services at (416) 326-8404.

Traffic Impacts

The new roadway extension can be implemented without requiring any roadway closures. Minor traffic delays may occur with the northerly construction around Tenth Street and Virginia Drive. Signage will be provided to notify the travelling public of construction work. The contractor will also notify adjacent businesses and property owners of construction activities.

The new roadway will cross a rarely used CNR spurline just south of the Tenth Street/Virginia Drive intersection. The City of Cornwall will contact CNR to discuss the crossing or potential acquisition of the CNR property during detail design.

7.3 Preliminary Mitigation Summary

Table 7-1 summarizes the potential environmental impacts and proposed mitigation for the project.

Table 7-1 Preliminary Mitigation Summary		
Potential Environmental Impact	Concerned Agency/ Stakeholder	Mitigation
Surface Water/Stormwater Runoff		Stormwater will be directed to roadside ditching and stormwater management facilities
Erosion and Sediment Control	MOE	- Providing ditching where possible until run-off can be redirected to the permanent ditching - Implementing erosion and sediment control measures (i.e. hay bales placed in strategic locations) - Pumping excess water run-off from the construction site and/or local detour routes as required and discharging into nearby ditching - Erosion and Sediment Control Plan will be based on best control management practices including the <i>Guideline on Erosion and Sediment Control at Urban Construction Sites</i>. The design elements associated with the plan will be identified in the detail design process and construction specifications - To mitigate any unforeseen areas predisposed to erosion or sedimentation, the contractor will be required to prepare an erosion and sedimentation control plan prior to commencing work on the site. The plan will be prepared to the satisfaction of the City.
Natural Environment	MNR, RRCA	Environmental Protection Plan that

Table 7-1
Preliminary Mitigation Summary

Potential Environmental Impact	Concerned Agency/ Stakeholder	Mitigation
		will be responsible for implementing measures during construction that prevent any sediments/petroleum products from entering watercourses (i.e. using silt fencing, check dams and debris capture devices) • Adjacent to all watercourses, storage of materials and refuelling of equipment will be prohibited. • Implement Risk Management Plan to reduce potential negative effects • Implement erosion and sediment controls to minimize downstream affects • Other measures include vegetation control, site grading, spill control, dewatering activities, and site restoration
Impact to Potential Archaeological Lands	Ministry of Culture	• There are no significant archaeological concerns associated with the remainder of this project and it is recommended that the development area be cleared of archaeological concerns. • In the unlikely event that deeply buried archaeological deposits are discovered in the course of construction, any construction work will immediately cease and the Cultural Programs Branch, Ontario Ministry of Culture, should be contacted immediately at (416) 314-7123. In the event that human remains are encountered, the proponent should immediately cease

Table 7-1
Preliminary Mitigation Summary

Potential Environmental Impact	Concerned Agency/ Stakeholder	Mitigation
		all construction work and contact the Cultural Programs Branch, Ontario Ministry of Culture, and the Registrar of Cemeteries Regulation Section of the Ontario Ministry of Consumer Business Services at (416) 326-8404.
Noise Impacts	Public	Noise restrictions during construction
Traffic Impact to Existing Transportation Network	City of Cornwall	Signage will be provided to notify the travelling public of construction work. The contractor will also notify adjacent businesses and property owners of construction activities.
Utility Impacts	Cornwall Electric	Liaise with Cornwall Electric during detail design to ensure roadway clearance from transmission lines
Property Access to adjacent properties	Property Owners	If required, contractor will acquire permission to enter adjacent properties prior to construction
CNR Spurline	CNR	Liaise with CNR to discuss the crossing or potential acquisition of the CNR property during detail design
Property Acquisition	RRCA, CNR	Financial Compensation or transfer of land

7.4 Construction and Material Management Plans

Several construction management plans will also be developed to account for temporary impacts to adjacent residents due to construction activities. This includes noise, dust and vehicular delay impacts.

Shoring Plan

The contractor will be responsible for selecting and designing the excavation and support methods required throughout the contract. The procedures shall be submitted to the City to ensure safe installation of services.

Dewatering Plan

The contractor will be responsible for submitting to the City its method(s) on how to handle groundwater during service installations to ensure safe installation of services. Should dewatering involve storage or diversion of water in excess of 50,000 litres per day, a Permit to Take Water will be required.

Pre-Construction Inspection

The contractor will be responsible for completing a pre-construction inspection of buildings, and structures within and around the vicinity of the work area for both the interior and exterior conditions. This inspection will ensure that the state of a building and/or structure is satisfactorily documented prior to construction to resolve possible claims by residents or building owners during and after construction.

Vibration Monitoring Plan

The contractor will be responsible for completing an initial vibration analysis based on existing conditions. During the course of construction, the contractor shall complete vibration monitoring in order to control the amount and effects of vibration from construction operations.

Construction Waste Management Plan

General management and disposal of construction waste and debris by the contractor will be similar to the guidelines and practices of the Ontario Provincial Standard Specifications (OPSS) 180 and shall conform to *Ontario's Environmental Protection Act* and associated regulations (notably Regulation 347) and if applicable, to the *Ontario Dangerous Goods Transportation Act* and the *Canadian Transportation of Dangerous Goods Act*.

Environmental Protection Plan

It will be the responsibility of the contractor to ensure that no contamination, waste or other substances, which may be detrimental to the environment, will enter the environment as either a direct or indirect result of construction. In this regard, any floating debris resulting from construction which accumulates in drainage ditches and/or creeks is to be immediately cleaned up and disposed of. Any spills or contamination, waste or other substances which may be detrimental to aquatic life or water quality will also be immediately cleaned up.

The contractor will be responsible for implementing measures during construction that prevent any sediments / petroleum products from entering the watercourse (i.e. using silt fencing, check dams and debris capture devices). Adjacent to all watercourses, storage of materials and refuelling of equipment will be prohibited.

Emergency Response Plan

The preparation of an Emergency Response Plan by the contractor shall allow for full emergency services access during the construction period, such that access is maintained to all residential properties and other land uses in the event of an emergency. Additionally, the emergency response plan should include provisions for providing temporary services to end users in the event of a construction-related service outage or other service disruption. A Spills Response and Reporting Plan will be prepared and adhered to by the contractor.

Management of Contaminated Materials

The MOE and Construction Manager should be notified immediately upon discovery of any contaminated material encountered within the construction area. If contaminated materials or contaminated groundwater are encountered within the construction limits, these are to be removed and disposed of in accordance with all applicable Acts and Regulations. Recommendations regarding material, handling, storage and remediation/disposal will be incorporated and monitored during construction.

Traffic Control Plan

The contractor will be responsible for developing a plan which outlines procedures for controlling vehicular and pedestrian traffic movements. The plan may include items such as staging sequences, work, public, and emergency vehicle access and egress, public access and separation from hazardous areas, temporary barriers, removal of old pavement marking, and traffic control layouts and devices. This plan shall be submitted to the City for approval.

7.5 Municipal Services

Municipal services, including future watermains, storm sewers, hydro and sanitary sewers will be constructed within the road allowance as part of the construction of the roadway.

7.6 Estimated Construction Costs and Implementation

The preliminary cost estimate to complete the construction of the Recommended Plan is approximately \$2 million. The estimated costs do not include traffic signals, which are not warranted at this time, but the underground plant will be installed as part of this project. The estimated cost also does not include municipal services such as watermains and sanitary sewers.

7.7 Summary of Remaining Areas of Concern

Remaining areas of concern which will require more in-depth review at the detail design stage of the project include:

- Carry out detailed engineering survey

7.8 30-Day Public Review

A 30-day public review of this Project File began on March 26, 2014. During this period, there will be an opportunity for an individual to request a *Part II Order* which is a request for the project to be “bumped-up” to an Individual Environmental Assessment.

7.9 Modification Process

Should there be a need in the future to make a change to the Recommended Plan once the EA process has been completed and prior to construction, it will be necessary to determine whether a minor or major change is required. A major change would require an amendment to this EA (as prescribed in the Municipal Class EA), whereas a minor change would not.

A major change would be defined as a significant shift of roadway alignment (i.e. 10 m or greater horizontal shift or 1 m or greater vertical change) for the Recommended Plan that would generate impacts not accounted for in the original EA. An addendum to this EA would need to be completed to document the change

and allow for public and agency review of the proposed change.

A minor change may be defined as a design change in lane and shoulder widths, intersection improvements, minor horizontal or vertical alignment refinement and/or underground infrastructure. Minor changes would be dealt with during the detail design phase and would not require public consultation.

8.0 CONCLUSIONS

The findings of this report were based on the application of the Environmental Assessment (EA) process, as outlined in the Class Environmental Assessment (EA) for Municipal Roads. The principles and methodology of the EA process assisted the Technical Advisory Committee in the analysis and evaluation of alternatives and the selection of the Recommended Plan. The participating public and government agencies have directly and indirectly endorsed these findings through their active participation throughout the course of the study.

This Project File will be filed with the City of Cornwall and be available for review at the City's engineering department. If public concerns regarding this project cannot be resolved, any person may request that the Minister of Environment requires the proponent to comply with Part II of the EA Act (which addresses individual EA's). If no concerns are expressed within 30 days of filing this document and notification thereof, the project can proceed in accordance with the recommendations of the Project File.

Specifically, the approval of the Project File will enable the City of Cornwall to carry out detail design followed by construction.

Appendix A

Traffic Analysis Memorandum

2611 Queensview Drive, Ottawa, ON K2B 8K2
Telephone: 613-829-2800 ~ Fax: 613-829-8299 ~ www.genivar.com

To:	Chris Miller	Date:	14 January 2014
From:	Daniel Riendeau	Project No.:	121-26609-00
Project:	Nick Kaneb Drive Extension		
Subject:	Nick Kaneb Drive / Tenth Drive Intersection – Traffic Analysis		

Introduction

The purpose of this memo is to compare the performance of a conventional T intersection with that of a 3-leg roundabout with projected traffic at the intersection of Tenth Street, Virginia Drive and the future Nick Kaneb Drive extension.

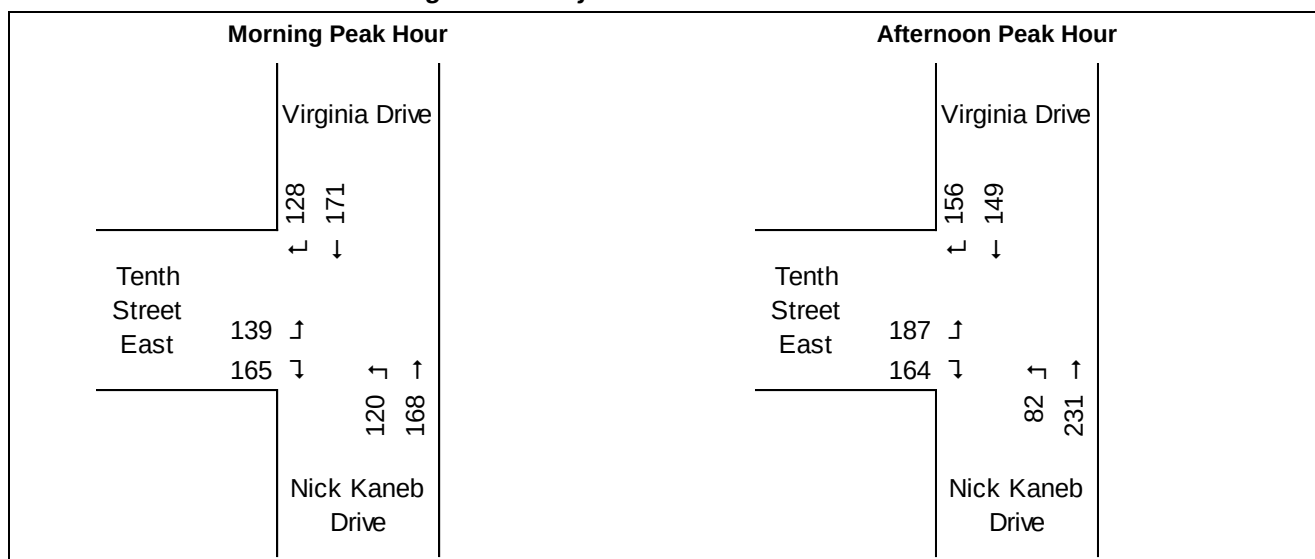
Projected Traffic

Traffic volumes for the present analysis have been taken from the report entitled “*Cornwall Regional Distribution Centre*” completed in July 2011 by LEA Consulting Limited for the Target Eastern Canadian Distribution Centre located at the northwest corner of Tenth Street and Industrial Park Drive. LEA assumed that Nick Kaneb Drive would eventually get extended from Marleau Street to Tenth Street / Virginia Drive and considered such extension as one of their traffic distribution scenarios (“Scenario 2”).

LEA’s projected traffic volumes cover the morning and afternoon peak hours of the horizon year 2016. In addition to the proposed distribution centre, the traffic projections account for the following:

- General traffic growth of 2% per year from the 2011 traffic level;
- Background developments, including the Shoppers Drug Mart distribution centre (now open) and the Boundary Properties distribution centre (known as the Loblaws distribution centre, currently under construction);
- Proposed road network changes, including the realignment of the Highway 401 / Boundary Road interchange, the signalization of the McConnell Avenue / Tenth Street intersection, the widening of Marleau Avenue, and the extension of Industrial Park Drive.

The 2016 traffic volumes are obtained from **Figures 5.3** and **5.4** of LEA’s report and presented in **Figure 1** below.

Figure 1 – Projected 2016 Traffic Volumes


Intersection Configuration Alternatives

Five configuration alternatives are currently considered for the future intersection of Tenth Street, Virginia Drive and the Nick Kaneb Drive extension.

Alternatives 1 and 2 consist of a T intersection with Nick Kaneb Drive and Virginia Drive as the main road and Tenth Street as the side approach. They differ by their roadway alignments but are expected to perform the same way with traffic.

Alternatives 3 and 4 both consist of a three-leg, single-lane roundabout. They differ by their roadway alignments and the distance between the approaches. However, it is assumed the traffic performance will be similar.

Alternative 5 consists of two offset intersections, with Tenth Street as the main road, Virginia Drive as the southbound side approach, and Nick Kaneb Drive as the northbound side approach. It is noted that, according to the traffic projections, there will be no traffic on Tenth Street east of Nick Kaneb Drive.

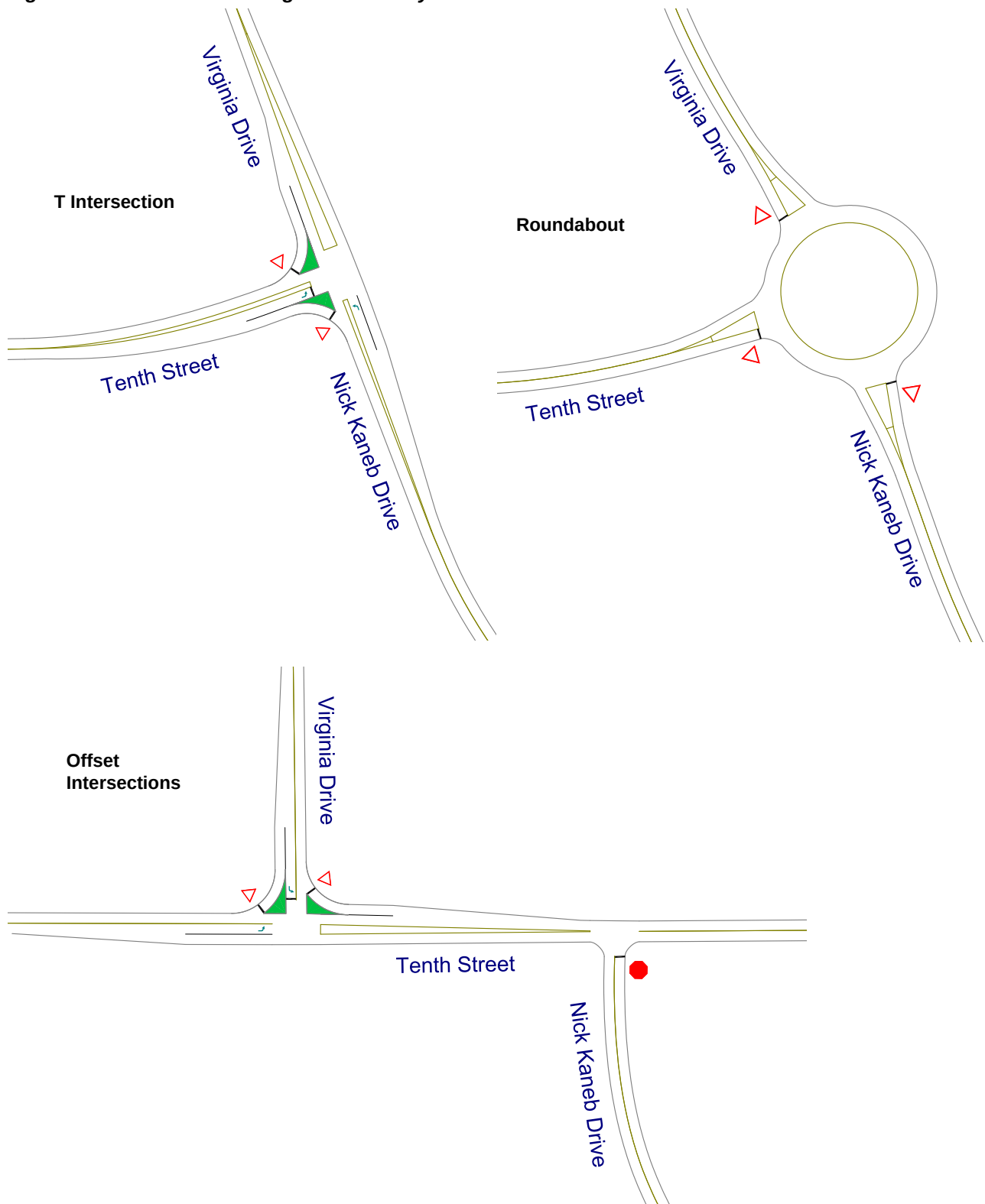
Figure 2 shows the configuration used for the Synchro analysis.

121-26609-00 Nick Kaneb Drive Extension

Nick Kaneb Drive / Tenth Drive Intersection – Traffic Analysis, 14 January 2014

Page 3

Figure 2 – Intersection Configurations in Synchro



Synchro Parameters

The analysis of traffic operations was performed using the software tool Synchro 8 implementing the Highway Capacity Manual (HCM) 2000 and 2010 calculation methodologies.

The following key parameters are used in Synchro:

- **Ideal Saturation Flow:** 1,800 pcu/h;
- **Percentage of Truck Volumes:** 10% everywhere;
- **Peak Hour Factor:** 0.92.

The ideal saturation flow is the assumed maximum number of passenger car units (pcu) per hour that can travel on a single lane under free flow conditions. In the context of a Synchro analysis, any truck is assumed to be equivalent to two passenger cars.

A Peak Hour Factor (PHF) is applied to the traffic volumes in Synchro to account for variations within the peak hour interval; it represents the hourly traffic flow rate divided by the highest 15-min traffic flow rate.

The traffic performance of stop-controlled and signalized intersections is determined with the Synchro default methodology (based on HCM 2000) whereas the performance of roundabouts is determined with the HCM 2010 methodology (separate interface in Synchro). The performance results should be interpreted as follows:

- **Volume-to-Capacity (V/C) Ratio:** represents the level of utilization of a turning movement. Typically, a V/C value below 0.85 indicates efficient operations whereas a value above 1 indicates congestion problems.
- **Average Delay per Vehicle and Level of Service (LOS):** represents the drivers' level of satisfaction. The LOS is directly based on the average delay. A level of service 'E' or 'F' may require corrective measures depending on the context;
- **95th Queue Length:** represents the 95th percentile queue length of the peak hour, as estimated by Synchro.

It is noted that the Synchro results for the channelized right turn movements are not shown in the tables below even if (in theory) they are impeded movements since their average delays are typically very low. All intersection movements are included in the calculation of the intersection average.

Traffic Analysis

Alternatives 1 and 2

The T intersection configuration has been analyzed both as a stop-controlled intersection and as a signalized intersection. **Table 1** presents the Synchro analysis results for the T intersection with a stop sign on the side street (Tenth Street). **Table 2** presents the results with traffic signals.

Table 1 – Intersection Performance, Alternatives 1 & 2, Stop-Controlled

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street / Nick Kaneb Drive	Eastbound Left	0.39	15	B	13	0.48	16	C	16
	Northbound Left	0.10	8	A	2	0.07	8	A	2
	AVERAGE	–	6	A	–	–	6	A	–

Table 2 – Intersection Performance, Alternatives 1 & 2, Signalized

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street / Nick Kaneb Drive	Eastbound Left	0.45	23	C	22	0.53	22	C	27
	Northbound Left	0.18	6	A	12	0.13	7	A	10
	Northbound Through	0.16	6	A	15	0.24	7	A	23
	Southbound Through	0.17	6	A	15	0.16	7	A	15
	AVERAGE	–	7	A	–	–	8	A	–

Because the traffic volumes are low, the unsignalized option yields slightly better results in terms of volume-to-capacity ratio and average delay. Both options perform satisfactorily.

Alternatives 3 and 4

Table 3 presents the Synchro analysis results for the roundabout configuration. The results indicate this configuration would perform satisfactorily.

Table 3 – Intersection Performance, Alternatives 3 & 4

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street / Nick Kaneb Drive	Eastbound All	0.39	9	A	14	0.44	10	A	14
	Northbound All	0.36	8	A	14	0.41	10	A	14
	Southbound All	0.37	8	A	14	0.36	8	A	14
	AVERAGE	–	9	A	–	–	9	A	–

Alternative 5

The offset intersection configuration has been analyzed both as stop-controlled and signalized intersections. **Table 4** presents the Synchro analysis results for the offset intersections with stop signs on the side streets (Nick Kaneb Drive and Virginia Drive). **Table 5** presents the results with traffic signals (the intersection at Tenth Street / Nick Kaneb Drive is expected to remain unsignalized).

Table 4 – Intersection Performance, Alternative 5, Stop-Controlled

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street	Eastbound Left	0.11	8	A	3	0.14	8	A	3
	Southbound Left	0.47	17	C	18	0.46	17	C	17
	AVERAGE	–	8	A	–	–	7	A	–
Tenth Street / Nick Kaneb Drive	Northbound Left	0.40	13	B	13	0.42	13	B	15

Table 5 – Intersection Performance, Alternative 5, Signalized

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street	Eastbound Left	0.21	7	A	15	0.27	7	A	19
	Eastbound Through	0.17	7	A	15	0.17	6	A	14
	Westbound Through	0.12	6	A	12	0.08	6	A	8
	Southbound Left	0.50	20	B	24	0.46	21	C	21
	AVERAGE	–	7	A	–	–	6	A	–

The signalized option yields slightly better results in terms of volume-to-capacity ratio and average delay. Both options perform satisfactorily. It is noted that the northbound left movement experiences an extra delay because of the stop sign at the east intersection (see **Table 4**).

Interpretation

It appears from the results above that Alternatives 1 and 2 (T intersection) with stop control yield the best results while Alternatives 3 and 4 (roundabout) rank last. However, the projected traffic volumes are very low and the intersection performances are so similar that the differences between them bear little meaning.

Traffic Analysis, 50% Increase

It is likely that traffic at this intersection will get significantly higher in the future as the industrial park keeps getting developed and with the planned extension of Virginia Drive from Tenth Street (north branch) to Tollgate Road near Highway 401. However, the exact number of trips that will be generated (or that will use Tollgate Road and Virginia Drive as a bypass route) cannot currently be determined with certainty.

Therefore, in order to allow a comparison between the different proposed alternatives under heavy traffic conditions, all turning movements shown in **Figure 1** have been increased by 50%. Without any nearby development, this is equivalent to a 20-year horizon beyond 2016 (i.e. 2036) with a growth rate of 2% per year compounded.

Alternatives 1 and 2

Table 6 presents the Synchro analysis results for the T intersection with a stop sign on the side street (Tenth Street). **Table 7** presents the results with traffic signals.

Table 6 – Intersection Performance, Alternatives 1 & 2, Stop-Controlled, 50% Increase

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street / Nick Kaneb Drive	Eastbound Left	1.08	97	F	114	1.33	189	F	181
	Northbound Left	0.16	8	A	4	0.10	8	A	2
	AVERAGE	–	34	D	–	–	69	F	–

Table 7 – Intersection Performance, Alternatives 1 & 2, Signalized, 50% Increase

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street / Nick Kaneb Drive	Eastbound Left	0.60	24	C	32	0.67	24	C	40
	Northbound Left	0.36	10	A	23	0.26	11	B	18
	Northbound Through	0.29	8	A	27	0.44	11	B	45
	Southbound Through	0.30	8	A	27	0.29	10	A	28
	AVERAGE	–	8	A	–	–	10	A	–

In this particular case, signalization is required since the eastbound approach would otherwise exceed capacity. The signalized option yields results very similar to the results without the traffic increase.

Alternatives 3 and 4

Table 8 presents the Synchro analysis results for the roundabout configuration. The results indicate this configuration would perform satisfactorily, although with longer average delays.

Table 8 – Intersection Performance, Alternatives 3 & 4, 50% Increase

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street / Nick Kaneb Drive	Eastbound All	0.66	17	C	35	0.73	20	C	42
	Northbound All	0.59	14	B	28	0.70	19	B	42
	Southbound All	0.59	13	B	28	0.56	12	B	28
	AVERAGE	–	15	B	–	–	17	C	–

Alternative 5

Table 9 presents the Synchro analysis results for the offset intersections with stop signs on the side streets (Nick Kaneb Drive and Virginia Drive). **Table 10** presents the results with traffic signals (the intersection at Tenth Street / Nick Kaneb Drive is expected to remain unsignalized).

Table 9 – Intersection Performance, Alternative 5, Stop-Controlled, 50% Increase

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street	Eastbound Left	0.17	8	A	4	0.22	8	A	6
	Southbound Left	1.31	187	F	158	1.39	223	F	175
	AVERAGE	–	64	F	–	–	72	F	–
Tenth Street / Nick Kaneb Drive	Northbound Left	0.67	20	C	36	0.71	22	C	42

Table 10 – Intersection Performance, Alternative 5, Signalized, 50% Increase

Intersection	Impeded Movement	Morning Peak Hour				Afternoon Peak Hour			
		V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)	V/C Ratio	Avg. Delay (s)	Level of Service	95 th Queue Length (m)
Virginia Drive / Tenth Street	Eastbound Left	0.42	12	B	29	0.51	13	B	38
	Eastbound Through	0.31	9	A	28	0.30	9	A	26
	Westbound Through	0.23	9	A	21	0.15	8	A	13
	Southbound Left	0.64	23	C	35	0.60	22	C	30
	AVERAGE	–	9	A	–	–	8	A	–

Similar to Alternatives 1 and 2 with the traffic increase, signalization is required since the southbound approach would otherwise exceed capacity. The signalized option yields results very similar to the results without the traffic increase.

Conclusion

Based on the results above, the T intersection configuration (Alternatives 1 and 2) provides the best results in terms of traffic performance. The unsignalized option is recommended on the short term and until traffic signals become warranted.

The roundabout configuration (Alternatives 3 and 4) provide satisfactory results but with longer average delays than the T intersection configuration with or without traffic signals. This may be attributed in part to the limited number of movements and conflict points of the T intersection, combined with the channelization.

The offset intersection configuration (Alternative 5) provides results very similar to the single T intersection, except for the extra delay caused by the east intersection, where the northbound traffic has to stop before proceeding with a left turn.

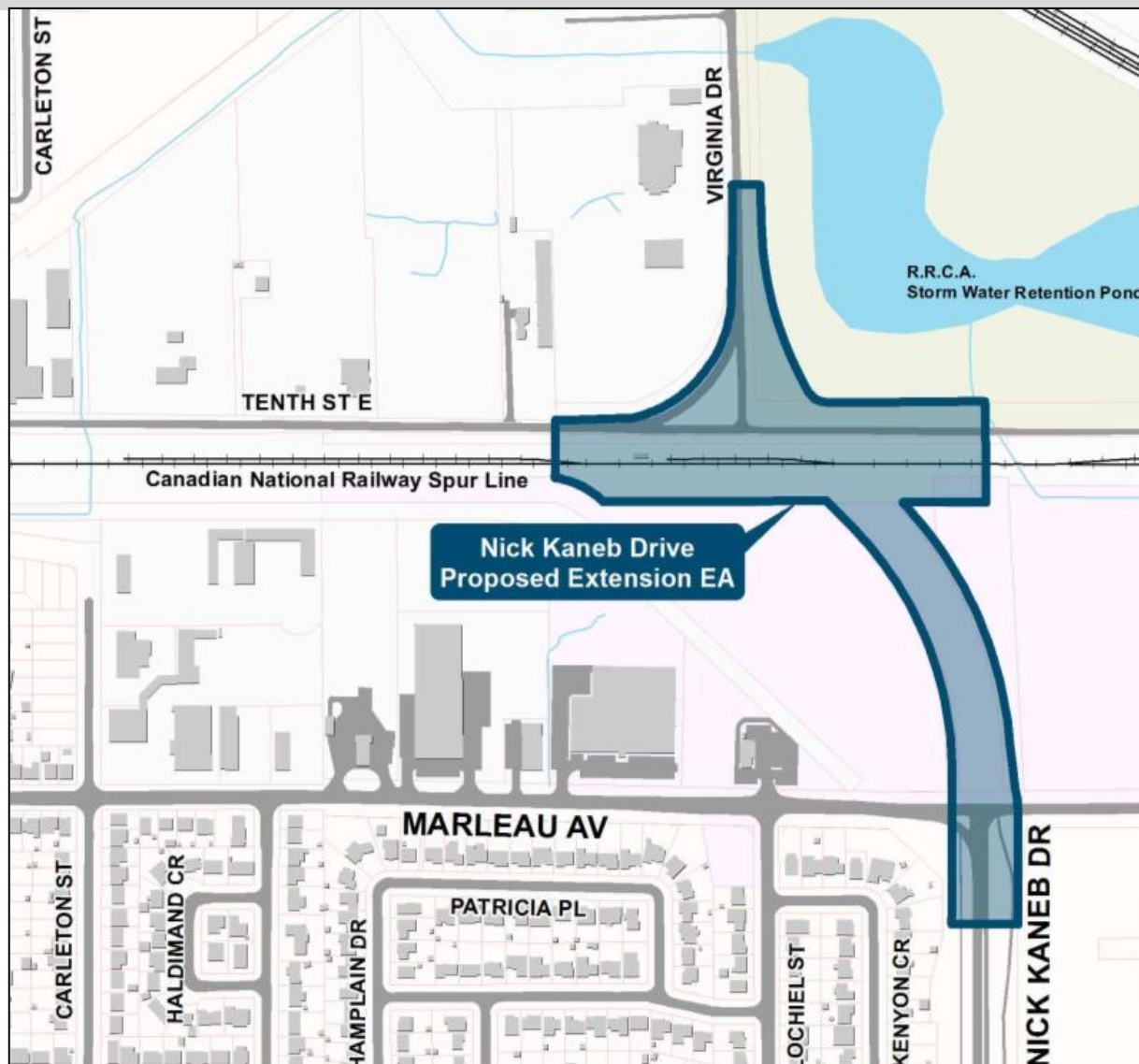
Appendix B

Public Open House Summary Report

Prepared for:
City of Cornwall



Public Open House Summary Report



Municipal Class Environmental Assessment
for the Proposed Extension of Nick Kaneb Drive

GENIVAR File No. 121-26609

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A	Contact and Newspaper Notice
B	Public Open House (POH) Presentation Boards
C	Comment Sheets

1.0 INTRODUCTION

This report, prepared by GENIVAR, documents the Public Open House (POH) meeting held as part of the Municipal Class Environmental Assessment (EA) Schedule “B” process to examine the proposed extension of Nick Kaneb Drive, between Marleau Avenue and Tenth Street/Virginia Drive. This meeting is one element of an open and consultative process with the public for this project.

This study is being undertaken by the City of Cornwall; the purpose of which is to:

- Define a Recommended Plan for the extension of Nick Kaneb Drive that will improve capacity and safety, including an improved intersection option at Tenth Street/Virginia Drive;
- Define a plan that will allow future development adjacent to the roadway;
- Accommodate all modes of travel (bicycles, pedestrians, trucks and transit); and
- Obtain environmental clearance for the future Nick Kaneb Drive extension, in order for the City to proceed with design and construction of the roadway.

1.1 Study Area

The study area is shown in **Figure 1**.

1.2 Public Open House Date and Location

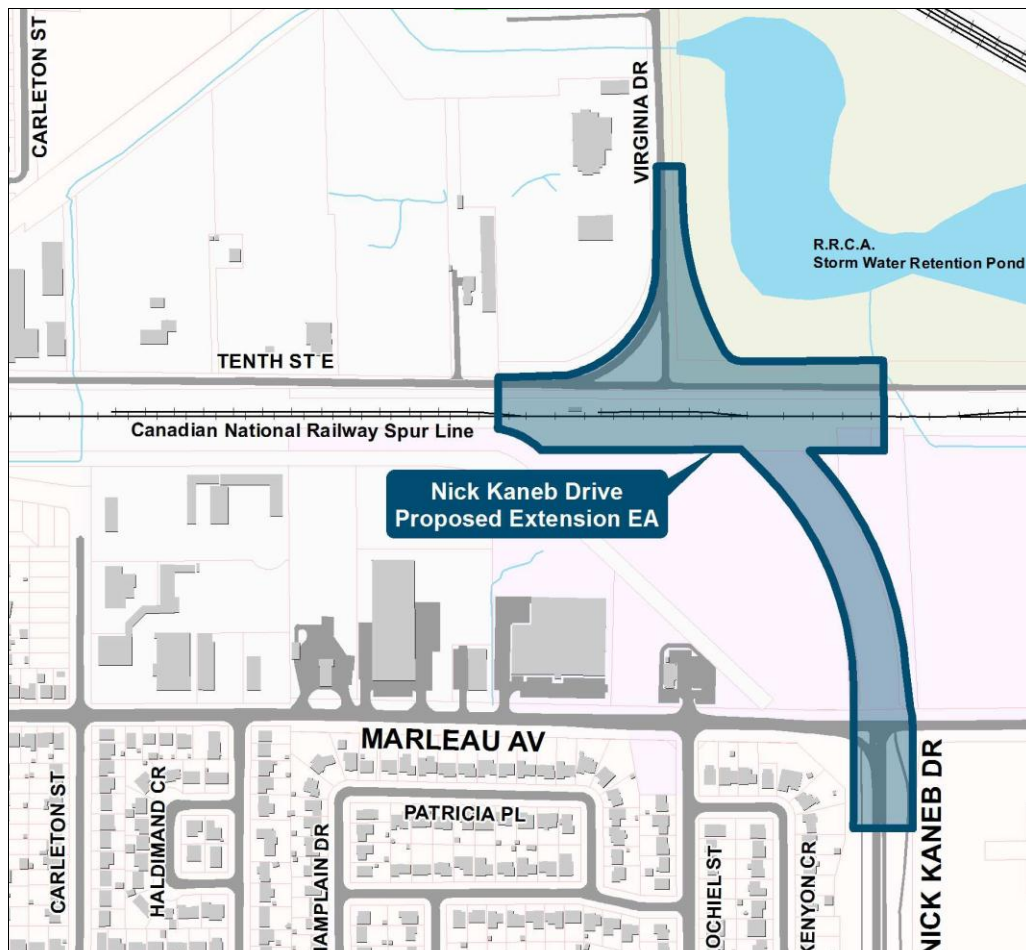
The Public Open House was held:

Wednesday, October 16, 2013
City of Cornwall
Infrastructure and Municipal
Works Building
1225 Ontario Street
Cornwall, ON
4:00 to 7:00 pm

The purpose of the Public Open House was to:

- Review inventories and traffic analysis;
- Review Planning Solutions;
- Review preliminary alignment alternatives;
- Review the evaluation of alignment alternatives;
- Review the Recommended Plan;
- Review the study schedule; and
- Receive public comments.

Figure 1
Study Area



2.0 PUBLIC AND AGENCY CONSULTATION

One of the key aspects of the project is to provide the public, interested parties and affected agencies with the opportunity for meaningful input. In order to ensure this objective is met, a public and agency notification program was undertaken.

The program included a number of communication mechanisms, discussed below.

2.1 Individual Contact Notification

Notification of the Public Open House was communicated to all affected residents, external agencies and interested groups.

Individual notices were mailed to property owners within and adjacent to the Study Area. A database of property owner names was provided by the City of Cornwall.

A sample of the notice is provided in **Appendix A**.

2.2 Newspaper Notice

A newspaper notice for the Public Open House was placed in the following local newspapers prior to the event:

- Cornwall Standard Freeholder: Wednesday, October 9th, 2013; and
- Le Journal de Cornwall: Wednesday, October 9th, 2013.

The newspaper notices are found in **Appendix A**.

2.3 City of Cornwall Website

Notification and information regarding the Public Open House was also provided on the City of Cornwall's website at www.cornwall.ca

2.4 Agency Contacts

Agency contact letters were sent to the following external agencies and interest groups:

- Ministry of the Environment
- Ministry of Culture
- Ministry of Natural Resources
- Department of Fisheries and Oceans Canada
- Transport Canada
- Raisin Region Conservation Authority
- St. Lawrence Parks Commission
- Ministry of Health and Long-Term Care
- Health Canada
- Ministry of Economic Development and Trade
- Environment Canada
- St. Lawrence River Restoration Council
- Heritage Cornwall Local Architectural Conservation Advisory Committee
- St. Lawrence River Institute of Environmental Sciences
- Canadian National Railway
- Cornwall Chamber of Commerce
- Ministry of Agriculture, Food and Rural Affairs
- Ministry of Attorney General
- Eastern Ontario Health Unit;
- Cornwall Transit;

- Municipal Environmental Advisory Committee;
- Conseil écoles publiques de l'Est de l'Ontario (French)
- Upper Canada District School Board (Public)
- Catholic District School Board of Eastern Ontario (English)
- Conseil des Ecoles District Catholique de Langue Français
- Cornwall Fire Service
- Cornwall Police Service
- Bell Canada
- Cornwall Electric
- Union Gas
- Rogers
- Cogeco Cable
- Trans Northern Pipelines

2.5 First Nations Contacts

Contact letters/notices were sent to the following First Nations groups and agencies:

- Indian and Northern Affairs Canada
- Ministry of Aboriginal Affairs
- Mohawk Council of Akwesasne

3.0 PUBLIC OPEN HOUSE

The Public Open House (POH) was held at the City of Cornwall's Infrastructure and Municipal Works Building on Wednesday, October 16th, 2013 between the hours of 4:00 and 7:00 pm.

The Public Open House permitted all members of the public and interest groups to view the presentation material and to discuss the project with City and consultant representatives. The POH presentation boards are provided in **Appendix B**.

In total, twenty (20) persons registered at the Public Open House. Each person was provided with a comment form and encouraged to submit their written comments in the box provided or by fax/email within the 2-week comment period. In total, six (6) comment sheets /letters/e-mails were returned during the Open House and the subsequent 2-week response period. Copies of the completed comment forms are provided in **Appendix C**. A summary of the comments/issues provided is outlined in **Chapter 4.0**.

4.0 SUMMARY OF WRITTEN COMMENTS

The written comments/concerns received at the Public Open House are summarized below in **Table 1**.

Table 1 Summary of POH Written Comments		
Area of Concern	Number Of Respondents	Comment Sheet Reference No.
Support the Recommended Plan	2	1, 4
Request for intersection along Nick Kaneb Dr. between Marleau Ave. and Tenth St. to access future development sites	1	2
Request for roundabout rather than conventional intersection	2	3, 4
Concern regarding CNR mainline	1	3
Information Request	1	5
Concerns/issues outside of the scope of this project	1	6

5.0 CONCLUSIONS

General support for the Recommended Plan for the Nick Kaneb Drive extension was received from the public at the Open House.

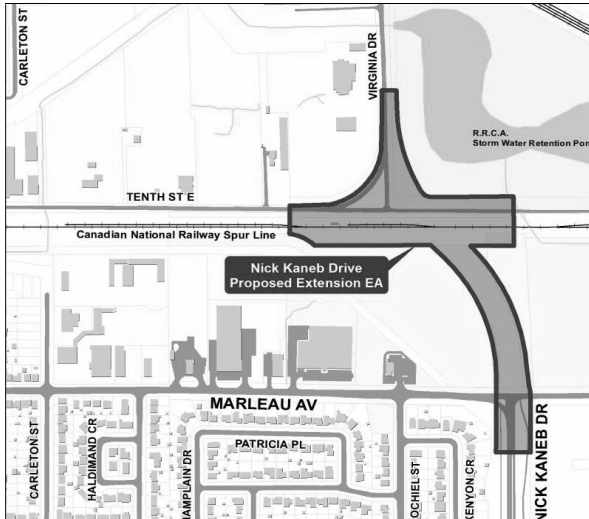
APPENDICES

Appendix A

Contact and Newspaper Notice

**Study Commencement – Public Open House Notice
Municipal Class Environmental Assessment
for the Proposed Extension of Nick Kaneb Drive**

The City of Cornwall has initiated a Municipal Class Environmental Assessment (EA) for the Proposed Extension of Nick Kaneb Drive. This study will be completed as a Schedule “B” project under the Municipal Class EA. A Project File will be completed to record the EA process, alternatives reviewed, results and mitigation. If, following the initial need and justification of this project, it is determined that there is a potential for greater environmental impacts, property impacts and/or costs, this project will proceed as a Schedule “C” project. This would involve a second round of public consultation and the completion of an Environmental Study Report. The study area is shown below.



The purpose of this study will be to define a Recommended Plan for Nick Kaneb Drive that will:

- Improve capacity of the transportation network, in particular nearby the study area;
- Improve safety by incorporating geometric improvements such as left turn lanes, right turn tapers, restricting access to right-in-right-out, and channelization, and potentially incorporating signalized intersection or roundabout;
- Define a plan that will allow future development adjacent to the roadway (define right-of-way protection and road profile);
- Accommodate all modes of transportation such as bicycles, pedestrians, trucks and transit; and
- Receive environmental clearance for the future Nick Kaneb Drive extension, in order for the City to proceed with design and construction.

A Public Open House (POH) meeting has been scheduled and will be held as follows:

**October 16th, 2013
City of Cornwall
Infrastructure and Municipal Works Building
1225 Ontario Street
Cornwall, ON K6H 5T9
4:00 to 7:00 p.m.**

For more information please contact:

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Transportation Section
Department of Infrastructure & Municipal Works
City of Cornwall
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angelo.renon@genivar.com

We are interested in hearing comments from individuals, groups, and the general public. Comments and information regarding this study are being collected to assist the City of Cornwall in meeting the requirements of the Environmental Assessment Act. This information will be maintained on file for use during the study, and may be included, with the exception of personal information, in the study documentation. Any persons interested in being included on the study mailing list or obtaining information regarding the project should contact the consultant project manager.

Début d'étude — Avis de rencontre ouverte au public Évaluation environnementale de portée municipale pour la prolongation proposée de la rue Nick Kaneb

La ville de Cornwall a débuté une évaluation environnementale de portée municipale (EE) pour la prolongation proposée de la rue Nick Kaneb. Cette étude sera complétée comme projet du programme « B » sous la portée municipale EE. Un fichier de projet sera complété pour enregistrer le processus d'EE, les solutions de rechange examinées, les résultats et l'atténuation. Si, suite à la nécessité et la justification initiale de ce projet, il est déterminé qu'il y a une possibilité pour de plus grands impacts sur l'environnement, la propriété et / ou les coûts, ce projet se déroulera comme un projet de l'annexe «C». Cela impliquerait une deuxième ronde de consultations publiques et la réalisation d'un rapport d'étude environnementale. La zone d'étude est présentée ci-dessous.



Le but de cette étude est de définir un plan recommandé pour la rue Nick Kaneb qui:

- Améliorera la capacité du réseau de transport, en particulier à proximité de la zone d'étude;
- Améliorera la sécurité en intégrant des améliorations géométriques telles que voies de virage à gauche, voies de virage à droite, îlot tourne-à-droite, la canalisation et l'incorporation éventuelle d'une intersection signalisée ou d'un rond-point.
- Définira un plan qui permettra le développement futur adjacent à la route (définir la protection des droits de passage et le profil de la route);
- Répondra à tous les moyens de transport tels que les vélos, les piétons, les camions et les transports en commun, et
- Recevra l'autorisation environnementale pour le futur prolongement de la rue Nick Kaneb, pour que la Ville procède à la conception et à la construction.

Une réunion ouverte au public (ROP) a été prévue et aura lieu comme suit:

16 octobre 2013
Ville de Cornwall
Édifice de l'infrastructure et des travaux municipaux
1225, rue Ontario
Cornwall, ON K6H 5T9
16 h-19 h

Pour plus d'informations veuillez contacter:

Enrique Kamm, M.Sc., P. Eng.
Division du transport
Service de l'infrastructure et des travaux municipaux
Ville de Cornwall
1225, rue Ontario
Cornwall ON
Tel: 613 930-2787 Ext. 2231
Fax: 613 932-8891
ekamm@cornwall.ca

Angelo Renon, P.Eng.
Directeur du projet
GENIVAR
2611, Queensview Drive
Ottawa ON K2B 8K2
Tel: 613 829-2800
Toll Free: 1 866 537-5289
Fax: 613 829-8299
angelo.renon@genivar.com

Nous sommes intéressés à entendre les commentaires de personnes, de groupes et du public en général. Les commentaires et les renseignements concernant cette étude sont recueillis pour aider la Ville de Cornwall à répondre aux exigences de la Loi sur l'évaluation environnementale. Cette information sera conservée dans nos dossiers pour utilisation au cours de l'étude, et peut être incluse, à l'exception des renseignements personnels, dans la documentation de l'étude. Les personnes intéressées à être inclus sur la liste de diffusion de l'étude ou à obtenir des renseignements concernant le projet doivent communiquer avec le chargé de projet.

Appendix B

POH Presentation Boards

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Welcome

Welcome to the Public Open House for the Municipal Class Environmental Assessment (EA) for the Proposed Extension of Nick Kaneb Drive.

Please feel free to view the presentation material and the background reports at the Resource Table. Should you have any questions regarding the material, or any other aspect of the study, please speak to any of the City or Consultant study team members in attendance.

We encourage you to provide your comments in writing. Comment sheets are available at the registration desk. Please deposit completed forms in the comment box or mail/ fax/ e-mail to the address at the bottom of the form. We also encourage you to record your attendance at the registration desk.

There is an opportunity at any time during the EA process for interested persons to provide comments. Any comments received pertaining to the study will be collected under the Environmental Assessment Act and, with the exception of personal information, will become part of the public record.

Problem Statement

To provide an efficient and effective north/south transportation link alternative to McConnell Avenue and Boundary Road to meet long term forecasted travel demand. This plan will meet the requirements of all modes of transportation (pedestrians, bicycles, transit, goods movement and vehicular traffic) and will have a goal of providing the safest facility considering the value of all competing interests. This study will define an improvement plan and receive environmental clearance for the facility that matches the land use plan. The roadway design will be selected using a traceable evaluation technique to provide a defensible case for the Recommended Plan. The Recommended Plan will provide the City with:

- An approved plan that can be constructed in 2014;
- A defined cost; and
- A sustainable plan that can allow economic development of the community.

Study Goal

The goal of this study includes the following:

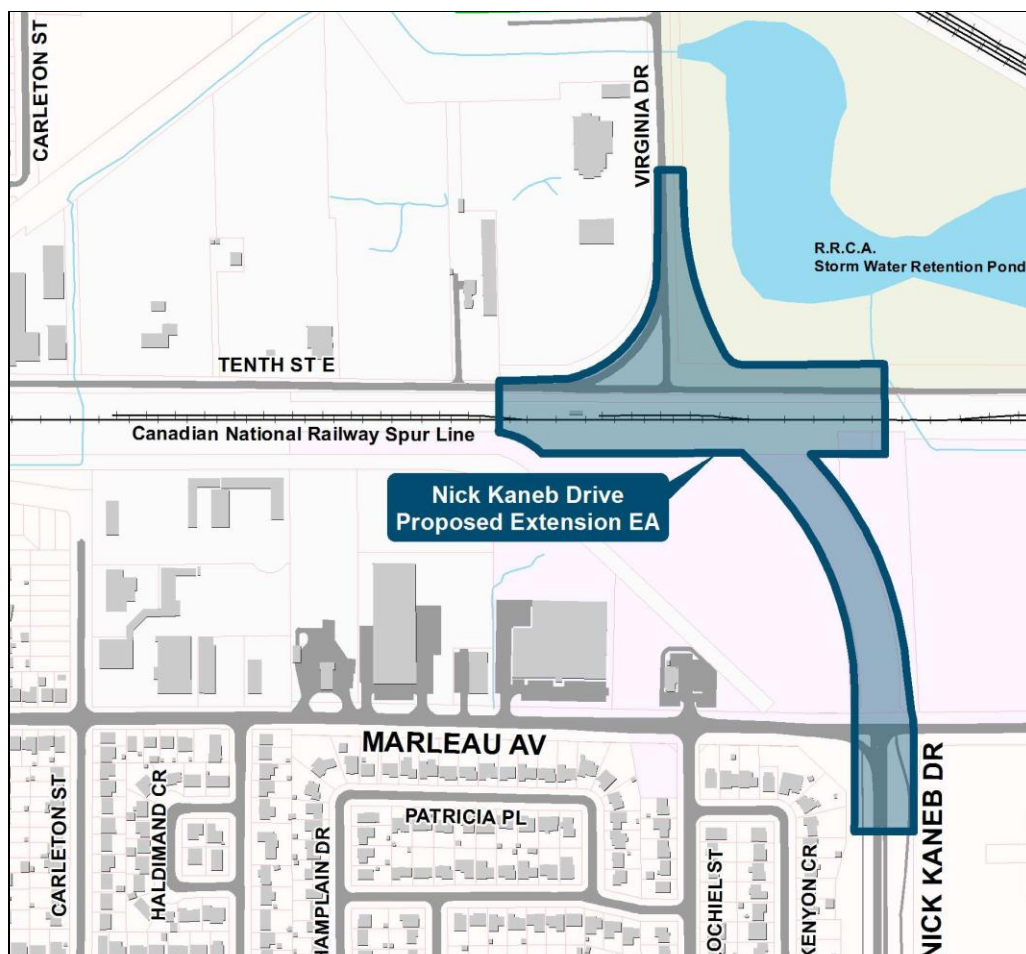
- Define a Recommended Plan for the extension of Nick Kaneb Drive that will improve capacity and safety, including an improved intersection option at Tenth Street/Virginia Drive;
- Define a plan that will allow future development adjacent to the roadway;
- Accommodate all modes of travel (bicycles, pedestrians, trucks and transit); and
- Obtain environmental clearance for the future Nick Kaneb Drive extension, in order for the City to proceed with design and construction of the roadway.

Aims and Objectives of the Public Open House

The public open house will provide the public the opportunity to:

- Review inventories and traffic analysis;
- Review Planning Solutions;
- Review preliminary alignment alternatives;
- Review the evaluation of alignment alternatives;
- Review the Recommended Plan;
- Review the study schedule; and
- Receive public comments.

Study Area



Background

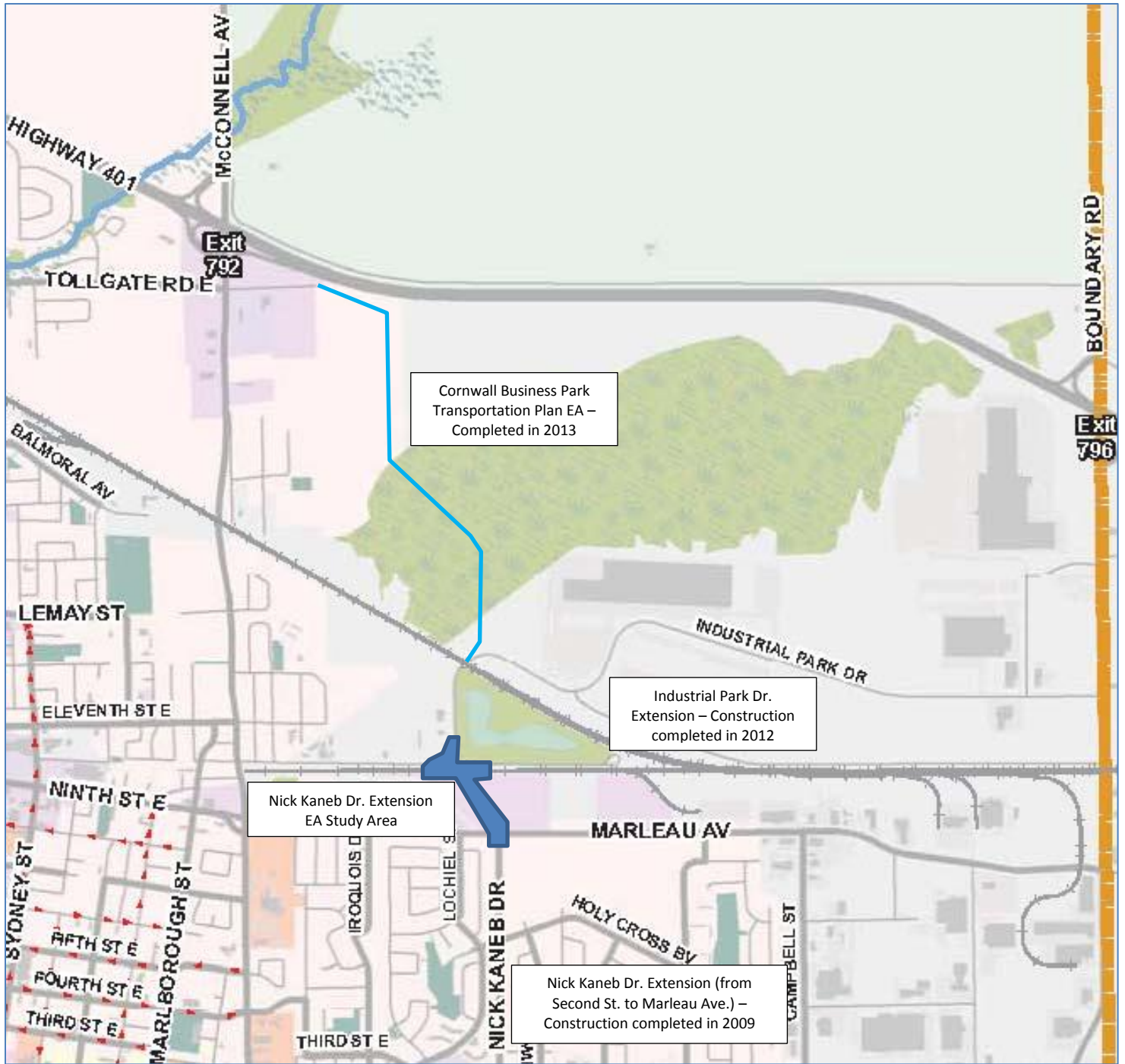
The City of Cornwall has undertaken several Environmental Assessments and construction projects in the eastern portion of the City to deal with increased development and traffic. The following projects have been recently completed:

- Nick Kaneb Drive Extension (from Second Street northerly to Marleau Avenue) – Construction completed in 2009;
- Marleau Avenue Widening and Improvements EA (from Marlborough Street to Glenview Boulevard) – EA completed in 2012;
- Industrial Park Drive Extension – Construction completed in 2012; and
- Cornwall Business Park Transportation Master Plan – EA completed in 2013.

This project will provide for the extension of Nick Kaneb Drive from Marleau Avenue northerly to the Tenth Street/Virginia Drive intersection and provide an additional north-south link for all modes of travel within the eastern portion of the City of Cornwall.

Environmental Assessment Process

This study will follow a Schedule “B” planning process under the Municipal Class Environmental Assessment will be followed. A Project File will be completed to record the Environmental Assessment Process, alternatives reviewed, results, the Recommended Plan and mitigation.



Study Stages

This EA study will include the following five key study stages:

1. Study Commencement
 - Define Problem (Need and Justification) or Opportunity
2. Information Gathering and Generation of Alternatives
 - Consideration of Alternative Solutions/Alternative Projects
3. Analysis and Evaluation of Alternatives and Recommended Plan
 - Preliminary Design Alternatives
 - Recommended Plan
4. Recommended Plan
 - Effects and Mitigation Measures
5. Documentation
 - Project File



Evaluation of Alternatives

The evaluation of alternatives is a two-step approach.

1. Review, Confirm and Evaluate Planning Solutions
2. Evaluate Preliminary Design Alternatives

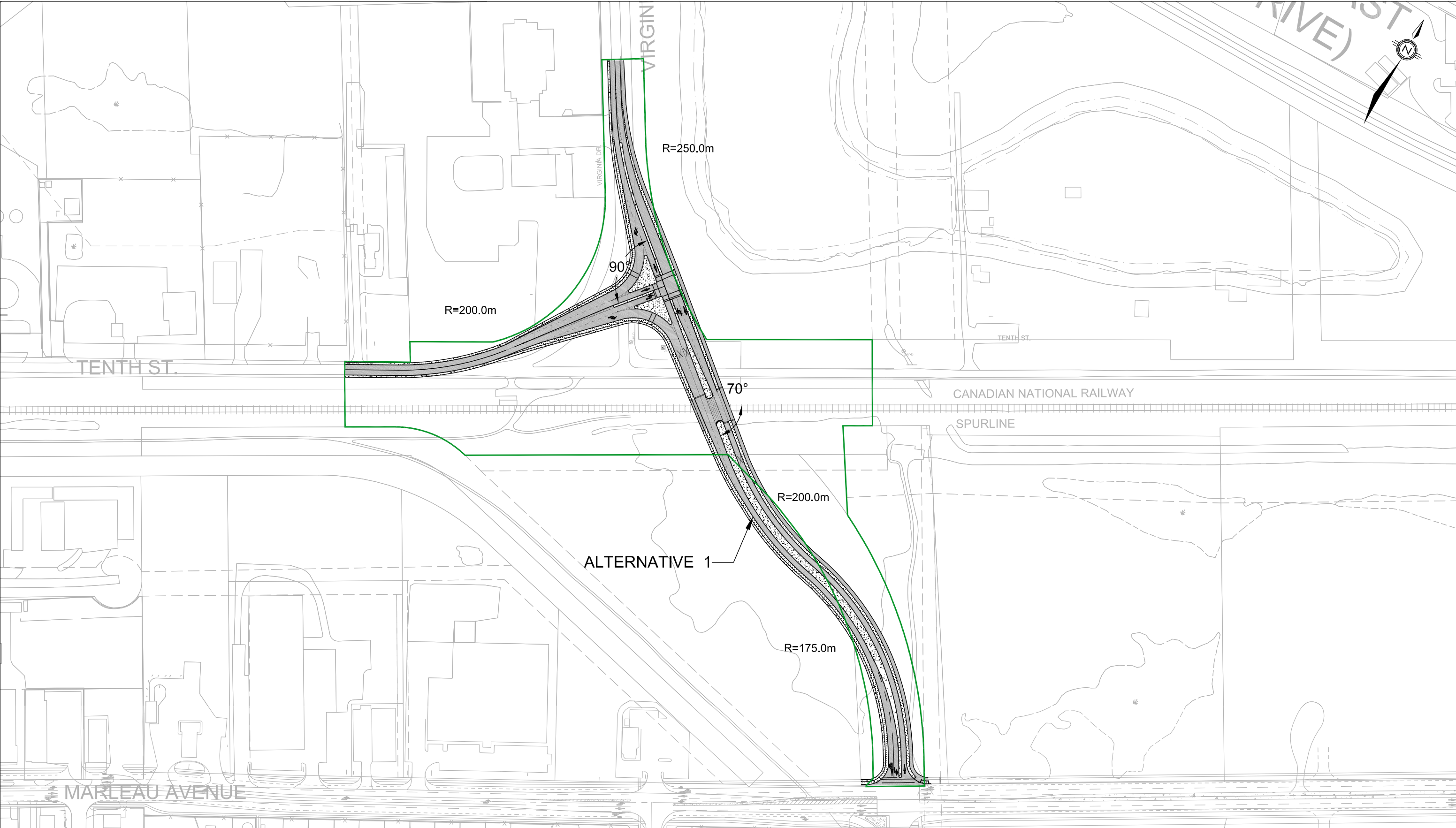
The Planning Solutions were used to develop preliminary design alternatives for the Nick Kaneb Drive Extension.

The Preliminary Roadway and Intersection Design Alignment Alternatives were evaluated and assessed to determine which alternative provides the best balance of roadway operation/safety while minimizing any detrimental environmental effects.

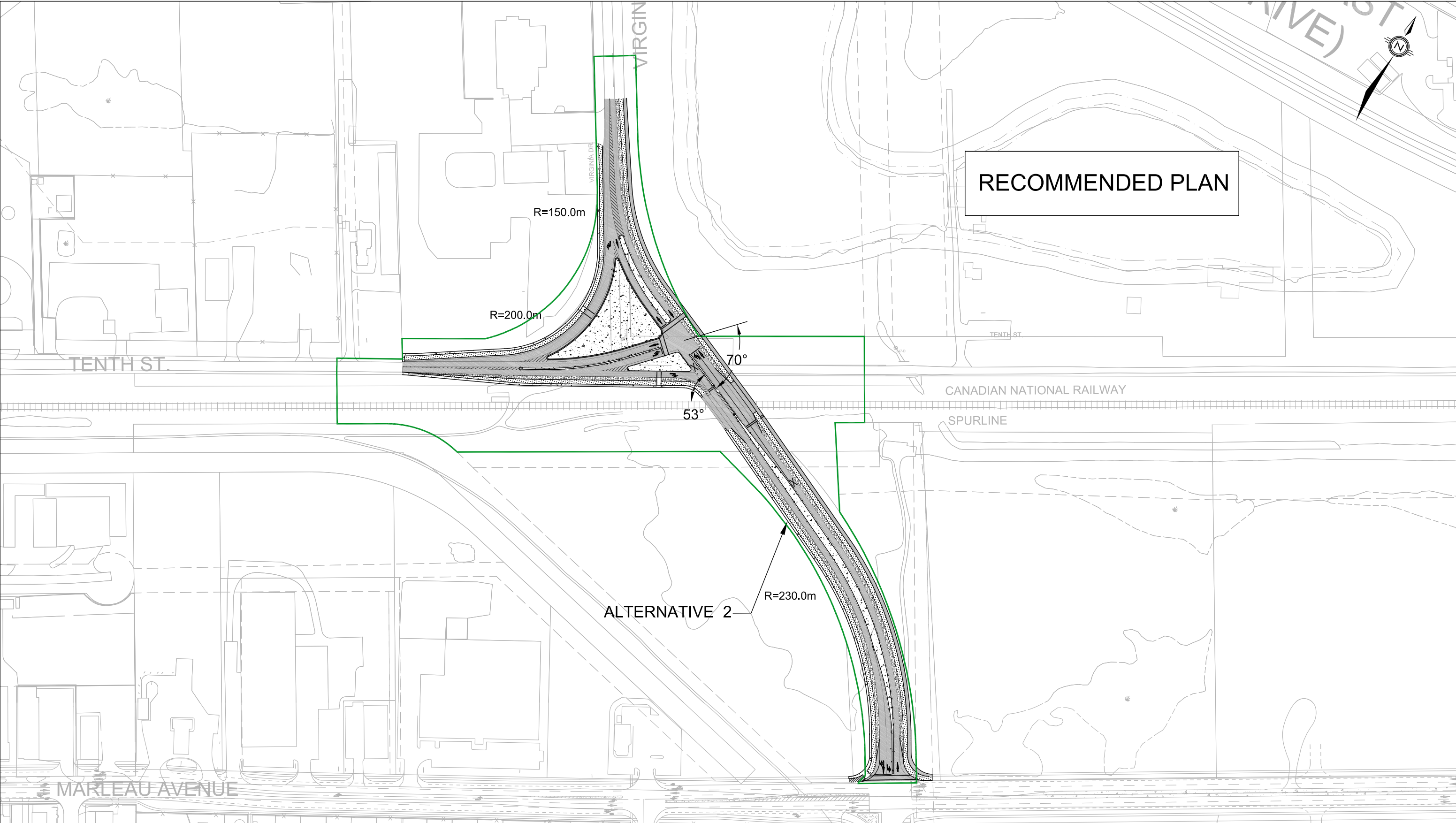
Nick Kaneb Drive Extension EA Evaluation of Planning Solutions

Do Nothing	Transportation Systems Management (TSM)	Transportation Demand Management (TDM)	Nick Kaneb Drive Extension
Maintain the current transportation network.	Use technology and other strategies to increase the efficiency of the existing transportation network. TSM should be considered part of an overall transportation strategy.	Use travel demand management (TDM) strategies to reduce auto use, including: - Shifting demand to nonpeak hours - ridesharing, carpooling, etc. - Transit incentives to increase the transit modal share - Discourage automobile use. TDM should be considered part of an overall transportation strategy.	Implement a new roadway extension between Marleau Avenue northerly to Industrial Park Drive.
SUMMARY/RECOMMENDATION			
- Least property impact and capital cost. - Does not address operational, safety, mobility, planning and capacity deficiencies.	- The TSM/TDM improvements alone are not sufficient to address the identified current and future traffic demands - TSM/TDM should be considered part of an overall transportation strategy for the City	- The TSM/TDM improvements alone are not sufficient to address the identified current and future traffic demands - TSM/TDM should be considered part of an overall transportation strategy for the City	- This solution addresses specific operational and capacity deficiencies and planning objectives - This solution is consistent with the City's long range planning objectives for the need for expansion, based on capacity and operational issues
✗ DO NOT CARRY FORWARD	✓ CARRIED FORWARD (as a component of a basket of solutions for the road project)	✓ CARRIED FORWARD (as a component of a basket of solutions for the road project)	✓ CARRIED FORWARD

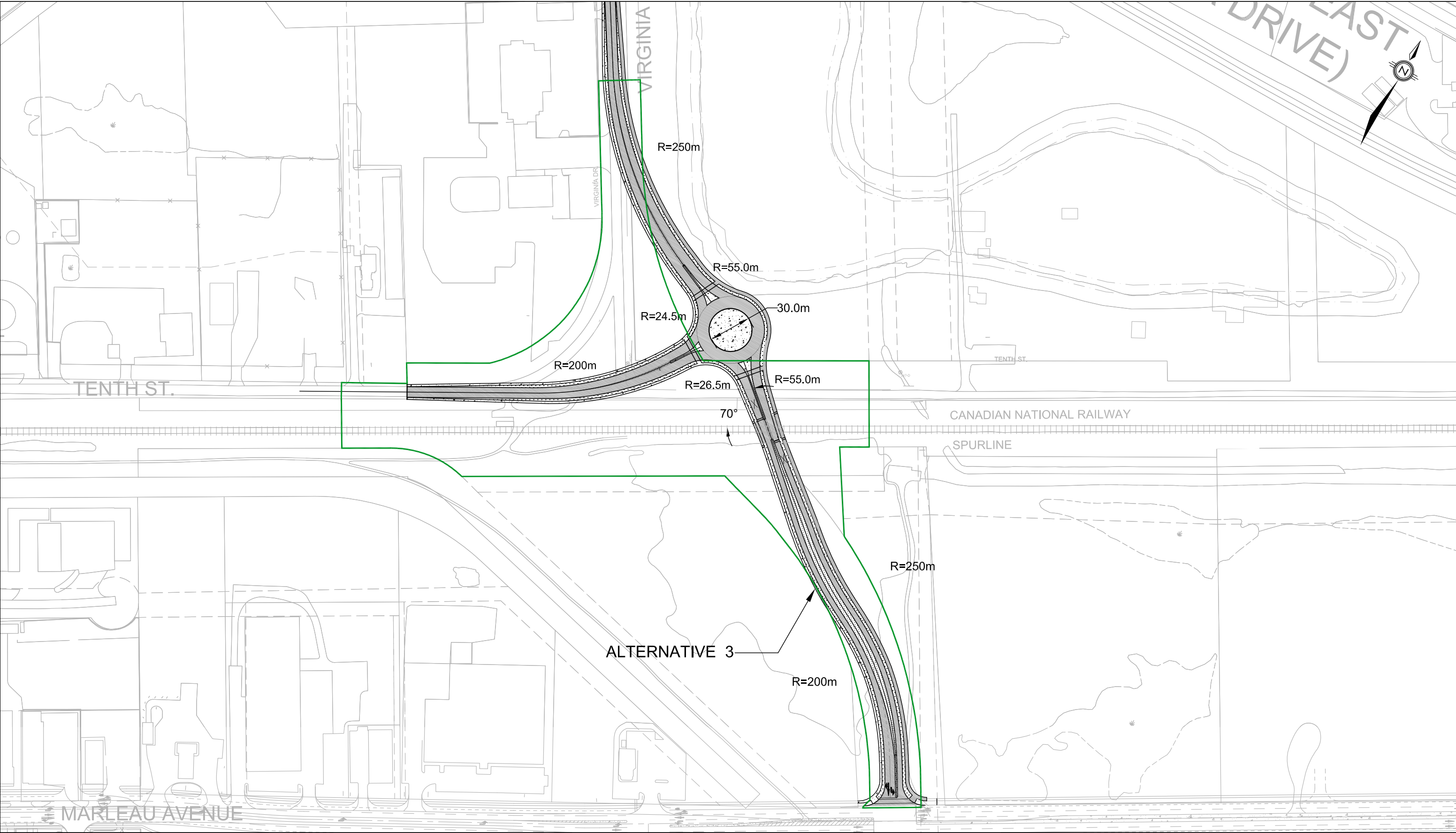
Nick Kaneb Drive Extension EA Analysis and Evaluation of Preliminary Nick Kaneb Drive Roadway/Intersection Design Alternatives (✓ Good in comparison, ▢ Neutral in comparison, ✗ Poor in comparison)					
Criteria	Alternative 1 Standard Intersection	Alternative 2 Standard Intersection	Alternative 3 Roundabout	Alternative 4 Roundabout	Alternative 5 (Tee Intersection at Tenth Street)
Transportation					
• Provides adequate capacity for traffic volumes and minimum intersection offset (30 m) from CNR rail line	✓	✓	✓	✓	✗
• Provides roadway continuity of Nick Kaneb Drive between Marleau Avenue and Industrial Park Drive	✓	✓	✓	✓	✗
• Provides sufficient truck turning movement	✓	✓	✓	✓	✓
• Meets minimum skew angle of Nick Kaneb Dr./Tenth St. intersection	✓	✓	✓	✓	✓
Land Use & Property					
• Utilizes the existing City of Cornwall right-of-way	-	✓	✗	✓	✓
• Minimizes impacts to adjacent lands	-	-	✗	✓	✓
Cost					
• Preliminary Construction Cost	- (\$1.75 million)	- (\$2.0 million)	✗ (\$2.6 million)	✗ (\$2.6 million)	✓ (\$0.65 million)
Overall Summary	✗ This alternative requires additional property and impacts adjacent lands	✓ This alternative has minimal impact on adjacent lands. Carried forward as the Recommended Plan	✗ This alternative requires additional property and impacts adjacent lands and has a high cost	✗ This alternative has a high cost	✗ This alternative does not provide roadway continuity between Marleau Avenue and Industrial Park Drive



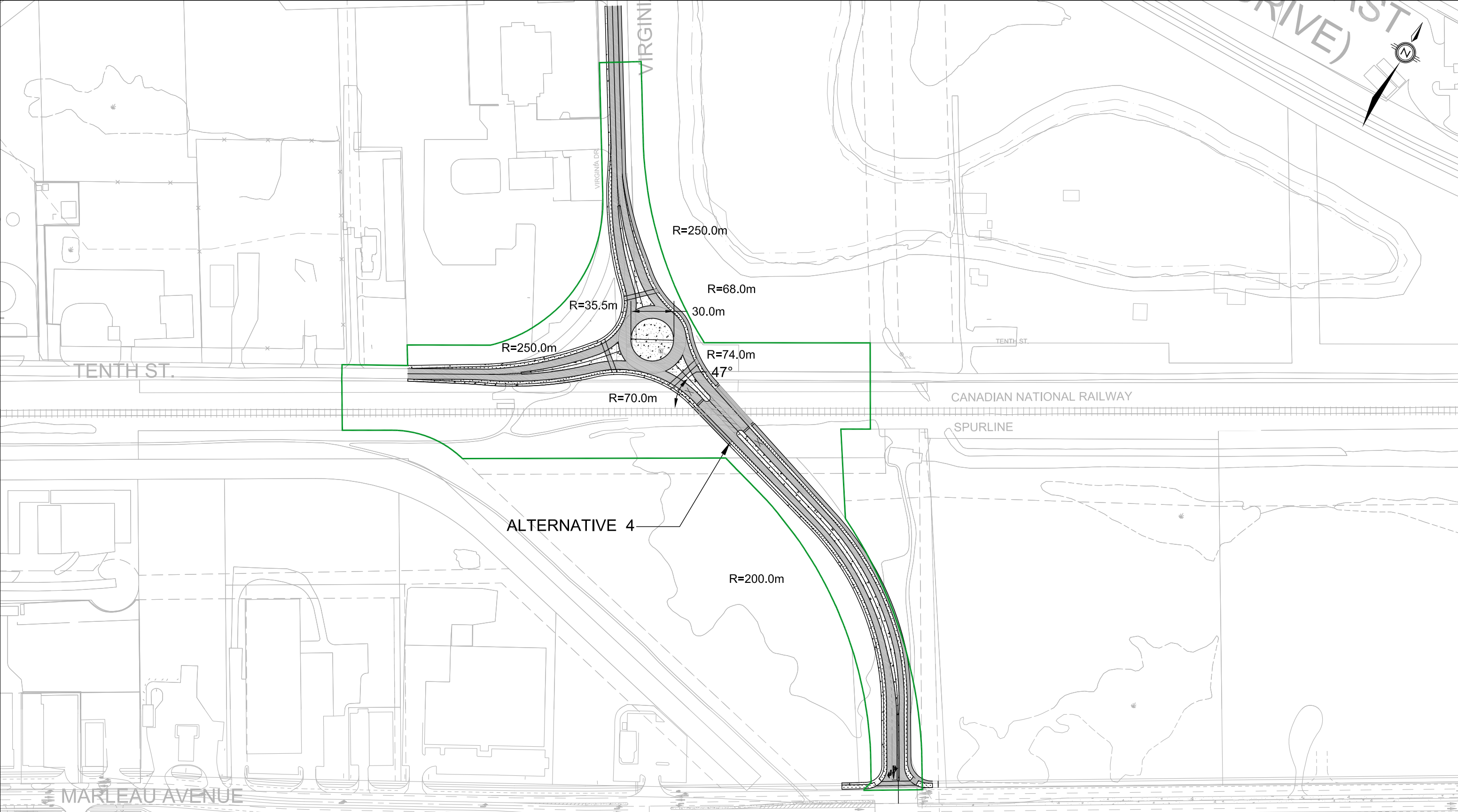
PROPOSED NICK KANEB / TENTH STREET
ALTERNATIVE 1
STANDARD INTERSECTION



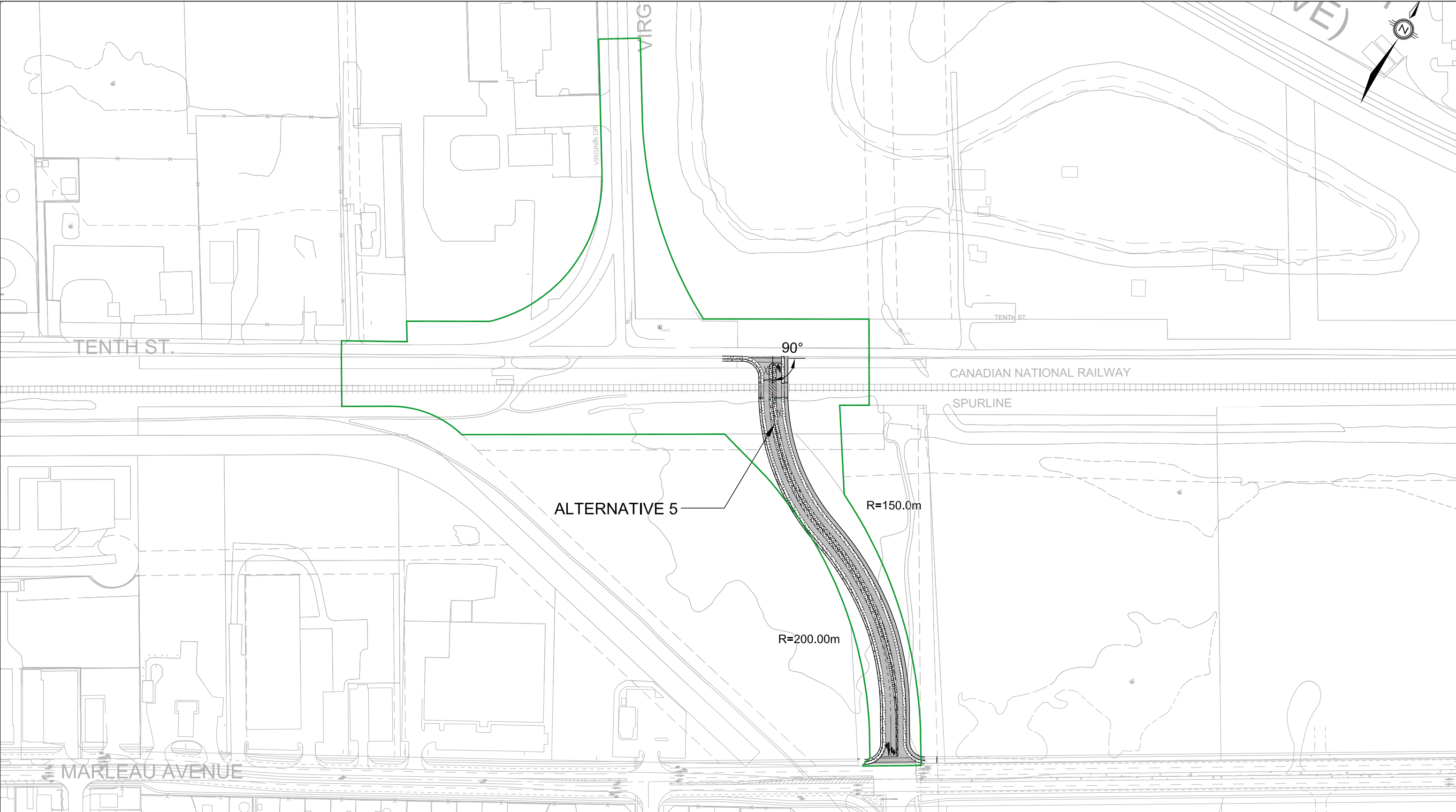
PROPOSED NICK KANEB / TENTH STREET
ALTERNATIVE 2
STANDARD INTERSECTION



PROPOSED NICK KANEB / TENTH STREET
ALTERNATIVE 3
ROUNDBOUT



PROPOSED NICK KANEB / TENTH STREET
ALTERNATIVE 4
ROUNDBOUT



PROPOSED NICK KANEB / TENTH STREET
ALTERNATIVE 5
STANDARD INTERSECTION

Public Involvement

Your input into this study is valuable and appreciated. Comment forms are available at the Registration Desk. All information is collected in accordance with the Freedom of Information and Privacy Act.



Please provide your completed comment form on or before **October 30, 2013**. Methods of sending in your form are indicated on the comment sheet.

There is an opportunity at any time during the EA process for interested persons to provide comments. Any comments received pertaining to the study will be collected under the Environmental Assessment Act and, with the exception of personal information, will become part of the public record.

What Happens Next?

Following this Public Open House we will:

- Review all comments
- Finalize the Recommended Plan
- Present the Recommended Plan to City Council for endorsement
- Prepare and File the Project File – Fall 2013

How Can You Remain Involved in the Study?

You can remain involved in study by:

- Requesting that your name/e-mail be added to our study mailing list
- Providing a written comment sheet
- Contacting the City or consultant representatives at any time during the study

Appendix C

Comment Sheets

①

Comment Sheet
City of Cornwall
Municipal Class Environmental Assessment
for the Proposed Extension of Nick Kaneb Drive
Public Open House
October 16, 2013
4:00 p.m. to 7:00 p.m.
Infrastructure and Municipal Works Building

Thank you for your participation. Open House information is also available at www.cornwall.ca. Please deposit this comment sheet in the box provided or e-mail/fax/mail it no later than October 30, 2013 to:

Enrique Kamm, M.Sc., P. Eng.
Transportation Section
Department of Infrastructure & Municipal Works
City of Cornwall
1225 Ontario Street
Cornwall, ON K6H 5T9
Tel: (613) 930-2787 Ext. 2231
Fax: (613) 932-8891
ekamm@cornwall.ca

Angelo Renon, P.Eng.
Project Manager
GENIVAR
2611 Queensview Drive
Ottawa, ON K2B 8K2
Tel: (613) 829-2800
Toll Free: 1-866-537-5289
Fax: (613) 829-8299
angelo.renon@genivar.com

COMMENTS

I like the "recommended" proposal

Maybe sidewalk & bike path on the same side of the road

Name: _____
Address & Postal Code: _____
Telephone: _____
E-mail: _____
☒ **Add me to mailing list**

Notices of future meetings will be sent through our mailing list and placed in local newspapers. Please indicate above if you want to be added to our mailing list. Personal information on this form is collected under the authority of the Municipal Act and will be used for this project only.

②

Comment Sheet
City of Cornwall
Municipal Class Environmental Assessment
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October 16, 2013
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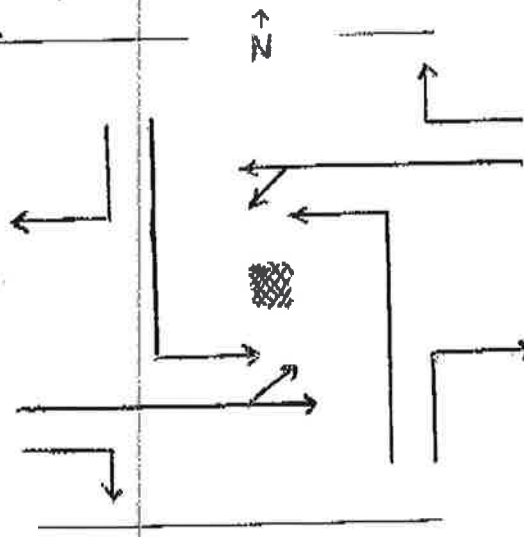
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 Fax: (613) 829-8299
angelo.renon@genivar.com
chris.miller@genivar.com

COMMENTS

FURTHER TO OUR CONVERSATION OCT 23 2013
PLEASE UPDATE THE DRAFT FOR THE PROPOSED EXTENSION
OF NICK KANEB DRIVE TO INCLUDE A CONCEPTUALIZED
INTERSECTION INCORPORATING BOTH RIGHT AND LEFT HAND,
IN AND OUT TURN LANES THAT WOULD ALLOW ACCESS
TO OUR EAST AND WEST PROPERTIES FROM BOTH A
NORTH AND SOUTH DIRECTION.



Name:
 Address:
 Telephone:
 E-mail:
☐ Add

Notices of fu
 our mailing list. E-MAILING INFORMATION FOR THE PROJECT ONLY.

nt to be added to
 project only.

Proposed Kanab Drive extension presentation - City Workshop - 2013-10-16

It is my hope that a traffic circle design would be used: I would be very much in favour of a traffic circle as compared to the intersection as displayed.

I think that a traffic circle properly designed, would require less maintenance than electronic signals.

I have not operated a snow plow, but I would feel that a traffic circle would be easier to clear than the intersection displayed.

There are businesses on 10th st. that do receive goods via standard highway transports of one 53 foot trailer. There is no reason that the transport combination commonly referred to as 'B-Trains', 2 - 40 foot trailers on a fifth wheel hitch would not also use 10th St.

I wonder though if the 30m circumference is large enough for transports commonly known as B-trains could easily negotiate it.

Discussion lead me to understand that planning does not include those types of vehicle on 10th st. very much. However, on leaving the presentation, at Marleau and McConnell, there we saw such a vehicle. There should be every expectation in the planning process that it could use 10th st.

I have also been thinking about Ontario Highway 401 and emergency closures, will the province/city change the EDR route to avoid Marleau Ave.

Now, because I am interested in Rail Road trains I want to raise a certain other concern. I know that the 10th / Virginia St. mainline CNR crossing was, on two occasions that I am aware of this year, blocked for considerable time.

One involved a coupler failure somewhere on a freight train that lasted for about 6 hours ending at about 9:30pm. The other closure involved a very long train, as trains are getting these days, that stopped short of Boundary Road so as not to bring down the barriers at Boundary and it did clear the crossing at Tollgate road, but it blocked 10th / Virginia drive.

The problem is that this crossing cannot be seen by traffic coming from east or west because of the curve in the roadway. Automobiles can turn readily in the roadway. Transports cannot.

Until an overpass is built at that crossing I am suggesting that an flashing advance warning sign be place west of the crossing on 10th before Kanab and another on Industrial drive prior to the entrance Eleven Points Logistics (Target) yard.

About overpasses and railway crossings. Many drivers now of the terrible condition of the crossing at Boundary Road. It must be the worst crossing in Eastern Canada. (I do travel to the Maritimes). It should be a very high priority for repair, just go and watch ALL traffic slowing down for it. Boundary road must be made a priority for a four (4) lane overpass.

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angelo.renon@genivar.com

COMMENTS

I fully support the extension of Nick Kaneb Drive in both directions, south as well as north. I recommend, however, that all intersections along the full length of Nick Kaneb Drive be "roundabouts". The current drive has 3 intersections, one a 4-way stop and the other 2 have stoplights. A roundabout is more environmentally friendly, they help to keep vehicle speeds at a reasonable level, they definitely improve traffic flow and they are much safer as left hand turns are eliminated in areas of high traffic because speeds are reduced and drivers are more cognitive of what they are doing. The most dangerous accidents are right angled and head-on ones which are eliminated in a roundabout. Pedestrian crossings are set back a car length or more from the intersection and cars are only coming from one direction. A U.S. study comparing accidents at intersections both before and after the construction of a roundabout showed a 40% drop in vehicle accidents, an 80% drop in injuries and a 90% drop in serious injuries. Roundabouts permit u-turns not available at normal intersections. These points alone should encourage the City of Cornwall to move forward with the introduction of roundabouts.

Name: _____
 Address _____
 Telepho _____
 E-mail: _____

☒ Add me to mailing list

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Toll Free: 1-866-537-5289
Fax: (613) 829-8299
angelo.renon@genivar.com

COMMENTS

-

- (STAGE) - + Draft - Genivar memo

Name: _____

Address & Postal Code: _____

Telephone: _____

E-mail: _____

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Natural
Environment

Comment Sheet

City of Cornwall

Municipal Class Environmental Assessment
for the Proposed Extension of Nick Kaneb Drive

Public Open House

October 16, 2013

4:00 p.m. to 7:00 p.m.

Infrastructure and Municipal Works Building

6

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COMMENTS

My priority at this time is to request the City to look at and reconsider a fence matter relating to Phase 1. I am respectfully requesting the City to purchase and install a fence at the end of my backyard property, as per my original offer from the City, of a few years ago. During phase 1, I completed a questionnaire that asked about my preference of either a fence structure or an earth berm. I opted for the fence, however ~~because~~ only part of Kirkwood St. property owners had the fence installed and the other owners (myself included) were provided with the earth berms. I am at this time →

Name: _____

Address _____

Telephone _____

E-mail: _____

☐ Add me to mailing list

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*Please see other side →

Kindly asking the City to instal a fence,
as they did for my neighbours to ⑥
the North of me. I would very much
appreciate the same consideration ^{as was} given
to the people whom had a fence constructed
by the City.

I could suggest a cheaper alternative
for the fence which is possibly a metal
structure (panels used for a dog kennel)
TSC sells them on sale at 4 for approx.
\$300.- \$350.⁰⁰ and sometimes even cheaper.

I am concerned for the danger of
① - vandalism ^{the f⁺} there has already been 1 attempt
to get into my shed. The door is now damaged
and doesn't close properly.

② People cut through the cedars at the back
of my yard.

③ Young students from the nearby high school
hang out behind my property and
leave used condoms there. As well, on
one occassion, condom wrappers were left
in my backyard property. An elderly
neighbour informed me she came upon a
young couple in their teens, scantily clad & making
out directly behind my cedars.

pg 2

continued -

Comment Sheet

City of Cornwall

Municipal Class Environmental Assessment
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angelo.renon@genivar.com

COMMENTS

④ I fear for the safety of my 22 year old daughter who just completed university, and myself.

Enclosed is a copy of a newspaper article concerning break and enters on Kirkwood St and Third St.

Regarding Phase II - I have no objection to your plans for an extension of the road from Nick Kaneb and Marleau through to Virginia Drive.

THANK YOU VERY MUCH FOR THIS OPPORTUNITY
TO HAVE MY REQUEST
AND CONCERNS HEARD.

Name:

Address &

Telephone:

E-mail:

☐ Add me to

6

Two men arrested for multiple break-and-enters

ADAM BRAZEAU

ADAM.BRAZEAU@TC.TC

CORNWALL, Ontario – Police have arrested two men in connection with a string of break-and-enters in the early hours of Aug. 9. Two Cornwall men were spotted going through yards near Kirkwood Street and Third Street East after 3a.m. Police were called and after a brief investigation it was confirmed some

sheds had been broken into and property was removed. Marcel Gauvreau, 42 and Ashton James Markell, 24 both of Cornwall were located in the area of the break-and-enters and arrested. The two men were bound by an undertaking with conditions to keep the peace. They were charged with three counts of break and enter, trespass by night and breaches. They were transported to police headquarters and are scheduled for a bail hearing today.

Appendix C

Environmental Inventory Report

**Planning Level Environmental Inventory
in Support of the Municipal Class Environmental Assessment**

**Nick Kaneb Proposed Extension
Cornwall, Ontario
September 2013**

Prepared for:
The Corporation of the City of Cornwall
1246 Ontario Street
Cornwall, Ontario K6H 4C8

Prepared by:
GENIVAR Inc.
2611 Queensview Drive, Suite 300
Ottawa, Ontario K2B 8K2

Project No. 121-26609-00

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1. Introduction

GENIVAR Inc. (GENIVAR) was retained by the City of Cornwall to conduct a Planning Level Environmental Inventory in support of the Municipal Class Environmental Assessment (MCEA) for a proposed extension of Nick Kaneb Drive located south of the Virginia Drive and 10th Street East within the City of Cornwall, Ontario (**Figure 1**).

The study area is located within Concession 1 Part of Lot 4 (approximately 45.03752,-74.710615) within the City of Cornwall, Ontario (**Figure 1**). The zoning of the proposed extension and road widening locations include Commercial (CC SC – Commercial – Shop Centre) in the proposed area of extension, Open Space (OP-SP10) in the northeast portion, Residential (RES 20) in the southern portion and industrial (MFR 20 – Manufacturing 20) in the northwest portion of the study area.

A stormwater management (SWM) pond and future snow disposal site are located northeast and northwest of the Study Area, respectively.

The proposed extension location (**Figure 1**) occurs within the Raisin Region Conservation Authority's (RRCA) regulated area.

2. Methodology

2.1 Study Approach

The Study Area is located in the City of Cornwall, occurs within the RRCA regulated area and includes part of an unevaluated wetland and the Leitch-McLennon Drain, a tributary of Grey's Creek, runs north of the Site from the SWM pond.

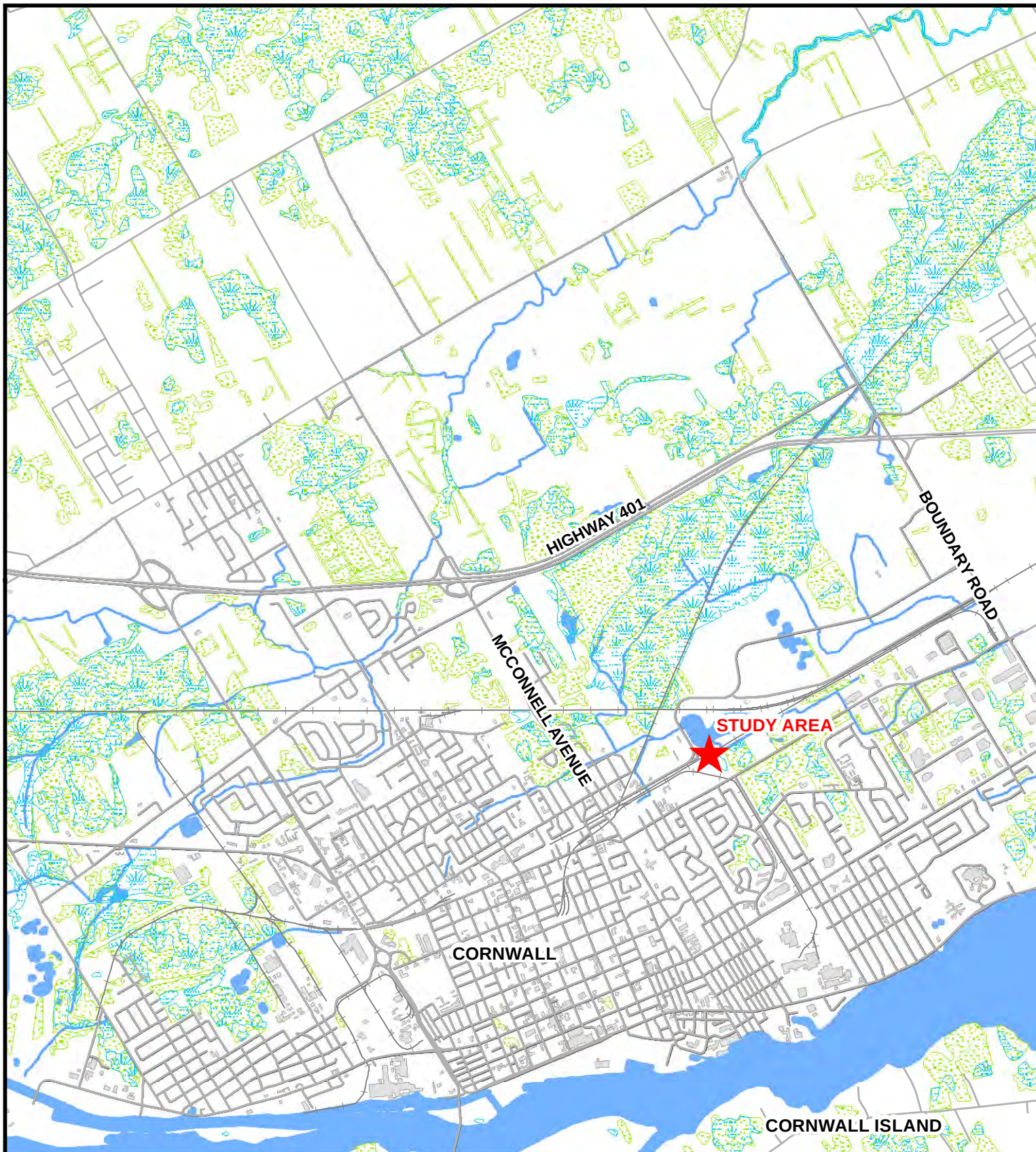
Background information was obtained from the following sources:

- Ontario Ministry of Natural Resources (OMNR):
 - o Natural Heritage Information Centre database (NHIC)
- Raisin Region Conservation Authority (RRCA)
 - o The Distribution of Fish Species at Risk maps (2012 and 2013)
- City of Cornwall Official Plan (OP)
- Atlas of Breeding Birds of Ontario (OBBA)
- Ontario Herpetofaunal Atlas
- Ontario Reptile and Amphibian Atlas (ORAA)
- Species at Risk in Ontario (SARO) List
- Species at Risk Public Registry (SARA)

During the background review process Kemptville District MNR was contacted to identify historical records of Species at Risk (SAR) and Species of Special Concern within and surrounding the study area.

2.2 Background Information

The Study Area does not occur within the Raisin Region Conservation Authority Regulated Area. The Leitch-McLennon Drain, a tributary of Grey's Creek, runs south on the north side of the Site from the stormwater retention pond.



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PROJECT

**ENVIRONMENTAL SITE
SCREENING - CORNWALL**

CLIENT

KEY PLAN

scale 1:45,000

date AUGUST 2013

drawn by GR/CD

job no. 121-26609-00

FIGURE 1



The results of a search of MNR Natural Heritage Information Centre (NHIC 2013), Ontario Breeding Bird Atlas (Bird Studies Canada 2005), the Distribution at Risk maps for RRCA and the Ontario Reptile and Amphibian Atlas (Ontario Nature 2011) identified 6 Species at Risk and species of concern that may occur within or adjacent to the study area:

Avian

- Barn Swallow (*Hirundo rustica*),
- Bobolink (*Dolichonyx oryzivorus*); and,
- Eastern Meadowlark (*Sturnella magna*).

Herpetofauna

- Snapping Turtle (*Chelydra serpentina*); and,
- Western Chorus Frog (*Pseudacris triseriata* pop. 2).

Flora

- Butternut Tree (*Juglans cinerea*),

Aquatic Environment

The following fish species have been identified by the MNR as potentially occurring in the vicinity of the Site:

- Bluntnose Minnow (*Pimephales notatus*),
- Brook Stickleback (*Culaea inconstans*),
- Brown Bullhead (*Ameiurus nebulosus*),
- Iowa Darter (*Etheostoma exile*),
- Notropis sp.; and,
- White Sucker (*Catostomus commersonii*).

An unevaluated wetland was identified by the MNR as present on the southwest portion of the Site just north of Marleau Avenue.

None of these species are identified as being at Risk according to SARA and SARO searches.

The *Distribution of Fish Species at Risk maps Raisin River Conservation Authority, 2013* (Fisheries and Oceans Canada 2013) shows that the watercourse running east-west through the SWM pond and along Tenth Street East is not designated as containing Special Concern Species. The City of Cornwall Official Plan (OP, Corporation of the City of Cornwall Official Plan 2005) was reviewed to identify potential constraints related to the project. According to Schedule 3 (Appendix C) of the OP, a portion of the Summerstown Swamp is located approximately 400 m north of the project area.

3. Existing Conditions

GENIVAR staff conducted a site survey on July 18, 2013, in order to observe and document existing terrestrial and aquatic conditions. During the field visit, the Site was evaluated with respect to presence of dominant vascular plants, site topography, wetland areas, incidental wildlife contact, herpetofauna, and aquatic and terrestrial habitat potential (**Figure 2**). A photographic inventory of the site visit is included in Appendix D.

3.1 Terrestrial Environment

The terrestrial environment along the proposed alignment has been largely disturbed by human activity. The southern end of the Site occurs along Nick Kaneb Drive, crossing Marleau Avenue, and extending north to just south of the railroad tracks is a hydro right-of-way (ROW) running approximately north/south. Pedestrian paths are present along Nick Kaneb Drive south of Marleau Road, and the ROW running north/south contains a gravel access road and a fenced enclosure just south of some railway tracks running east/west south of Tenth Street East. The existing vegetation in this area is dominated by manicured grasses.

LEGEND



STUDY AREA
50 M SETBACK



WATER COURSE
OBSERVED WATERCOURSE
WATER BODY
WOODED AREA

AREAS OF NATURAL INTEREST



WETLAND
PROvincially SIGNIFICANT WETLAND
AREA OF NATURAL SCIENTIFIC INTEREST

DATA FROM LANDS INFORMATION ONTARIO MAY 2013

RIVER/STREAMS SPECIES AT RISK



PROTECTED UNDER SARA (EX, EN, TH)
TO BE LISTED IN 1 YR + (EN, TH)
ALL SPECIAL CONCERN SPECIES (Sch. 1, 3 and newly listed)

DATA FROM CONSERVATION ONTARIO



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PROJECT

ENVIRONMENTAL SITE
SCREENING - NICK KANAB
DRIVE, CORNWALL

CLIENT

SITE PLAN

scale

1:5,000

date

SEPTEMBER 2013

drawn by

GR/CD

job no.

121-26609-00

FIGURE 2



A fairly dense Silver maple (*Acer saccharinum*) dominated forest with extensive areas of Sensitive fern (*Onoclea sensibilis*) in the understory occurs immediately east of this area and extends north to Tenth Street East. Grasses, Red-osier Dogwood (*Cornus sericea*) and an unidentified fruit tree (*Prunus* spp.) were observed in the edge areas around the forest. This area likely holds water in small, isolated pools during the spring thaw.

Tall grasses line the western edge of this area. A large cattail stand containing standing water at the time of the site visit occurs immediately west of the tall grass.

This north / south ROW intersects another ROW that runs east / west approximately 250 m north of the intersection of Nick Kaneb Drive and Marleau Avenue. The existing vegetation in this ROW was dominated by common species such as: Staghorn sumac (*Rhus typhina*), Goldenrod (*Solidago* spp.), Wild Red Raspberry (*Rubus idaeus*), Queen Annes Lace (*Daucus carota*), Wild Grape (*Vitis* spp), Wild Parsnip (*Pastinaca sativa*), Jewel Weed (*Impatiens capensis*), and seedling Manitoba Maple (*Acer negundo*) with occasional Milkweed (*Asclepias* spp.).

The road ROW along Tenth Street East and Virginia Drive contained wellmaintained, manicured grasses. North of Tenth Street East was a large fenced area surrounding the Fly Creek Storm Water Retention Pond. The vicinity of the storm water retention pond was largely meadow type conditions containing grasses, Wild Parsnip, sapling Ash (*Fraxinus* spp.) and Manitoba Maple. Mature White cedar (*Thuja occidentalis*) trees lined the north side of Tenth Street East near the intersection of Virginia Drive. A row of mature Silver Maple trees occurred behind the cedars and extended along the east side of Virginia drive to the northern end of the study area.

A commercial property was located along the north / west edge of the site with occasional areas of cattails (*Typha* spp.) and wet loving grasses throughout.

The railroad tracks occurred south of Tenth Street East with a narrow strip of common trees and meadow species running along the north and south sides of the tracks consists mainly of common.

3.2 Aquatic Environment

A small watercourse feature flowed along the east side of the east / west ROW and turned north within the proposed road extension alignment, under the railroad tracks, under Tenth Street East, just east of Virginia Drive. The watercourse appears to be permanent and drains into the Fly Creek Storm Water Retention Pond. The watercourse was densely vegetated with grasses and cattails between the railroad tracks and Tenth Street East and become dominated by cattails north of Tenth Street East to the retention pond.

Wetlands are defined in the PPS as lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface (MMAH 2005). There are four major wetland types; swamps, marshes, bogs, and fens. An unevaluated wetland is defined as an area identified as provincially significant by the Ministry of Natural Resources using evaluation procedures established by the province, as amended from time to time (MMAH 2005).

A review of Lands Information Ontario (LIO) geospatial data using a Geographic Information System (GIS) depicts no provincially significant wetlands within 120 m of the proposed development site.

The RRCA was contacted on August 14, 2013 via email regarding the location of the Site in relation to the RRCA enforcement area as per O.Reg 175/06. Ms. Kimberley Macdonald, Manager of Planning and Regulations indicated that the Site is not located in the RRCA enforcement area for wetlands, however in the event that a watercourse runs through the Site, it falls under O. Reg. 175/06 and therefore is subject to the regulation requirements or to a "Development, Interference with Wetlands & Alteration to Shorelines & Watercourse" permit under the regulation (RRCA 2012). A copy of the correspondence is included in Appendix A. During the Site visit, a potential seasonal watercourse was observed north of the Site running southeast.

The City of Cornwall OP regulates development and site alterations within locally significant wetlands and Adjacent Lands to Wetlands. The proposed development area does not occur within a locally significant

wetland, does not meet the definition of an Adjacent Land, does not occur within 120 m of Summertown Swamp, and does not occur within 50 m of and ECA.

Council may require an Environmental Impact Study (EIS) for any development or site alteration on lands which are adjacent to the designated wetlands that are not provincially significant. The development site is not adjacent to any of the designated wetlands.

4. Potential Impacts & Discussion

Consultation of various databases, including NHIC, Ontario Breeding Bird Atlas (OBBA, Bird Studies Canada 2005), the Ontario Reptile and Amphibian Atlas (ORAA, Bird Studies Canada 2013) and consultation with MNR was carried out to determine Species at Risk occurrences within the vicinity of the site.

Not all SAR identified during the collection of background information (Section 2.2) have the potential to occur within the Study Area. Each SAR was assessed for their potential to occur within the Study Area based on the habitat types present. The habitat potential ranged from Low to High (Table 1) for all SAR assessed.

Table 1: Significant Species that may Occur in the Study Area, their Rank, Preferred Habitat, and Potential to Occupy the Site

Species	S-Rank ¹	SARO ²	SARA ³	Habitat Description	Habitat Potential ⁴
AVIAN					
Barn Swallow <i>Hirundo rustica</i>	S4B	THR	No Status	This species can be found in many habitats types such as: agricultural, urban and coastal. They will nest in agricultural structures, or under bridges.	Low
Bobolink <i>Dolichonyx oryzivorus</i>	S4B	THR	No Status	The species build nests on the ground in dense grasses such as unmaintained hayfields.	Moderate
Eastern Meadowlark <i>Sturnella magna</i>	S4B	THR	No Status	This species prefers pastures, open fields and overgrown roadsides.	Moderate
FLORA					
Butternut <i>Juglans cinerea</i>	S3?	END	END	This species prefers well drained soils, adjacent to streams, with direct sunlight.	Moderate
HERPETOFAUNA					
Snapping Turtle <i>Chelydra serpentina</i>	S3	SC	SC	This species prefers large bodies of water to small ponds containing dense vegetation.	Low

Species	S-Rank ¹	SARO ²	SARA ³	Habitat Description	Habitat Potential ⁴
Western Chorus Frog <i>Pseudacris triseriata</i>	S3	NAR	THR	This species can be found in moist cultivated, meadow or forested lands. Tadpoles develop within intermittent wet pockets.	High

¹ Protection priority Provincial Rank (NHIC 2013); 1 - Critically Imperiled, 2 - Imperiled, 3 - Vulnerable, 4 - Apparently Secure, 5 - Secure; and

² Species protected under the provincial Endangered Species Act; END – Endangered, THR – Threatened, SC – Special concern.

³ Species protected under the federal Species at Risk Act (2007)

⁴ Habitat Potential; None, Low, Moderate, High

Avian species, including Eastern Meadowlark and Bobolink were designated with Moderate habitat potential. The habitat of these species is protected from damage and destruction as well as certain activities that may require authorizations under the ESA. Any potential work should consider the disturbance of possible habitat (e.g. nesting sites).

No Butternut Trees were encountered within 25 m of the project area during the Site visit.

Western Chorus Frog may find suitable habitat adjacent to the wetland within the ephemerally moist forested areas.

5. Impact and Mitigation Measures Discussion

Employment of mitigation measures during all phases of construction will protect identified Natural Features located on and within the vicinity of the Site. The following sections outline the potential impacts that the proposed road extension and widening may have on the specific natural features, as well as provide mitigation strategies to eliminate or reduce the potential impact.

No confirmed critical or specialized aquatic habitat features were identified in the area. If any Threatened or Endangered species is discovered the construction works, the contractor should contact the Kemptville District MNR Species At Risk Biologist. Additionally, operations should stop or be modified to avoid any negative impacts to species at risk until further direction is provided by MNR.

5.1 General

- All construction related activities should be regularly monitored and documented to ensure conformance with applicable regulatory approvals and environmental plans (i.e., sediment and erosion control). In the event of an infraction or incident, applicable agencies (e.g., Environment Canada, Fisheries and Oceans Canada, Raisin Region Conservation Authority) will be promptly notified of any environmental issues.
- Temporarily store, handle and dispose of all materials used or generated (e.g. organics, soils, woody debris, temporary stockpiles, construction debris such as concrete, sheet pile, wood forms, etc.) during site preparation, construction and clean-up in a manner that prevents their entry to waterbody including temporarily storing and stockpiling materials a safe distance from waterbody and stabilize/contain them.
- Operate, store and maintain (e.g., re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious substance to the waterbody.
- Operating, refuelling and maintenance of construction equipment and the handling and storage of toxic materials (e.g. fuel, lubricants, form oils, paints, wood preservatives, and other chemicals) must be carried out in such a way as to avoid contamination of soils, groundwater and surface waters. Temporary materials and equipment storage locations should be identified in the detail plans and are subject to approval.

- Ensure mitigation measures are properly implemented, installed, maintained, and are functioning effectively.
- Erosion control fencing should be placed around all ongoing construction activity areas as well as at adjacent locations where supplies or excavated materials and imported fill may be temporarily stored. Fencing should be properly installed and inspected at regular intervals and after significant rain events to confirm it is functioning properly. Fencing should be regularly cleared of silt accumulation to ensure the integrity of erosion prevention/sediment containment measures. Areas of exposed soil, especially newly graded areas that cannot be immediately stabilized with the final surface treatments should be appropriately treated to minimize erosion (e.g., straw mulch, erosion blanket, sod, or hydroseed).
- Ensure Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, emergency contact numbers) on-site at all times for implementation in event of accidental spill during construction. Adequate measures to prevent or capture and contain any debris and spills resulting from construction activities should be kept onsite in sufficient quantities. Staff should be orientated as to the location of materials and their proper use and disposal. All measures and procedures should conform to pertinent provincial requirements. In the event of a release during the construction work on the pipeline, the following general steps are suggested:
 - o Stop the release of the product
 - o Contain as much as possible of the product in the immediate vicinity of the spill
 - o Prevent or reduce the impact of released product on people, property or the environment
 - o Recover as much of the product as possible
 - o Clean up the affected area, to the extent practical, to pre-spill conditions
 - o Comply with the legislative requirements of relevant regulating bodies
 - o An emergency spill kit will be kept on site at all times during construction or when vehicles or equipment are present on-site.
- All erosion and sediment control measures will be integrated with the construction operation methods and schedule as determined by the Contractor.
- Prior to the start of any construction activity, the perimeter of the work area will be clearly delineated with snow fencing. Equipment will not be operated near water unless it is specifically needed to work in watercourses or on watercourse banks.
- Construction operations should not commence until temporary erosion and sediment control measures have been installed.
- Stabilize and re-vegetate (or use other materials appropriate to site conditions) all areas of soil disturbed/ exposed during construction that drain to a waterbody, which includes stabilization of new or cleaned out ditches.
- Upon completion of construction, exposed soils should be restored to its original condition. Erosion control fencing may be removed once vegetation has been established.
- Reinstate and re-stabilize banks of waterbody disturbed during construction to pre-construction configuration and condition (or better condition) using properly designed and installed stabilization measures, which may include temporary measures (e.g. biodegradable materials, 'nurse'-crop vegetation) to provide interim stabilization until vegetation fully established.

5.2 Terrestrial Conditions

General mitigation measures related to the terrestrial environment may include:

- Reinstate and re-stabilize banks of waterbody disturbed during construction to pre-construction configuration and condition (or better condition) using properly designed and installed stabilization measures:

- o typically no hard engineering
 - o may include vegetation, rock/stone material
 - o may incorporate temporary measures (e.g. biodegradable materials, 'nurse'-crop vegetation) to provide interim stabilization until vegetation fully established
- Wildlife may be encountered in the study area. Any wildlife observed during construction activities should be gently encouraged to leave the study area, if possible to do so safely. Photos for identification should be taken of animals observed on-site if possible.
- Vegetation clearing should be limited to the minimum area required for construction activities.
- Vegetation protection areas should be identified on contract drawings/document.
- Reinstatement of vegetation as soon as possible following completion of construction in impacted areas. All reinstatement plantings should be native species compatible with the existing or historical terrestrial ecosystem.
- Stabilize and re-vegetate (or use other materials appropriate to site conditions) all areas of soil disturbed/ exposed during construction that drain to a waterbody, which includes stabilization of new or cleaned out ditches.
- Upon completion of construction, exposed soils should be restored to its original condition. Erosion control fencing may be removed once vegetation has been established. Reinstatement and re-stabilize banks of waterbody disturbed during construction to pre-construction configuration and condition (or better condition) using properly designed and installed stabilization measures, which may include temporary measures (e.g. biodegradable materials, 'nurse'-crop vegetation) to provide interim stabilization until vegetation fully established.

5.2.1 Breeding birds

The Site was observed to present conditions suitable for breeding birds. As such, the *Migratory Birds Convention Act*, 1994, states that "[i]ncidental take is the harming of migratory bird nests due to actions such as construction activities", including vegetation clearing, tree removal, site grubbing, site access, excavation and piling of soil/fill (Canadian Wildlife Service 2012). Therefore:

- Contractor shall not destroy active nests of protected migratory birds. Removal of vegetation should not occur between April 30 and July 31 to avoid the breeding bird season. Any native plant species removed should be replanted upon completion of construction activities.
- Construction activities with the potential to harm or destroy migratory birds, such as vegetation clearing, should not take place in migratory bird habitat during the core breeding season, from May 1st to July 31st

Construction may only take place during the breeding bird season if, prior to construction activities commencing, a qualified biologist conducts a breeding bird survey within the construction site. Active nests will be flagged and appropriate buffers (ranging from 5 to 50 m, depending on the species observed) will be put in place during construction. These surveys must be repeated once every 3 days until the end of the breeding bird season (August 1st of any given year) or until construction is complete, whichever occurs first.

No Butternut trees were observed in the study area or within 25 m of the study area.

5.3 Aquatic Conditions

5.3.1 Unevaluated Wetland

The watercourse located on site likely functions as fish habitat, however the habitat is likely not rare, sensitive or supporting sensitive species. No in-water work should be undertaken within the timing restrictions set out by the MNR Kemptville District (March 15-June 30, Warmwater)

Proper functioning of the unevaluated wetland on the proposed road extension and widening site, and the ability to support aquatic and terrestrial species is dependent on both the quality and quantity of the water supplying it. A potential for increased sediment, contaminant and nutrient loading on hydrological

features may exist during clearing, grading and construction activities. Best Management Practices should be employed in the development of any stormwater, sediment and erosion control plans to minimize sediment and erosion associated impacts.

The habitat directly adjacent to the unevaluated wetland is considered a riparian/transition zone. Loss of shade due to the removal of vegetation may impact the temperature of the wetland community. Further, to ensure that the riparian wetland habitats are not negatively impacted by the proposed road extension and widening, the following mitigative measures are recommended:

- Temporary siltation fencing should be employed at the construction area boundary. Its location and installation should be completed before any work on the site begins, and removed after the threat of siltation effects have ceased. The siltation fence should reduce or eliminate the transport of sediments, nutrients, contaminants, and increased turbidity to the hydrological features.
- Vegetation removal within the unevaluated wetland should be minimized wherever possible.

6. Monitoring

In order to minimize potential impacts during construction, the following monitoring initiatives should be conducted during construction:

- Periodic inspection of the protective fencing (i.e., snow fencing, sediment and erosion control measures) used to separate vegetation that is to be retained from the construction area. If the fencing is damaged or ineffective, it shall be replaced immediately;
- Periodic inspection of all equipment used for construction, including industrial equipment, work vehicles and sub-contractors equipment. Fluid leaks should be repaired promptly. A spill kit may be required depending on the extent and proximity of work to water. If it is required, it shall be inspected daily to ensure it is not moved or damaged.

To minimize post-construction impacts, the following monitoring initiatives be implemented following construction:

- Vegetation planted to stabilize soil shall be examined one year after planting to ensure successful establishment; and
- Replanting of any vegetation that was not established shall occur within one year.

The monitoring should be conducted by the contractor who is constructing the proposed development. It is recommended that a log be established to ensure that the monitoring be conducted periodically and can be reviewed at any time. Any deficiencies that are noted during monitoring activities should be corrected through consultation with the appropriate authorities (e.g., MNR, RRCA).

7. Closure

This report has been produced by GENIVAR solely for use by the City of Cornwall in support of the proposed Extension of Nick Kaneb Drive within the City of Cornwall. Any part of this document used by a third party or for a purpose for which it was not intended is the responsibility of the user.

Respectfully Submitted,

GENIVAR Inc.

Prepared by:



Kathryn Maton, C.E.T.
Environmental Technologist

Reviewed by:



Edward Malindzak, M.Sc.,
Senior Biologist

8. References

- Bird Studies Canada. Ontario Breeding Bird Atlas. 2005. www.birdsontario.org/atlas/atlasmain.html. Accessed August 2013
- Canadian Wildlife Service (Ontario Region). July 2012. Explanation for Core Nesting Periods Table
- Corporation of the City of Cornwall Official Plan. 2005.
- Fisheries and Oceans Canada. 2013. Distribution of Fish Species at Risk Raisin River Conservation Authority (Map 1)
- Ministry of Natural Resources. 2013. Species at Risk.
http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_WHTS_RSK_STR_MNT_EN.html. Accessed July 2013
- Ministry of Natural Resources. 2013. Natural Heritage Information Centre (NHIC).
<http://nhic.mnr.gov.on.ca/>. Accessed July 2013.
- Ministry of Municipal Affairs and Housing (MMAH). 2005. Provincial Policy Statement.
- Bird Studies Canada. 2013. Reptile and Amphibian Atlas Internet site.
http://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php

Appendix A

Correspondence

Edward Malindzak

From: Kim MacDonald <kim.macdonald@rrca.on.ca>
Sent: Wednesday, August 14, 2013 4:07 PM
To: Kathryn Maton
Cc: Edward Malindzak; Chris Critoph; Brendan Jacobs
Subject: RE: Enforcement Area Request: Nick Kaneb Dr. Proposed Extension

Hello Kathryn,

We do not have RRCA board endorsement to regulate wetlands in that particular area of our watershed (although the text of our regulation takes precedence and states we regulate wetlands, it is 'complain driven' and would only proceed to the board for review upon request as per our internal policies). We do however enforce ALL watercourses within our watershed under O. Reg. 175/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses).

Wetlands are typically dealt with through municipal triggers (i.e. Zoning By-law).

Please ensure due diligence is followed concerning MNR Species at Risk, Butternut trees, etc. and that a permit is acquired from the RRCA for any work in or adjacent to a watercourse (a fishery review would be conducted concurrently by our office on behalf of our Level 2 Agreement with the Department of Fisheries and Oceans).

In the meantime, I will verify with our staff biologist to see if they are aware of any sensitive species in that particular area that may be of interest to you.

I trust the above satisfies your requirements at the present time.

Regards,

Kimberley MacDonald
Manager of Planning & Regulations
Raisin Region Conservation Authority
PO Box 429
18045 County Road 2
Cornwall, Ontario
K6H 5T2
Tel: 613-938-3611 ext. 242
Fax: 613-938-3221
E-mail: kim.macdonald@rrca.on.ca
Website: www.rrca.on.ca

From: Kathryn Maton [<mailto:Kathryn.Maton@genivar.com>]
Sent: Wednesday, August 14, 2013 2:51 PM
To: Kim MacDonald
Cc: Edward Malindzak
Subject: Enforcement Area Request: Nick Kaneb Dr. Proposed Extension

Hi Kim,

I am currently completing an Environmental Inventory report for the proposed extension of Nick Kaneb Dr, which is to run from the north end of Nick Kaneb Dr and attach to Virginia Dr (at 10th Street) in Cornwall (Please see attached drawing).

It does not appear that the site is in the enforcement area, could you please confirm this?

Many thanks,

Kathryn



Kathryn Maton, C.E.T.
Environmental Technologist

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IMPORTANT NOTE: This communication is intended for only the party to whom it is addressed and may contain information which is privileged or confidential. Any other delivery, distribution, copying, or disclosure is strictly prohibited and is not a waiver of privilege or confidentiality . If you have received this telecommunication in error, please notify the sender immediately by return electronic mail and destroy the message.



Natural Areas and Features Information Request Form

Contact Information

Name: _____

Address: _____

Phone Number: _____ Owner _____ Consultant _____

E-mail Address: _____

***All red fields are mandatory**

This includes X & Y Coordinates.

Please see _____ for assistance.

Site Information

Project Name: _____

Township: _____ Lot: _____ Concession: _____

X: _____ Y: _____ Address: _____

***If more than 1 site, please provide all individual coordinates in an attached spreadsheet*

Type of Proposal

- ☐ Severance / Zoning
 ☐ Drains / Roads / Culverts
☐ Hydroline clearing
 ☐ Small Scale Projects (less than 5 hectares)
☐ RE Projects
 ☐ Large Scale Projects (5 hectares or greater)
☐ Aggregate Project
 Other: _____

Attachments

*****Please attach a Site Map showing the area of interest**

☐ Picture
 ☐ Map(s)
 ☐ Engineered Drawings
 Other: _____

Request

I would like to request the following information for the property identified above:

To better respond to your request please briefly outline the purpose for which this information is required (e.g. proposed development, lot severance, etc. or attach details):

Date of works proposed: ____ / ____ / ____

Personal information contained in this form is collected in order to fulfill your request, respond to your inquiries and for other administration purposes. With regard to the personal information it collects, the ministry is bound by privacy protection rules under the Freedom of Information and Protection of Privacy Act and takes all necessary steps to safeguard personal information collected.

Please Note: This request **MUST** be made by the property owner or by someone acting on their behalf.
Depending on the nature of the request, it may take 6-8 weeks to respond to your inquiry.
If the request does not include the mandatory information, it may delay response time.

I have read the above and agree to all Terms and Conditions

Please forward the completed form to:

OR Fax: 613-258-3920

Attention: Information Requests
10 Campus Drive, Postal Bag 2002
Kemptville, ON K0G 1J0

MNR File Number: _____

LEGEND

- SITE OF INTEREST
- 120 M SETBACK
- 50 M SETBACK
- 30 M SETBACK

RIVER/STREAMS SPECIES AT RISK

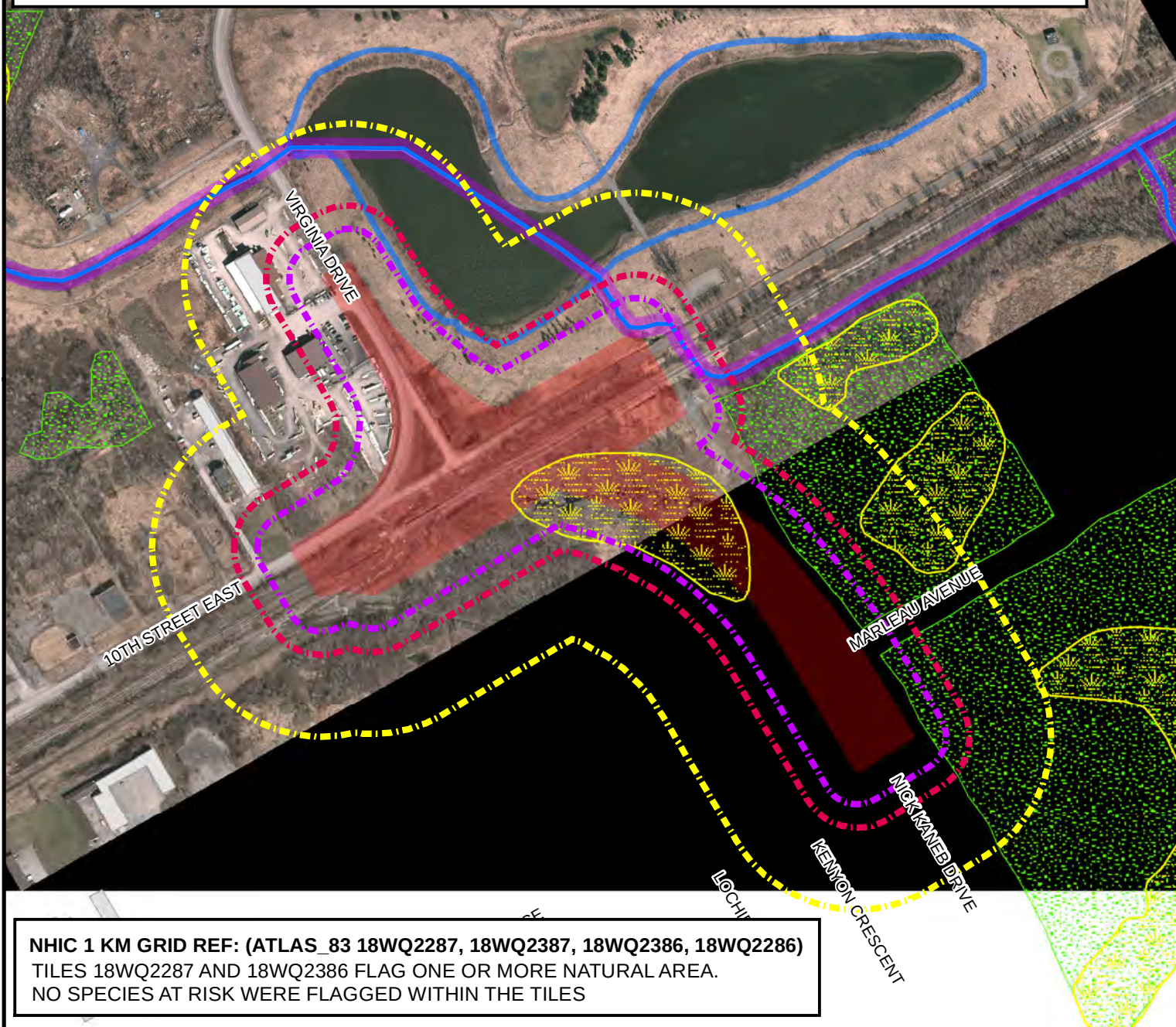
- NOT SAR HABITAT
- PROTECTED UNDER SARA (EX, EN, TH)
- TO BE LISTED IN 1 YR + (EN, TH)
- ALL SPECIAL CONCERN SPECIES (Sch. 1, 3 and newly listed)

DATA FROM THE RAISIN RIVER
CONSERVATION AUTHORITY

AREAS OF NATURAL INTEREST

- WATER COURSE
- WATER BODY
- WOODED AREA
- WETLAND
- PROVINCIALLY SIGNIFICANT WETLAND
- AREA OF NATURAL SCIENTIFIC INTEREST

DATA FROM LANDS INFORMATION
ONTARIO MAY 2013



NHIC 1 KM GRID REF: (ATLAS_83 18WQ2287, 18WQ2387, 18WQ2386, 18WQ2286)
TILES 18WQ2287 AND 18WQ2386 FLAG ONE OR MORE NATURAL AREA.
NO SPECIES AT RISK WERE FLAGGED WITHIN THE TILES



GENIVAR

1345 ROSEMOUNT AVENUE
CORNWALL ONTARIO
CANADA K6J 3E5
PHONE: 613-933-5602 FAX: 613-936-0335
WWW.GENIVAR.COM

PROJECT
**ENVIRONMENTAL SITE
SCREENING - CORNWALL**

CLIENT
**NICK KANE DRIVE
PROPOSED EXTENSION EA**

scale	1:5,000
date	MAY 2013
drawn by	GR
job no.	121-26609-00

FIGURE 1





Ministry of Natural Resources

Kemptville District
P.O. Box 2002
10 Campus Drive
Kemptville, ON K0G 1J0

Tel.: (613) 258-8204
Fax.: (613) 258-3920

Ministère des Richesses naturelles

District de Kemptville
CP 2002
10 Campus Drive
Kemptville, ON K0G 1J0

Tél.: (613) 258-8204
Télééc.: (613) 258-3920

Wed. Jun 5, 2013

Kathryn Maton
Genivar
2611 Queensview Drive, 3rd Floor
Ottawa

(613) 829-2800 ext 19419
kathryn.maton@genivar.com

Attention: Kathryn Maton

Subject: Information Request
Project Name: Nick Kaneb Drive Proposed Extension
Site Address:
Our File No. 2013_COR-2297

Natural Heritage Values

The Ministry of Natural Resources (MNR) Kemptville District has carried out a preliminary review of the area in order to identify any potential natural resource and natural heritage values.

The MNR works closely with partner agencies and local municipalities in order to establish concurrent approval process and to achieve streamlined and efficient service delivery. The MNR strongly encourages all proponents to contact partner agencies (e.g. MOE, Conservation Authority, etc.) and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements and approval timelines.

Natural heritage features and values contribute to the province's rich biodiversity and provide habitat for a variety of species. The following Natural Heritage values were identified:

- Unevaluated Wetland (Not evaluated per OWES)

Municipal Official Plans contain additional information related to natural heritage features. Please see the local municipal Official Plan for more information such as specific policies and direction pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality.

Where natural values and natural hazards exist (e.g., floodplains), there may be additional approvals and permitting required from the local Conservation Authority. The MNR strongly recommends contacting the local Conservation Authority for further information and approvals. Please see the MNR Kemptville Information Guide (2012) for contact information pertaining to Conservation Authorities located within the Kemptville District area.

The Natural Heritage Information Centre (NHIC) can provide additional information and mapping as it pertains to natural heritage features and species at risk. The NHIC website (including mapping tools) is available to all members of the public, for more information please see the attached NHIC Information Sheet.

In Addition, the following Fish species were identified: bluntnose minnow, brook stickleback, brown bullhead, Iowa darter, Notropis sp., white sucker.

Water

Where the site is adjacent to or contains a watercourses or waterbodies, additional considerations apply. If any in-water works are to occur, there are timing restriction periods for which work in water can take place (see below). Appropriate measures should be taken to minimize and mitigate impact on water quality and fish habitat, including:

- including the installation of sediment and erosion control measures;
- avoiding removal alteration or covering of substrates used for fish spawning, feeding, over-wintering or nursery areas; and
- debris control measures should be put in place to manage falling debris (e.g. spalling).

A work permit from the MNR may be required pending further details regarding the proposed works. No encroachment on the bed or banks of the waterbody (e.g. abutments, embankments, etc.) is permitted until MNR approval and clearance has been issued. In order for MNR staff to determine when a work permit is required, additional information can include:

- Detailed drawings (existing and proposed)
- Location mapping
- Registered Plan survey
- Site photographs
- Public Lands Act Forms - application forms, ownership form and landowner notification form.

The MNR does not have any water quality or quantity data available. We recommend that the Ministry of the Environment be contacted for such data along with the local Conservation Authority. For further information regarding fish habitat and protocols, please refer to the following interagency, document, *Fish Habitat Referral Protocol for Ontario* at: <http://www.mnr.gov.ca/264110.pdf>

Timing restriction periods in MNR Kemptville District*:

Warmwater	→ March 15 – June 30
	→ March 15 – July 15 for St. Lawrence River & Ottawa River
Coldwater	→ October 1 – May 31

Mixed lakes → October 1 – June 30 (Big Rideau & Charleston)

** Please note: Additional timing restrictions may apply as it relates to Endangered and Threatened Species, including works in both water and wetland areas.*

Additional approvals and permits may be required for the proposed works as it relates to the Fisheries Act. Please contact your local Conservation Authority and the Department of Fisheries and Oceans to determine requirements and next steps. Where the Fisheries Act is triggered and habitat compensation, mitigation measures or best management practices are being considered; as the MNR is charged with the management of Provincial fish populations, the MNR requests ongoing involvement in such discussions in order to ensure population conservation. Furthermore, local Conservation Authorities may also have additional approvals for works in and adjacent to water and wetland features. Finally, Transport Canada's Navigable Waters Protection Division may require review and approval of the proposed project. Please contact these local agencies directly for more information.

As per the Natural Heritage Reference Manual (Section 13; OMNR 2010) the MNR strongly recommends that an Ecological Site Assessment be carried out to more thoroughly determine the presence of natural heritage features, and Species at Risk and their habitat located on site. The MNR can provide survey methodology for particular species at risk and their habitats. In addition, the local planning authority may have more details pertaining to the requirements of the assessment process, which will result in allow for the municipality to make planning decisions which are consistent with the Provincial Policy Statement (2005).

Species at Risk

With the new Endangered Species Act (ESA, 2007) in effect, it is important to understand which species and habitats exist in the area and the implications of the legislation. A review of the Natural Heritage Information Centre (NHIC) and internal records and aerial photograph interpretation indicate that there is a potential for the following Threatened (THR) and/or Endangered (END) species on the site or in proximity to it:

- Barn Swallow (THR) **regulated habitat
- Bobolink (THR)
- Butternut (END)
- Eastern Meadowlark (THR)

All Endangered and Threatened species receive individual protection under Section 9 of the Endangered Species Act, 2007 (ESA). Species listed below receive both species and general habitat protection under Section 10 of the ESA, 2007. Thus any potential works should consider disturbance of possible important habitat (e.g. nesting sites). Please note that as of June 30, 2013 general habitat protection will apply to all Threatened and Endangered species. The habitat of these listed species will be protected from damage and destruction and certain activities may require authorization(s) under the ESA. Please keep this date in mind when planning any species and habitat surveys.

Species receiving General Habitat protection:

- Bobolink (THR)
- Eastern Meadowlark (THR)

If the proposed activity is known to have an impact on the species mentioned above or any other SAR, a permit under the Endangered Species Act, 2007 (ESA) may be required. It is recommended that MNR Kemptville be contacted prior to any activities being carried out to discuss potential survey and mitigation measures to avoid contravention of the ESA.

Habitat has been identified within the project area that appears suitable for one or more species listed by SARO as Special Concern (SC). In Addition, one or more Special Concern species has been documented to occur either on the site or nearby. Species listed as Special Concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act. Species of Special Concern for consideration:

- Snapping Turtle (SC)

If any of these or any other species at risk are discovered throughout the course of the work, and/or should any species at risk or their habitat be potentially impacted by on site activities, MNR should be contacted immediately and operations be modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by MNR.

Please note that information regarding species at risk is based on documented occurrences only and does not include an interpretation of potential habitat within or in proximity to the site in question. Although this data represents the MNR's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. i.e.: Species at Risk (SAR) or their habitat could still be present at the location or in the immediate area. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed; or their habitat is not damaged or destroyed through the activities carried out on the site. The MNR continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNR for technical advice and to discuss what activities can occur without contravention of the Act. If an activity is proposed that will contravene the Act (such as Section 9 or 10), the proponent must contact the MNR to discuss the potential for a permit (Section 17). For specific questions regarding the Endangered Species Act (2007) or SAR, please contact a district Species at Risk Biologist at sar.kemptville@ontario.ca. For more information regarding the ESA (2007), please see attached ESA Information Sheet.

Please note: The advice in this letter may become invalid if:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species.
- Additional occurrences of species are discovered.
- Habitat protection comes into force for one of the above-mentioned species through the creation of a habitat regulation (general habitat protection above).

This letter is valid until: Thu. Jun 5, 2014

The MNR would like to advise, by way of this letter, that we continue to be circulated on information with regards to this project. If you have any questions or require clarification please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'K Walker', with a long horizontal flourish extending to the right.

Korey Walker
Resource Management Planner
korey.walker@ontario.ca

Encl.\
-ESA Infosheet
-NHIC/LIO Infosheet

Natural. Valued. Protected.

Endangered Species Act, 2007 & Species At Risk in Ontario

Background

Endangered Species Act: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes-07e06_e.htm

Species at Risk in Ontario List: www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/246809.html

The Endangered Species Act (ESA) 2007 protects both species and habitat. Section 9 of the ESA “prohibits killing, harming, harassing, capturing, possessing, collecting, buying, selling, trading, leasing or transporting species that are listed as threatened, endangered or extirpated”. Section 10 of the ESA, 2007 prohibits damaging or destroying habitat of endangered or threatened species. Protected habitat is either based on general definition in the Act or prescribed through a regulation. The ESA 2007 defines general habitat as an area on which the species depends, directly or indirectly, to carry on its life processes, including reproduction, rearing, hibernation, migration or feeding.

It is important to be aware that changes may occur in both species and habitat protection. The ESA applies to listed species on the Species at Risk in Ontario List (SARO). The Committee on the Status of Species in Ontario (COSSARO) meets regularly to evaluate species for listing and/or re-evaluate species already listed. As a result, species’ designations may change that could in turn change the level of protection they receive under the ESA 2007. Also, habitat protection provisions for a species may change e.g. if a species-specific habitat regulation comes into effect. The regulation would establish the area that is protected as habitat for the species.

Information with respect to SAR can be found in the online database at the Natural Heritage Information Centre (NHIC) - <http://nhic.mnr.gov.on.ca/nhic.cfm> . The NHIC compiles, maintains and distributes information on species at risk and updates its information on a regular basis. We encourage you to routinely check the NHIC database to obtain the most up to date SAR information for proposed work locations. However, while the NHIC database is the best available source of data, even when there are no known occurrences documented at a site, there is a possibility that SAR may occur at a proposed work location.

All data represents the MNR’s best current available information, it is important to note that a lack of occurrence at a site does not mean that there are no Species at Risk (SAR) at the location. The MNR continues to encourage ecological site assessments to determine the potential for other SAR occurrences. When a SAR does occur on a proposed site, it is recommended that the proponent contact the MNR for technical advice and to discuss what activities can occur without contravention of the Act. If an activity is proposed that will contravene the Act (such as Section 9 or 10), the proponent must contact the MNR to discuss the potential for application of certain permits (Section 17) or agreement (Regulation 242/08). For specific questions regarding the Endangered Species Act (2007) or species at risk, please contact a district Species at Risk Biologist at sar.kemptville@ontario.ca.

Natural. Valued. Protected.

Natural Heritage Information Centre

Land Information Ontario

Natural Heritage Information Centre: <http://nhic.mnr.gov.on.ca/>

Biodiversity Explorer (mapping): <https://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/main.jsp>

Land Information Ontario: <http://www.mnr.gov.on.ca/en/Business/LIO/index.html>

Ontario Geospatial Data Exchange: http://www.mnr.gov.on.ca/en/Business/LIO/2ColumnSubPage/STEL02_167959.html

LIO Make-a-Map: http://www.mnr.gov.on.ca/en/Business/LIO/2ColumnSubPage/STDPROD_068999.html

Ontario Maps: http://www.mnr.gov.on.ca/en/Business/LIO/2ColumnSubPage/STDPROD_068512.html

The **Natural Heritage Information Centre (NHIC)** compiles, maintains and distributes information on natural species, plant communities and spaces of conservation concern in Ontario. This information is stored in a spatial database used for tracking this information. The Centre also has a library with conservation-related literature, reports, books, and maps, which are accessible for conservation applications, land use planning, and natural resource management. The NHIC website makes much of this information available through the internet.

Natural Heritage Information Centre

300 Water Street, 2nd Floor, North Tower
P.O. Box 7000, Peterborough, ON, K9J 8M5
Tel.:(705) 755-2159 Fax:(705) 755-2168

Land Information Ontario (LIO) manages key provincial datasets. LIO makes these and hundreds of other data sets available to registered users at no charge. LIO also coordinates public and private sector organizations to collect high resolution satellite imagery for Ontario providing significant cost savings for all partners. Technical bulletins, newsletters and more are available online. More details regarding Ontario imagery and data can be searched, ordered and accessed online.

LIO's Ontario Geospatial Data Exchange (OGDE) allows more than 400 public sector organizations to easily share and use digital geographic information under a single legal agreement. Membership is available to eligible public organizations at no costs.

Through the website, Maps & Map Tools are made available, including online mapping software: LIO Make-a-Map.

Land Information Ontario

lio@ontario.ca

LIO Support Team: (705) 755-1878

Or for specifics, see online at:

http://www.mnr.gov.on.ca/en/Business/LIO/2ColumnSubPage/STDPROD_068510.html

Additional Information pertaining to NHIC, LIO and other Natural Heritage and Data and Information tools is available in the MNR Kemptville Information Request Guide (2012).

Appendix B

Photographic Record

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



Photo 1. Facing north towards proposed extension from Marleau Ave.



Photo 2. Forested area on the southeast portion of the Site.

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



Photo 3. Facing west from hydroline along railway access road.



Photo 4. Culvert and seasonal drainage located on the northeast portion of the Site.

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



Photo 5. Railway spur facing west.



Photo 6. Culvert and stormwater retention pond on North portion of Site.

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



Photo 7. Stormwater retention pond on north portion of Site.



Photo 8. Seasonal water drainage on north portion of Site.

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



Photo 9. Northeast portion of Site.



Photo 10. Tenth Street East Facing west towards Virginia Drive .

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



Photo 11. Moist ground located by fenced in area off of Tenth Street East.



Photo 12. From driveway entrance, facing southeast.

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



Photo 13. Virginia Drive facing south towards Tenth Street East.



Photo 14. Ditch along Virginia Drive facing south.

Nick Kaneb Proposed Extension

Planning Level Environmental Inventory in Support of the Municipal Class Environmental Assessment

Site Visit Photos



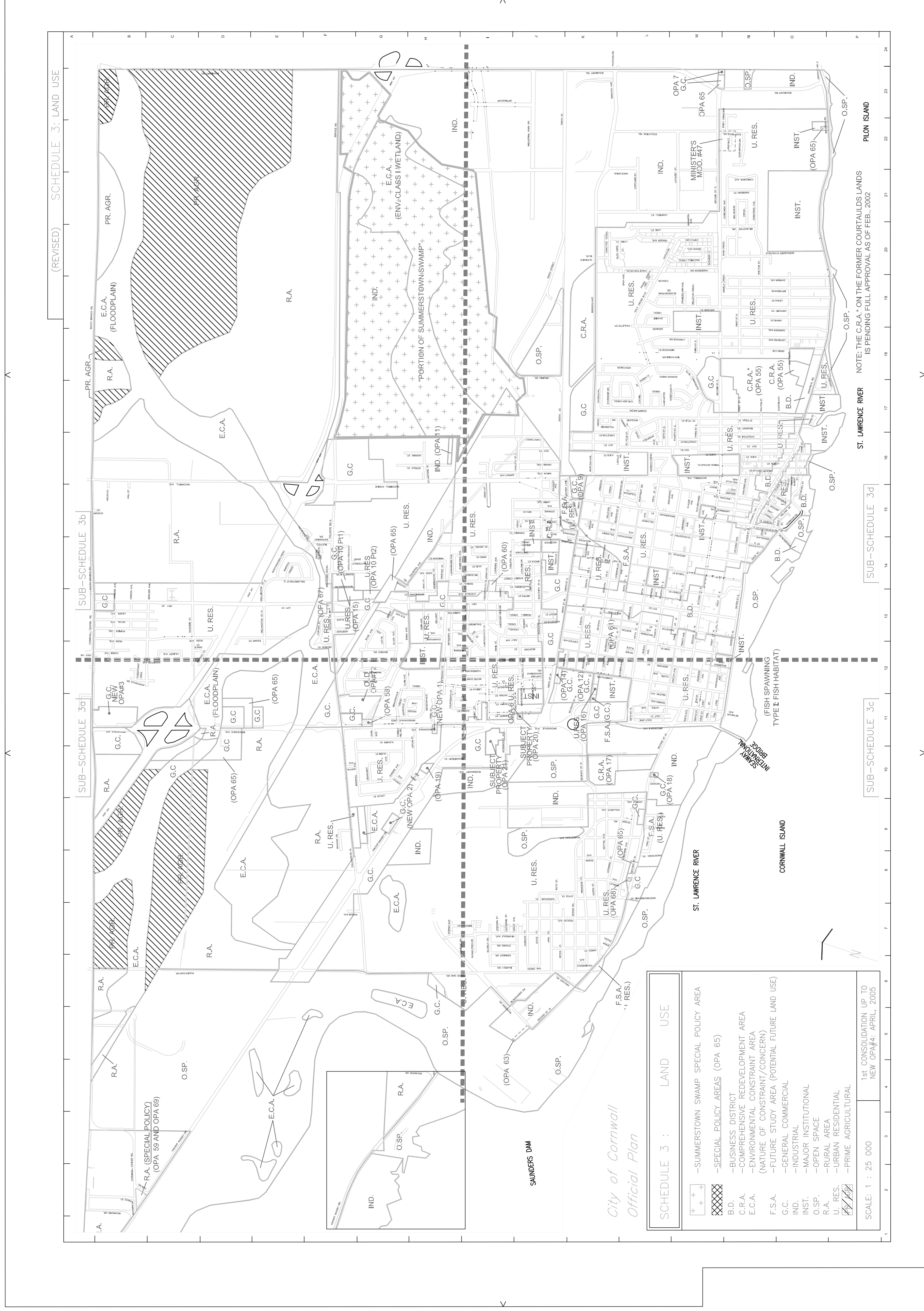
Photo 15. Railway spur facing west.



Photo 16. Unevaluated wetland located south of Site.

Appendix C

City of Cornwall OP: Schedule 3



Appendix D

Ontario Breeding Bird Atlas Search Summary



Square Summary (18WQ28)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
20	35	26	81	22	22	44	88	16	47	25	0

Region summary (#23: Cornwall)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
39	39	39	162	172	886	487

Target number of point counts in this square: 19 road side, 6 off road (1 in treed wetlands, 2 in deciduous forest, 3 in pasture/grassland). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Canada Goose	FY	FY	43	87	Turkey Vulture	P		38	76	Black Tern † §			25	20
Wood Duck		NU	69	76	Osprey			10	15	Common Tern §			23	15
<u>Gadwall</u>	P		25	17	Northern Harrier	H	H	92	92	Mourning Dove	T	AE	100	100
American Wigeon			30	23	Sharp-shinned Hawk	AE		20	43	Yellow-billed Cuckoo ‡			30	0
<u>American Black Duck</u>	H		69	33	Cooper's Hawk	H		15	35	Black/Yell-billed Cuckoo			0	38
Mallard	FY	FY	94	100	Northern Goshawk ‡			5	10	<u>Black-billed Cuckoo</u>	S		71	51
Blue-winged Teal			58	41	Red-should Hawk †			25	12	Eastern Screech-Owl			20	33
Northern Shoveler			20	23	<u>Broad-winged Hawk</u>			41	61	Great Horned Owl	P	H	74	64
Northern Pintail			38	23	Red-tailed Hawk	H	V	76	89	Northern Hawk Owl ‡			0	2
Green-winged Teal			0	25	American Kestrel	S	FY	92	94	Barred Owl			7	25
Redhead †			2	7	Merlin			0	23	Long-eared Owl			15	7
Ring-necked Duck ‡			0	2	Peregrine Falcon †			0	2	Short-eared Owl †			10	12
Lesser Scaup ‡			0	0	Yellow Rail †			2	0	North Saw-whet Owl			28	10
Common Goldeneye ‡			0	5	Virginia Rail			25	38	Common Nighthawk ‡	D	T	43	10
Hooded Merganser ‡			5	7	Sora			35	28	Whip-poor-will			23	20
Common Merganser		FY	7	10	Common Moorhen			23	23	Chimney Swift	AE	P	76	69
Ruddy Duck †			5	7	American Coot			20	10	Ruby-thr Hummingbird	H	H	79	100
<u>Gray Partridge</u>			48	58	Coot/Moorhen			0	2	Belted Kingfisher	H	A	94	84
<u>Ring-necked Pheasant</u>	P		25	5	Sandhill Crane ‡			0	7	Red-headed Woodpecker †			10	5
<u>Ruffed Grouse</u>	FY		74	92	Killdeer	T	DD	100	100	<u>Yellow-bellied Sapsucker</u>			64	87
Wild Turkey		FY	0	66	Rock Dove	AE	AE	84	100	Downy Woodpecker	H	AE	97	100
Common Loon			23	15	Spotted Sandpiper	P	FY	89	92	Hairy Woodpecker		AE	92	94
Pied-billed Grebe			20	35	Upland Sandpiper	H	AE	89	66	Northern Flicker	AE	V	100	100
Double-crest Cormorant §		H	15	17	Common Snipe	V	T	92	89	Pileated Woodpecker		S	33	82
<u>American Bittern</u>	H		69	58	American Woodcock	T	S	66	79	Eastern Wood-Pewee	DD	V	94	100
Least Bittern †			7	10	Wilson's Phalarope †			10	7	Alder Flycatcher	A	P	74	94
Great Blue Heron §		H	74	71	Ring-billed Gull §		H	7	17	Willow Flycatcher	T	T	46	64
<u>Green Heron</u> §			69	61	Herring Gull §			23	10	Least Flycatcher	T	P	94	92
Black-crown N.-Heron † §			2	5	Great Black-backed Gull †			0	5	Eastern Phoebe	S	S	92	97

[next page >>](#)

Ontario Breeding Bird Atlas - Summary Sheet for Square 18WQ28 (page 2 of 3)

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Gr Crested Flycatcher	S	V	97	97	<u>Eastern Bluebird</u>			46	66	<u>Canada Warbler</u>	S		33	28
Eastern Kingbird	AE	CF	100	100	Veery	A	T	87	100	Eastern Towhee			30	15
Loggerhead Shrike †			12	2	Swainson's Thrush ‡		T	5	10	Chipping Sparrow	FY	NY	94	100
Yellow-throated Vireo ‡			2	7	<u>Hermit Thrush</u>			28	53	Clay-colored Sparrow			17	33
Blue-headed Vireo			0	20	Wood Thrush	T	T	89	92	Field Sparrow		H	58	35
Warbling Vireo	T	T	82	100	American Robin	FY	AE	100	100	<u>Vesper Sparrow</u>			61	53
Red-eyed Vireo	A	T	87	100	Gray Catbird	A	A	97	100	Savannah Sparrow	T	AE	94	97
Gray Jay ‡			2	0	Northern Mockingbird ‡			0	15	Grasshopper Sparrow			10	20
Blue Jay	FY	CF	94	100	Brown Thrasher	T	S	94	89	Henslow's Sparrow †			2	2
American Crow	FY	AE	100	100	European Starling	NY	CF	100	100	Song Sparrow	CF	AE	100	100
<u>Common Raven</u>			0	56	Cedar Waxwing	NY	CF	94	100	Lincoln's Sparrow			7	5
<u>Horned Lark</u>			76	79	Tennessee Warbler ‡			2	0	Swamp Sparrow		S	89	97
Purple Martin	AE	H	74	38	Nashville Warbler		CF	56	74	White-throat Sparrow	A	T	94	97
Tree Swallow	NY	NY	100	100	Yellow Warbler	A	AE	97	100	Dark-eyed Junco ‡		H	5	5
North Rgh-wing Swallow	H	AE	61	48	Chestn-sided Warbler	T	S	84	87	Scarlet Tanager	S	S	69	82
Bank Swallow §	AE	H	82	69	Magnolia Warbler			35	48	Northern Cardinal	T	CF	35	87
Cliff Swallow §	AE	NE	76	79	<u>Black-thr Blue Warbler</u>	S		7	23	Rose-breast Grosbeak	A	S	94	100
Barn Swallow	N	NY	100	100	<u>Yellow-rumped Warbler</u>			33	64	Indigo Bunting	T	T	74	87
Black-capped Chickadee	CF	FY	94	100	Black-thr Green Warbler	S	S	15	56	Bobolink	A	CF	100	94
<u>Red-breast Nuthatch</u>			25	61	Blackburnian Warbler			28	17	Red-wing Blackbird	FY	NY	100	100
White-breast Nuthatch	A	CF	87	100	Pine Warbler			10	20	Eastern Meadowlark	CF	FY	100	97
<u>Brown Creeper</u>	D		38	25	Palm Warbler ‡			0	5	Rusty Blackbird ‡			5	0
House Wren	A	T	94	100	<u>Black-white Warbler</u>			66	89	Common Grackle	FY	CF	100	100
Winter Wren			12	30	American Redstart	A	FY	79	82	Brown-head Cowbird	FY	FY	100	100
Sedge Wren			20	23	Ovenbird	T	FY	87	94	Baltimore Oriole	A	CF	97	100
Marsh Wren			33	35	North Waterthrush	H	S	46	56	Purple Finch	S	P	58	76
Golden-crown Kinglet			10	20	Mourning Warbler	S	S	69	61	House Finch	NY	NY	7	82
Ruby-crown Kinglet ‡			5	0	Common Yellowthroat	A	FY	97	100	White-winged Crossbill ‡			2	5
Blue-gr Gnatcatcher ‡			2	2	Wilson's Warbler ‡			5	0	Pine Siskin ‡			5	10

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Ontario Breeding Bird Atlas - Summary Sheet for Square 18WQ28 (page 3 of 3)

SPECIES	Code		%	
	1st	2nd	1st	2nd
American Goldfinch	N	CF	100	100
Evening Grosbeak			30	12
House Sparrow	NY	NY	100	100

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #23 (Cornwall). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 18WQ28 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #23). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 13/08/2013. An up-to-date version of this sheet is available from <http://www.birdsontario.org/atlas/summaryform.jsp?squareID=18WQ28>

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Appendix E

At-Risk and Ranking Definitions

Ranks and At-Risk Designation Definitions

Table 1: Invasive Rank (I-Rank) definitions as provided by the NHIC's Biodiversity Explorer, 2011.

I-Rank	Definition
A	High Invasiveness
B	Medium Invasiveness
C	Low Invasiveness
D	Insignificant Invasiveness
AB	High to Medium Invasiveness
SC	Medium to Low Invasiveness
CD	Lot to Insignificant Invasiveness
U	Unknown Invasiveness

Table 2: Global Rank (G-Rank) definitions (NHIC 2011).

GRank	Definition
G1	Extremely rare; usually 5 or fewer occurrences in the overall reange or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2	Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in few occurrences; or because of some factor(s) making it vulnerable to extinction.
G3	Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4	Common; usually more than 100 occurrences; usually not susceptible to immediate threats.
G5	Very common; demonstrably secure under present conditions.
GH	Historic, no records in the past 20 years.
GU	Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
GX	Globally extinct. No recent records despite specific searches.
GNR	Unranked; Global rank no yet assessed
Q	Denotes that the taxonomic status of the species, subspecies, or variety is questionable.
T	Denotes that the rank applies to a subspecies or variety.

Table 3: Provincial Rank (S-Rank) definitions as provided by the NHIC's Biodiversity Explorer, 2011.

SRank	Definition
SX	<i>Presumed Extirpated – Species or xommunity is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.</i>
SH	<i>Possibly Extirpated (Historical) – Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20 – 40 years. A species or community could become NH or SH without such a 20 – 40 year delay if the only known occurrences in a nation or state/province were destroyed or it if had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocated occurrences, rather than simply using this status</i>

	<i>for all elements not known from verified extant occurrences.</i>
S1	<i>Critically Imperiled – Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.</i>
S2	<i>Imperiled – Imperiled in the nation or state/province because of the rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.</i>
S3	<i>Vulnerable – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.</i>
S4	<i>Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.</i>
S5	<i>Secure – Common, widespread, and abundant in the nation or state/province.</i>
SNR	<i>Unranked – Nation or state/province conservation status not yet assessed.</i>
SU	<i>Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.</i>
SNA	<i>Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.</i>
S#S#	<i>Range Rank – A numerical range rank (e.g. S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g. SU is used rather than S1S4).</i>
S#B	<i>Breeding migrants. There is no major concentration or staging areas during migration or in the non-breeding season.</i>
S#N	<i>Non-breeding migrants for birds which have major concentration or staging areas during migration in the province.</i>

Table 5: The At-Risk definitions for the Species at Risk Ontario (SARO), as defined within the Endangered Species Act, 2007.

At-Risk Status	Definition
Extinct (EXT)	<i>A species shall be classified as an extinct species if it no longer lives anywhere in the world</i>
Extirpated (EXP)	<i>A species shall be classified as an extirpated species if it lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.</i>
Endangered (END)	<i>A species shall be classified as an endangered species if it lives in the wild in Ontario but is facing imminent extinction or extirpation</i>
Threatened (THR)	<i>A species shall be classified as a threatened species if it lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening to lead to its extinction or extirpation</i>
Special Concern (SC)	<i>A species shall be classified as a special concern species if it lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered because of a combination of biological characteristics and identified threats</i>

NAR identifies a species which are not considered At-Risk by the particular agency or committee.

Ranks and At-Risk Designation Definitions

Table 1: Invasive Rank (I-Rank) definitions as provided by the NHIC's Biodiversity Explorer, 2011.

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SH	<i>Possibly Extirpated (Historical) – Species or community occurred</i>

	<i>historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20 – 40 years. A species or community could become NH or SH without such a 20 – 40 year delay if the only known occurrences in a nation or state/province were destroyed or it if had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocated occurrences, rather than simply using this status for all elements not known from verified extant occurrences.</i>
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S5	<i>Secure – Common, widespread, and abundant in the nation or state/province.</i>
SNR	<i>Unranked – Nation or state/province conservation status not yet assessed.</i>
SU	<i>Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.</i>
SNA	<i>Not Applicable –A conservation status rank is not applicable because the species is not a suitable target for conservation activities.</i>
S#S#	<i>Range Rank – A numerical range rank (e.g.S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g. SU is used rather than S1S4).</i>
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NAR identifies a species which are not considered At-Risk by the particular agency or committee.

Appendix D

Stage 1 and Stage 2 Archaeological Assessments

Stage 1 Archaeological Assessment of the Proposed Extension of Nick Kaneb Drive, Cornwall, Ontario

Licensee:	Helen Sheldon, M.A.
Licence #:	P191
Company:	Ground Truth Archaeology
Prepared by:	Helen Sheldon, M.A.
PIF#:	P191-072-2013
Development Name:	Nick Kaneb Drive Extension
Development Project Designation #:	121-26609-00
Property Location:	Part Lots 4 and 5 Concession 1 and Part Lots 4 and 5 Concession 2, Cornwall Township, Stormont County, Ontario
Date:	29, April, 2013
Report type:	Original

GROUND TRUTH ARCHAEOLOGY

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Executive Summary

The City of Cornwall has proposed to extend Nick Kaneb Drive to the north and connect it to Tenth Street East on the north side of the Canadian National Railway tracks (Figure 3). The resulting study area consists of several street right-of-ways, a section of railway right-of-way and an undeveloped stretch of woodland located on the northeast edge of the City of Cornwall. Specifically, the study area encompasses part of Lots 4 and 5 of the First Concession and part of Lot 4 of the Second Concession, in the Township of Cornwall in Stormont County.

Ground Truth Archaeology conducted a Stage 1 archaeological assessment of the property in February of 2013 as part of the environmental assessment process. Archival research indicated that the lots were patented from the Crown in the late eighteenth and early nineteenth centuries and it is likely that settlement occurred shortly thereafter. Late nineteenth century mapping (Figure 7) shows that buildings were located along the southern edge of the second concession lots, both on Lot 4 and on Lot 3 to the east and Lot 5 to the west. The original settler cabins may also have existed along the concession road at the south end of the second concession lots (within the study area). Additionally, the study area is located within 200 metres of a minor watercourse (Figure 9). The archival evidence combined with the proximity to a creek indicates that the study area has a moderate to high potential for the presence of archaeological sites (MTC 2011).

As a result of the Stage 1 archaeological assessment and in concordance with the 2011 *Standards and Guidelines for Consultant Archaeologists*, Ground Truth Archaeology makes the following recommendations in regards to the Nick Kaneb Drive Extension:

- The subject property has moderate to high potential for the presence of archaeological resources. A Stage 2 archaeological assessment is required for the subject property prior to ground disturbance.
- As the subject property is either treed or semi-developed (street and railway right-of-way) and is not suitable for ploughing the appropriate approach for the Stage 2 assessment is a test pit survey at 5m intervals.
- The Stage 2 archaeological assessment must adhere to the requirements of the 2011 *Standards and Guidelines for Consultant Archaeologists* (MTC 2011).

Project Personnel

Licensee	Helen Sheldon (P191)
Project Manager	Helen Sheldon
Historical Research	Helen Sheldon
Cartography	Helen Sheldon
Report Writing	Helen Sheldon

Development Context

In January of 2013 Ground Truth Archaeology was retained by Genivar Inc. to conduct a Stage 1 archaeological assessment of the location of a proposed extension on the north end of Nick Kaneb Drive on the northeast edge of the City of Cornwall.

The study area includes parts of a total of four lots in two concessions – Lots 4 and 5 of Concession 1 in the south and Lots 4 and 5 of Concession 2 in the north. The study area is located in Cornwall Township, Stormont County within the current limits of the City of Cornwall, Ontario.

The Stage 1 archaeological assessment was conducted as part of the environmental assessment process for the street extension. The legislation triggering the assessment is the Environmental Assessment Act. The City of Cornwall is the approval authority for this application.

Historical Context

Cornwall was founded in 1784 as the second Royal Township in Upper Canada. It was originally called “New Town” and then “Johnstown” and “New Johnstown” after Sir John Johnston. The name of “Cornwall” emerged in the late 1780s, referring to the Duke of Cornwall who was also the Prince of Wales at that time (Senior 1983).

The town site itself consisted of a square mile divided into town lots. The study area lies east and north of the original town site within the concessions and lots that were laid out with unusual haste by deputy surveyors at the time of the Loyalist arrivals in the late 1780s. The lots and concessions were not surveyed according to the usual guidelines, resulting in some lots being too large and others too small. One of the deputy surveyors (Patrick McNiff) held the only copy of the recipients of many of the land grants, but, as he had been dismissed from his position, he refused to surrender his copy of the records (Senior 1983). The ensuing chaos is clearly evident in the Land Registry Records for Cornwall Township, where some patent dates are missing and large gaps appear in what in other counties is usually a smooth progression of real estate transactions.

The study area encompasses parts of three lots in the first and second concessions of Cornwall Township - Lot 4, First Concession, Lot 5, First Concession and the East and West halves of Lot 4 in the Second Concession. The earliest recorded patent was in 1797, with the others occurring before 1809 and 1810 and in 1829. One building is recorded on the historic mapping (Figure 7) – on the south end of the east half of Lot 4, second concession. The houses for the two lots in the first concession were both at the south end of the lots and not in the vicinity of the study area. No building is shown on the west half of lot 4 in the second concession.

The Grand Trunk Railway was built through the northern boundary of Lots 4 and 5 of the First Concession in 1856, but little other development occurred through the entire nineteenth century. Air photographs from the twentieth century show the study area as primarily undeveloped through the mid-1980s (Figures 5, 10 and 11).

A brief history of each lot within the study area is presented below. It should be noted that the land registry records available at the Land Registry Office in Cornwall for the lots in the study area have been transcribed, and are in typewritten form on microfiche. Only the registered date of each transaction is recorded; the actual date was not available.

Lot 4, Concession 1

Lot 4 of Concession 1 was patented by the Crown to Jacob Vanduzen (Ontario Land Records (OLR)). The patent date is not given in the transcribed land records, but it would have been in the late 18th or early 19th century as in 1809 the entire 243 acres was sold by Vanduzen to Benjamin French. French owned the lot until his death in 1863 when it was willed to “Benjamin French and heirs”. The lot was still intact in 1863 except for 2.3 acres that had been sold to the Grand Trunk Railway in 1856 (OLR). Benjamin French

(presumably Junior) is shown as the owner of the lot on the 1879 Belden map (Figure 7). The house associated with the lot in 1879 is shown at the south end of the lot, and not in the vicinity of the study area.

The lot passed into corporate hands in 1914 when all 240 acres was sold to the Cornwall Street Ry Light and Power Co. Ltd.

Lot 5, Concession 1

Lot 5, Concession 1 consisted of 254 acres patented to Christopher and Jacob Empey. As for Lot 4 above, the patent date is missing from the land Registry Records, but was pre-1810, as in 1810 the lot was split when Christopher Empey sold the west half of 124 acres to Jacob Empey by quitclaim deed (OLR). On the same day (November 28, 1810) Jacob Empey sold Christopher Empey the east half. These transactions may have been completed in order to formalize title to the lands between the two Empeys. Only the east half of lot 5 lies within the project area.

By 1833 the east half had been acquired by Philip C. Empey who sold it in that year to Archibald McLean, who sold it immediately to the Reverend Hugh Urquhart. A section of the northern portion of the east half of Lot 5 was sold to the Grand Trunk Railway in 1856 (OLR).

Upon Urquhart's death in 1871 the lot passed to his trustees who sold it to William Mattice. James MacLennan obtained the east half of Lot 5 from Mattice in 1872 (OLR). MacLennan is shown as the owner on the 1879 Belden map, where the house associated with the lot is shown far to the south of the study area (Figure 7).

Lot 4, East Half, Second Concession

The east half of Lot 4 in the second concession was patented in 1829 to William Dusler. Dusler owned the 100 acres of the lot until his death in 1853 when it was willed to Andrew Dusler (OLR). Dusler (Deusler) is shown as the owner on the Belden map where the house is located on the south end of the lot in the vicinity of the study area (Figure 7).

In 1889 the lot was still intact at 100 acres and was sold out of the Deusler family to Daniel McCourt. The McCourts still owned the land in 1913 when Mary Jane McCourt sold off small parcels of 1.86 acres and 1.83 acres to the Cedar Rapids Manufacturing and P. Co. and the Glengarry and Stormont Railway Co. (OLR).

Lot 4, West Half, Second Concession

The 100 acres of the west half of Lot 4 was patented to Andrew Frister in 1797. In 1802 the patent was registered again to Andrew Trisler or Trysler (OLR). Possibly his name was misspelled the first time around and the patent was reissued in order to clarify the matter.

No further activity is recorded for the lot until 1853 when the will of William Dusler leaves the property to his heirs. Mary Bergin had acquired the lot by 1856 and lost it by mortgage default by 1865 to the Freehold P. B. and Savings Society. The mortgage was for \$1000, so John Sandford Macdonald got a bargain when he bought the 100 acres from the FPB&S Society for a mere \$450. In 1878 John D. Macdonald (presumably an heir) bought the lot from the estate of John Sandford Macdonald for \$1600 (OLR). J.D. Macdonald is the owner on the 1879 Belden map. No building is shown on the lot at this time (Figure 7).

J.D. Macdonald and wife sold the lot to Alexander Gadbois in 1884 for \$3500 for the 100 acres. The lot was intact and owned by the Gadbois family until 1914 when 1.84 acres was granted to the Cedar Rapids Manufacturing Paper Company and 1.7 acres was granted to the Glengarry and Stormont Ry Co. (OLR).

Today the land within the study area is a mixture of undeveloped woodlot, railway right-of-way and city streets.

Archaeological Context

The study area is located in Cornwall Township in the City of Cornwall and encompasses a strip of land curving north from the north end of Nick Kaneb Drive, across the Canadian National Railway, west along Tenth Street E and north on Virginia Drive.

Archival information indicates that, apart from the construction of roads and a railway, little development has taken place in the 200+ years since the first land grants were issued. One building is shown on the historic mapping on the south end of the east half of Lot 4 of the second concession in the vicinity of the study area. The early date of settlement, combined with a known structure in the area in the late nineteenth century indicates that the study area has a moderate to high potential for the presence of archaeological resources (MTCS 2011). Furthermore, the study area lies within 200 metres of a small creek (Figure 8), and thus is considered to have moderate to high potential for the presence of precontact archaeological resources (MTC 2011).

Consultation with the Ministry of Culture's Archaeological Sites Database found that there are no registered archaeological sites within the study area and no registered archaeological sites within one kilometre of the study area (MTCS 2013). A lack of archaeological sites can be an indicator of low potential, but in a case such as this, where the historical information indicates otherwise, it may be an indicator of a lack of archaeological fieldwork rather than an absence of sites.

The soil map (Dominion Department of Agriculture 1954) (Figure 16) shows that the soils within the study area are classified as Mountain sandy loam (Msl), a slightly undulating stone free brown podzolic soil with imperfect drainage and Allendale sandy loam (Asl), a level to depressional stone free dark grey gleisolic soil with poor drainage. The soils are adequate but not exceptional for farming and raising livestock.

Two archaeological assessments have been completed near the study area (McRae and Paauw 2008, PIF P248-035-2008; Paauw and McRae 2010, PIF P272-051-2009) on Marleau Avenue. No archaeological resources were identified during either assessment.

The study area consists of a mixture of undeveloped woodland (immediately north of Nick Kaneb), a section of the Canadian National Railway rail line and the road allowances of Nick Kaneb, Tenth Street E and Virginia Drive, all of which are in commercial settings, except for the west side of Nick Kaneb which borders on a residential subdivision.

Maps

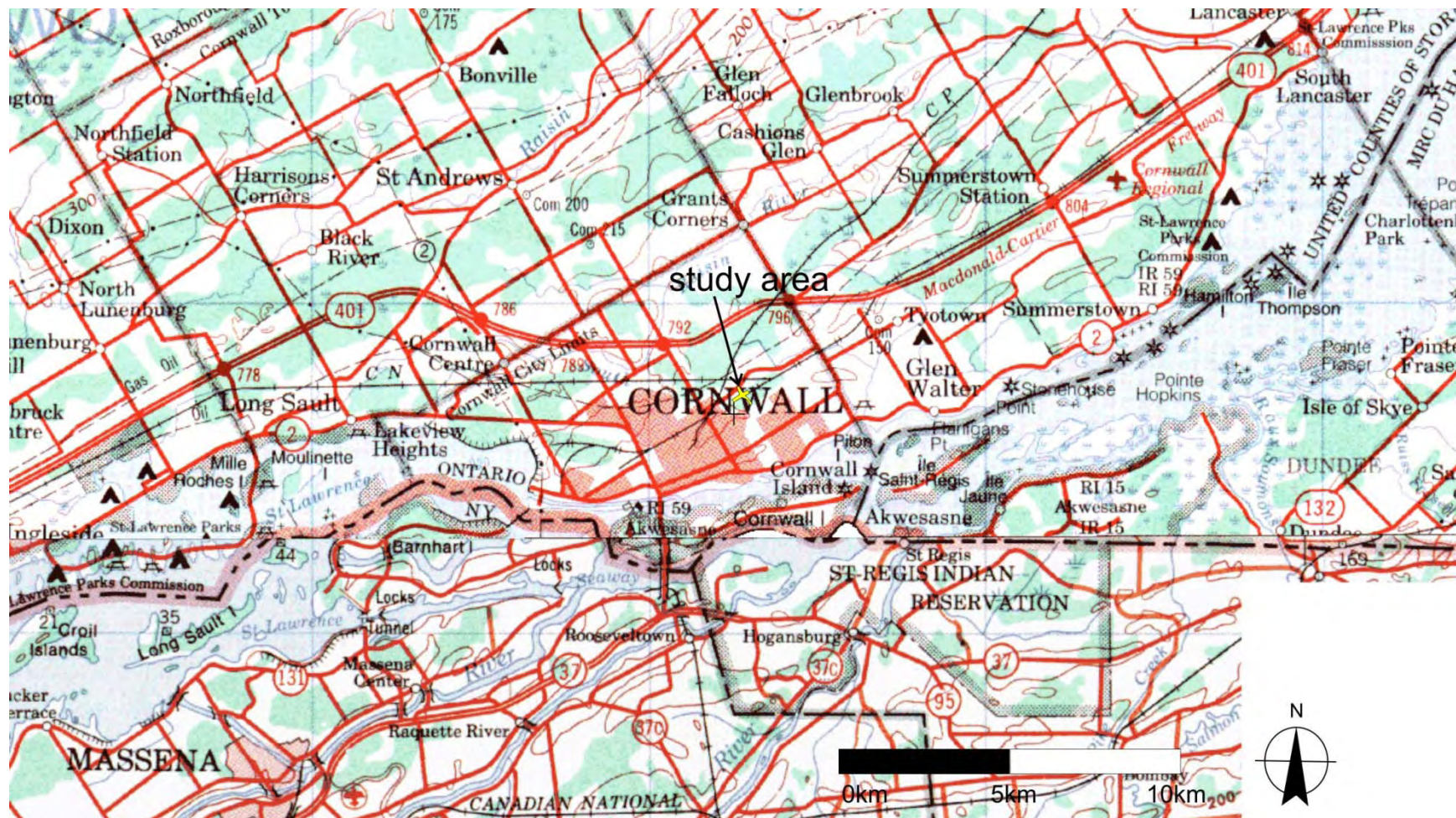


Figure 1: Study area (in yellow) shown on the 1:250,000 NTS map (31G)

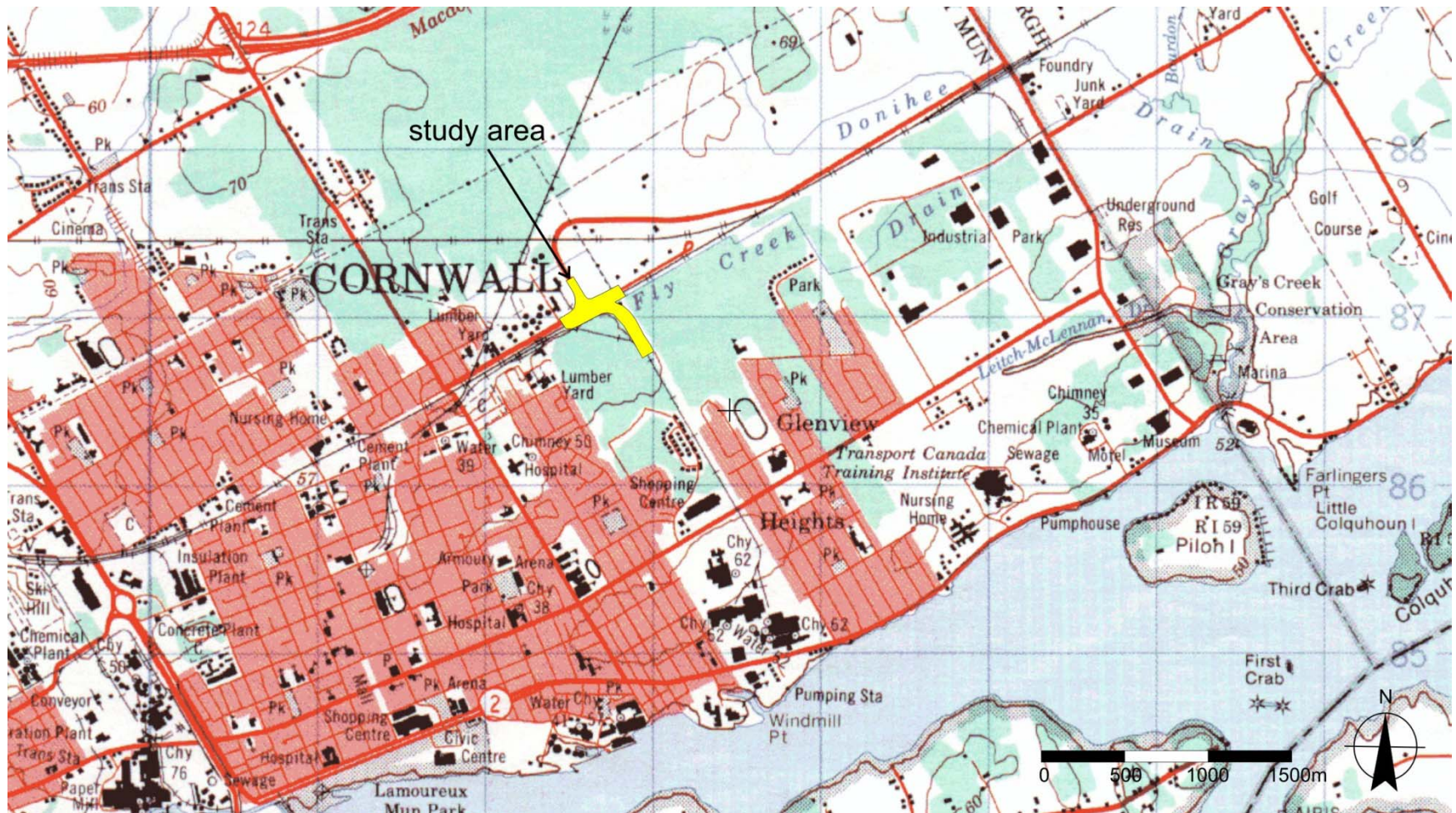


Figure 2: Study area (in yellow) shown on the 1: 50,000 NTS map (31G/02)

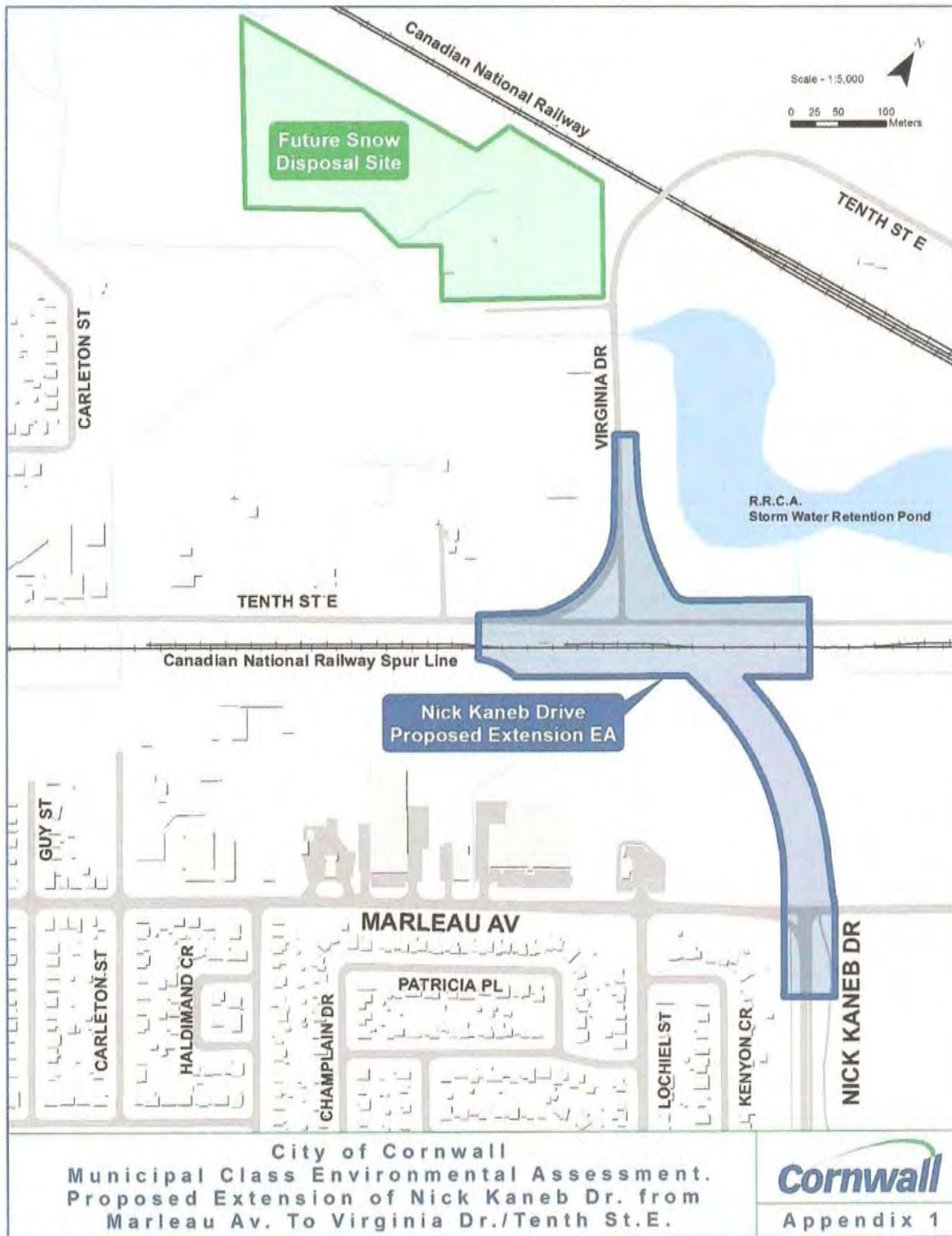


Figure 3: Location of study area in blue (City of Cornwall)

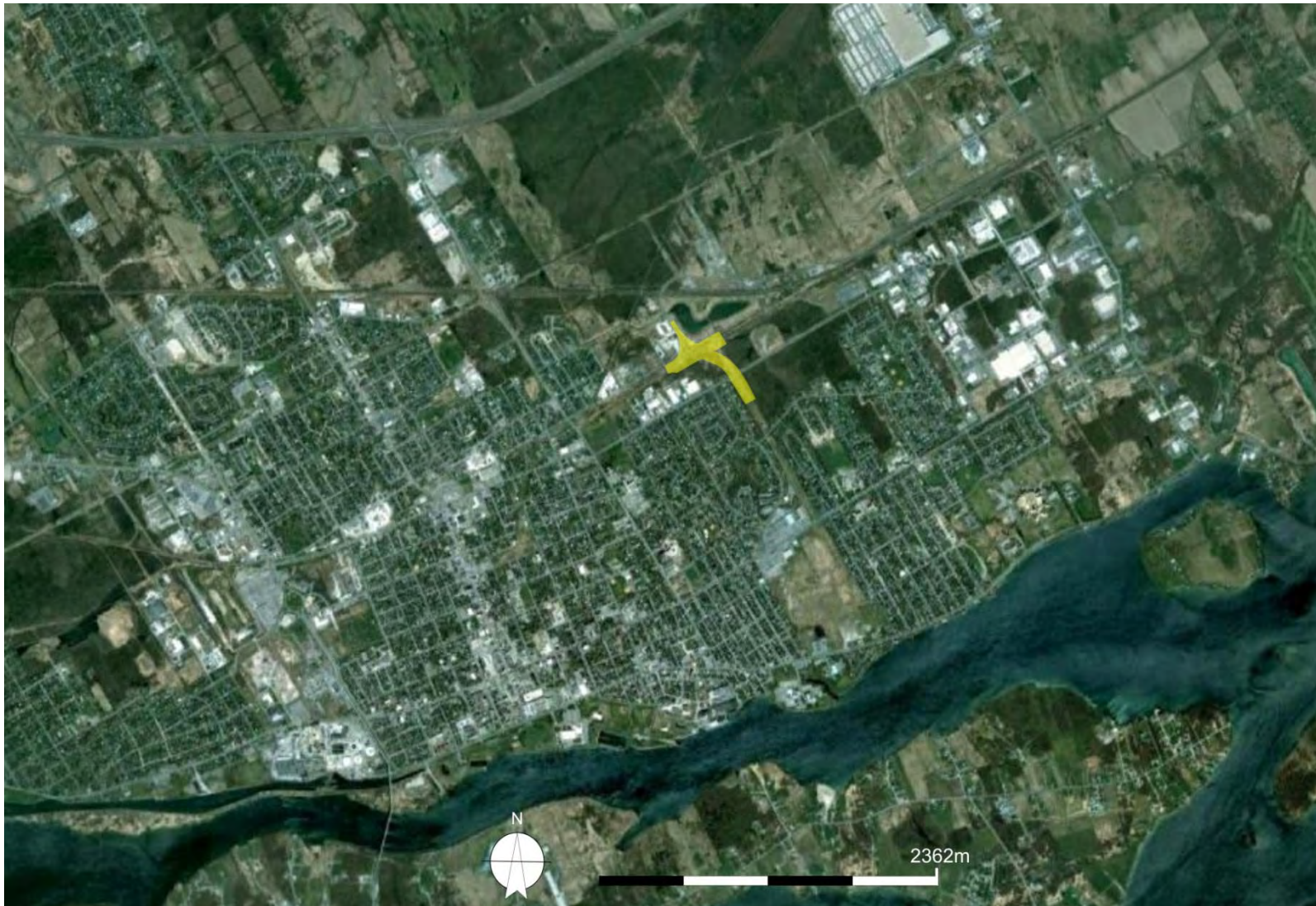


Figure 4: Aerial view of study area (in yellow), overview, base image Google Earth



Figure 5: Aerial view of study area (in yellow), detail, base image Google Earth



Figure 6: Study area on the 1879 Belden map, outlined in red



Figure 7: 1882 Official Plan of Cornwall, study area in red



Figure 8: 1981 1:25,000 military map of Cornwall showing creeks

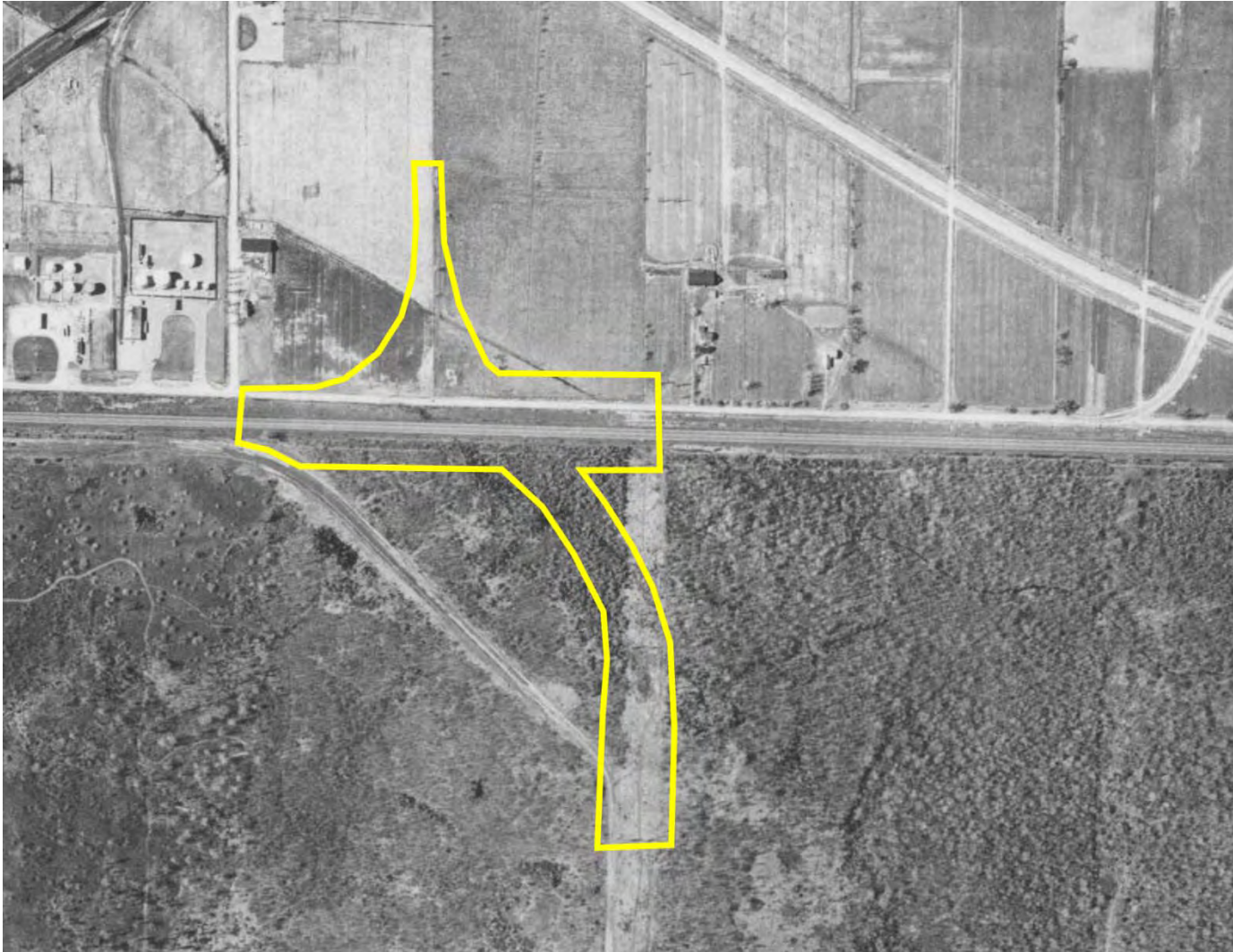


Figure 9: 1957 aerial, study area outlined in yellow



Figure 10: 1972 aerial, study area outlined in yellow



Figure 11: 1986 aerial, study area outlined in yellow

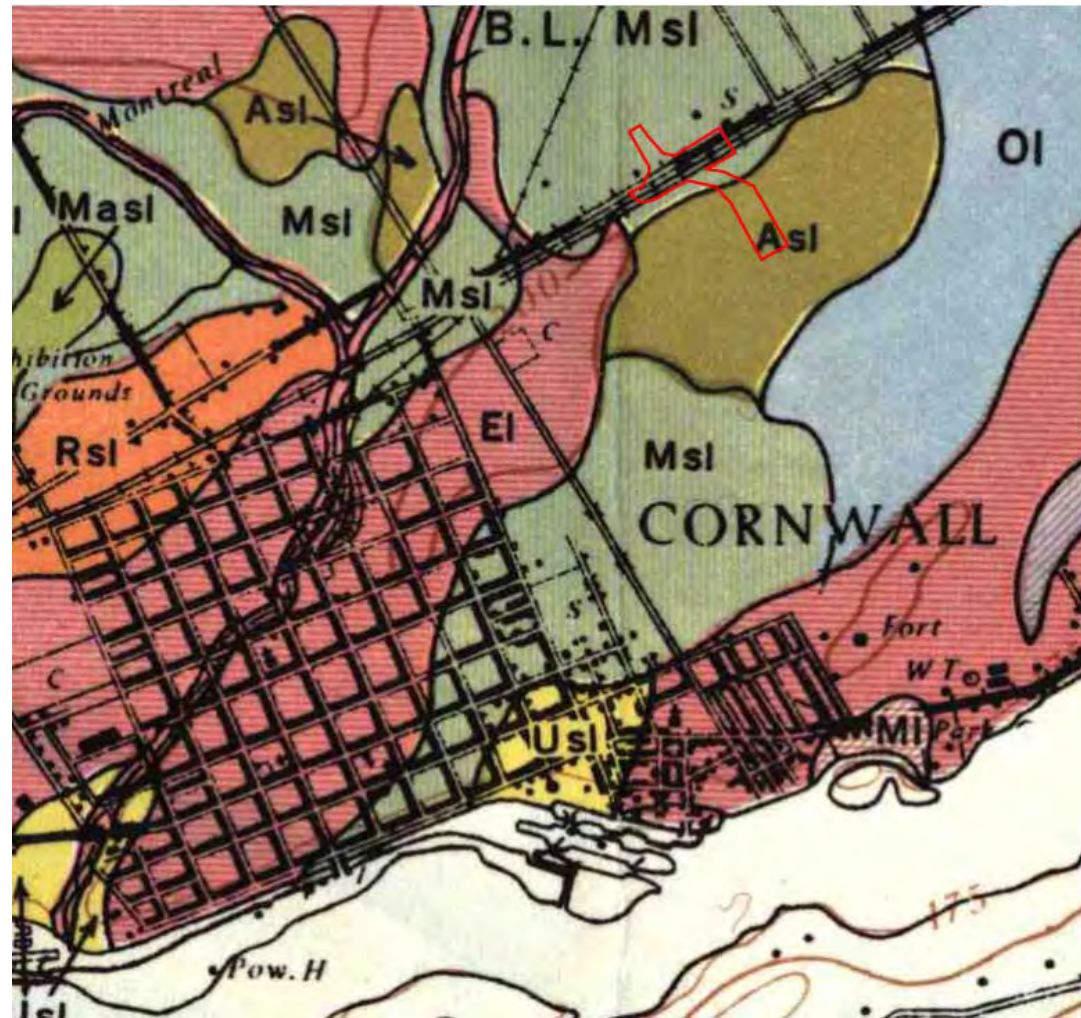


Figure 12: Study area shown on the soil map, outlined in red (Canada Dept. of Agriculture 1958)



Figure 13: Area with moderate to high archaeological potential, requiring Stage 2 test pit survey



Figure 14: Photograph directions

Field Methods

An optional property inspection was not conducted as weather conditions were not suitable for the observation of archaeological resources, i.e., snow cover was present (see Plate 1) (MTC 2011, section 1.2).

Documentation associated with the Stage 1 assessment is stored in the offices of Ground Truth Archaeology in Quinte West, Ontario.

Images



Plate 1: View of proposed extension to Nick Kaneb Drive, February 22, 2013

Analysis and Conclusions

The study area consists of several street right-of-ways, a section of railway right-of-way and an undeveloped stretch of woodland located on the northeast edge of the City of Cornwall. Specifically, the study area encompasses part of Lots 4 and 5 of the First Concession and part of Lot 4 of the Second Concession, in the Township of Cornwall in Stormont County.

Several factors must be taken into consideration when determining the potential for the existence of archaeological sites in a given area (MTC 2011). Archival research indicated that the lots were patented from the Crown in the late eighteenth and early nineteenth centuries and it is likely that settlement occurred shortly thereafter. Late nineteenth

century mapping (Figure 7) shows that buildings were located along the southern edge of the second concession lots, both on Lot 4 and on Lot 3 to the east and Lot 5 to the west. The original settler cabins may also have existed along the concession road at the south end of the second concession lots (within the study area). Additionally, the study area is located within 200 metres of a minor watercourse (creek, Figure 9). The archival evidence combined with the proximity to a creek indicates that the study area has a moderate to high potential for the presence of archaeological sites (MTC 2011).

Recommendations

As a result of the Stage 1 archaeological assessment and in concordance with the 2011 *Standards and Guidelines for Consultant Archaeologists*, Ground Truth Archaeology makes the following recommendations in regards to the Nick Kaneb Drive Extension:

- The subject property has moderate to high potential for the presence of archaeological resources. A Stage 2 archaeological assessment is required for the subject property prior to ground disturbance.
- As the subject property is either treed or semi-developed (street and railway right-of-way) and is not suitable for ploughing the appropriate approach for the Stage 2 assessment is a test pit survey at 5m intervals.
- The Stage 2 archaeological assessment must adhere to the requirements of the 2011 *Standards and Guidelines for Consultant Archaeologists* (MTC 2011).
- Should deeply buried archaeological remains be found on the property during development activities, the Ministry of Tourism, Culture and Sport (416-314-7148) should be notified immediately.
- In the event that human remains are encountered during development, the proponent should immediately contact local law enforcement, then Michael D'Mello, Cemeteries Regulation Unit, Ministry of Small Business and Consumer Services, 416-326-8404, and the Ministry of Tourism, Culture and Sport.

Advice on Compliance with Legislation

This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.

References

Maps

NTS (31G) – 1:250,000 map
NTS (31G/02) – 1:50,000 map

Archival Map References

Illustrated Historical Atlas of the Counties of Stormont, Dundas and Glengarry, Ontario.
H. Belden and Co. 1879. Toronto.

Dominion Department of Agriculture
1954 Soil Map of Stormont County Ontario, Soil Survey Report No. 20. Experimental
Farms Service, Ottawa.

Primary Historic Documents

Ontario Land Registry (OLR) Records Cornwall Township, Stormont County

<http://maps.cornwall.ca/mapguide/cornwallcustomtools/airphotos/1957/1096-312-32.pdf>

<http://maps.cornwall.ca/mapguide/cornwallcustomtools/airphotos/1972/72363-54.pdf>

http://maps.cornwall.ca/mapguide/cornwallcustomtools/airphotos/1986/86109_67.pdf

http://www.cornwall.ca/en/webadmin/recources/1882_town_of_Cornwall.PDF

Other

Google Earth imagery date 2007

McRae, Laura and Derek Paauw
2008 Stage 1 and Stage 2 Archaeological Assessment on Marleau Avenue, Geographic
Township of Cornwall, Stormont County. Consultant report The Central
Archaeology Group Inc.

Ministry of Tourism and Culture
2011 Standards and Guidelines for Consultant Archaeologists. Ministry of Tourism and
Culture: Toronto.

Ministry of Tourism, Culture and Sport
2013 Sites within a One Kilometre Radius of the Project Area Provided from the Ontario
Archaeological Sites Database, February 26, 2013.

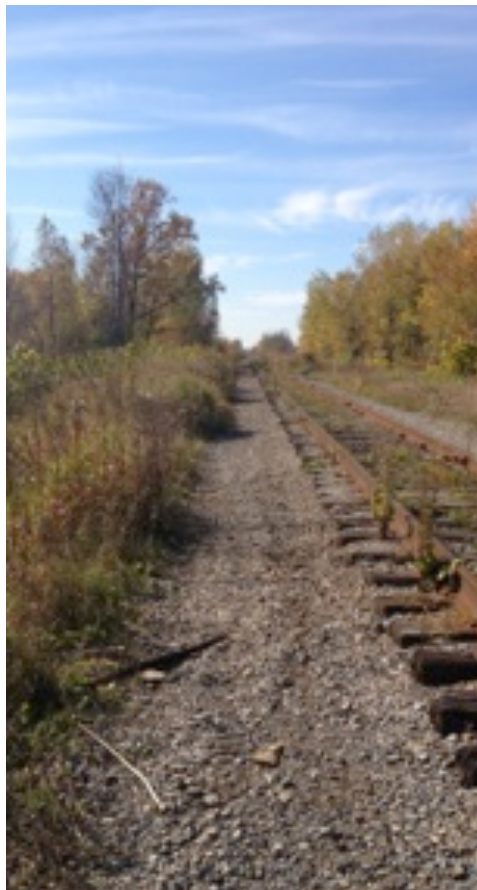
Paauw, Derek and Laura McRae

2010 Stage 1 and Stage 2 Archaeological Assessment Municipal Class Environmental Assessment for the Proposed Widening and Improvements to Marleau Avenue, City of Cornwall Geographic Township of Cornwall, Stormont County. Consultant report The Central Archaeology Group Inc.

Senior, Elinor Kyte

1983 From Royal Township to Industrial City, Cornwall 1784 – 1984. Mika Publishing Company: Belleville.

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Stage 2 Archaeological Property Survey Proposed Extension of Nick Kaneb Drive City of Cornwall, Ontario

ORIGINAL REPORT

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Stage 2 Archaeological Property Survey

Proposed Extension of Nick Kaneb Drive, City of Cornwall, Ontario

ORIGINAL REPORT

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CAGI Project No. CAGI-2013-LM49

Stage 1 Report - P191-072-2013 (Ground Truth Archaeology: Helen Sheldon)

Development Project Designation #: 121-26609-00

Original Report Submission - November 5, 2013

Distribution of Reports:

GENIVAR
City of Cornwall
Ministry of Tourism, Culture and Sport



Bringing the **past**
to the **present**
for the **future**

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Acknowledgements

The Central Archaeology Group Inc. would like to extend their gratitude to the following individuals and parties.

- ✱ Chris Miller and Angelo Renon, GENIVAR.
- ✱ City of Cornwall.
- ✱ The staff at the Trent University Maps and Geospatial Resources section of the Thomas, J. Bata Library, Peterborough.
- ✱ The staff at the Bancroft Public Library, Bancroft.

Acronyms

CAGI	Central Archaeology Group Inc.
CoC	City of Cornwall
CoS	County of Stormont
CR	County Road
cm	centimeters
GToC	Geographic Township of Cornwall
GTA	Ground Truth Archaeology
m	metres
MTCS	Ministry of Tourism, Culture and Sport

Executive Summary

Described within this report are the details of an archaeological assessment conducted on the proposed Nick Kaneb extension, in the City of Cornwall. The project area consists of street right-of-ways, a section of railway right-of-way and woodland area on the northeast edge of the City of Cornwall.

This Stage 2 property survey was undertaken as a result of the recommendations forwarded by Ground Truth Archaeology in 2013 (P191-072-2013):

“The subject property has moderate to high potential for the presence of archaeological resources. A Stage 2 archaeological assessment is required for the subject property prior to ground disturbance.” (GTA 2013:1).

The Ontario Ministry of Tourism, Culture and Sport (2011) requires that three objectives be met by way of a Stage 2 archaeological assessment. These objectives include: 1) to document all archaeological resources on the property; 2) to determine whether the property contains archaeological resources requiring further assessment; and, 3) to recommend appropriate Stage 3 assessment strategies for archaeological sites identified (MTC 2011: 27).

Therefore, the Stage 2 archaeological property survey involves the documentation of archaeological resources by collecting artifacts and mapping cultural features. Depending on the nature of the property environment, two methods may be employed in the survey: 1) pedestrian survey and 2) test pit survey. As the area recommended for Stage 2 survey was comprised treed or semi-developed (street and railway right-of-way) and was deemed not suitable for ploughing, the approach recommended by GTA (2013:1) for the Stage 2 assessment was a test pit survey at five metre intervals.

Permission to access the area and to carry out the activities necessary for the completion of the Stage 2 property survey was granted by Chris Miller, Environmental Planner, GENIVAR. Based on the results of the archaeological assessment, the following recommendations are provided for consideration to the Ontario Ministry of Tourism, Culture and Sport and the County of Peterborough, and are subject to approval by the Ontario Ministry of Tourism, Culture and Sport:

- 1) The Stage 2 archaeological assessment did not recover any material culture during survey activities. Consequently, significant pre-contact and historic First Nations or historic Euro-Canadian archaeological sites are unlikely to be found in any undisturbed ground within the project area. Therefore, there are no significant archaeological concerns associated with the remainder of this project and it is recommended that the property be cleared of archaeological concerns.
- 2) Notwithstanding the results and recommendations presented in this study, The Central Archaeology Group Inc. notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. Therefore, in the event that archaeological remains are found during subsequent construction activities, the consultant

archaeologist, approval authority, and the Cultural Programs Unit of the Ministry of Tourism, Culture and Sport should be immediately notified.

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1.0 Project Context

1.1 Introduction.

The *Ontario Heritage Act* makes provisions for the protection and conservation of heritage resources in the Province of Ontario. Our archaeological assessment work is part of an environmental review which is intended to identify areas of heritage interest as specified in the *Provincial Policy Statement*. Heritage concerns are recognized as a matter of provincial interest in Section 2.6.2. of the *Provincial Policy Statement*:

“development and site alteration shall only be permitted on lands containing archaeological resources or areas of archaeological potential if the significant archaeological resources have been conserved by removal and documentation, or by preservation on site. Where significant archaeological resources must be preserved on site, only development and site alteration which maintain the heritage integrity of the site may be permitted.” (emphasis in the original)

The purpose of the Stage 1 background study was to determine if there was potential for cultural resources to be found on a property for which a change in land use is pending. It is used to determine the need for a Stage 2 field assessment involving the search for archaeological sites.

The purpose of a Stage 2 property survey, as outlined by the *Standards and Guidelines for Consultant Archaeologists* (2011:27), are as follows:

- ✱ To document all archaeological resources on the property;
- ✱ To determine whether the property contains archaeological resources requiring further assessment; and,
- ✱ To recommend appropriate Stage 3 assessment strategies for archaeological sites identified.

In accordance with Provincial Policy Statement 2.6, if significant sites are found, a strategy (usually avoidance, preservation or excavation) must be put forth for their mitigation.

Section 7.2.3 of the standards and guidelines formulated by the Ministry of Tourism, Culture and Sport (2011:115) states the following standard with respect to the reporting requirements for archaeological assessments: “The final report must be filed in the form and manner as specified by the ministry in Section 7.5.” Section 7.5.1 of the standards and guidelines (2011:121) further states the following standard with respect to the reporting requirements for archaeological assessments: “All project reports must contain the sections listed in the first column of Table 7.1.” The present report conforms in all respects to the reporting requirements of the 2011 standards and guidelines.

Section 7.5.5 of the standards and guidelines formulated by the Ministry of Tourism, Culture and Sport (2011:124) requires that the *Project Context* section of each report includes the

context for the archaeological investigations and that it cover three main areas: development context; historical context; and archaeological context. These are presented below.

1.2 Development Context.

The information contained in this section of the report is being presented to satisfy the standards that are set in Section 7.5.6.1, 7.5.6.2 and 7.5.6.3 of the standards and guidelines formulated by the Ministry of Tourism, Culture and Sport (2011:124-125).

On October 8, 2013 The Central Archaeology Group Inc. (CAGI) was retained to conduct a Stage 2 property survey for the proposed extension of Nick Kaneb Drive in the City of Cornwall. The Stage 2 property survey of Lots 4 and 5 in the First Concession and part of Lot 3 in the Second Concession was undertaken on October 12, 2013 (Plan 1; Map 1). The legislation triggering this assessment is the *Environmental Assessment Act*. The City of Cornwall is the approval authority for this application. The purpose of the work was to ensure that cultural heritage interests and concerns were addressed and also to determine if there were significant heritage resources within the subject lands that may be impacted by the proposed development.

This Stage 2 property survey was undertaken as a result of the recommendations forwarded by Ground Truth Archaeology in 2013 in the Stage 1 archaeological assessment (P191-072-2013).

The standard concerning permission for access that is specified in the standards and guidelines is as follows: *Provide statements that the landowner or landowner's representative (e.g. planner, engineer, lawyer) gave permission for the licensee to access the property to conduct all required archaeological fieldwork activities, including the recovery of artifacts, and state any limits placed on access (e.g. time limits, refusal of access to portions of property)* (MTC 2011:125). Permission for access to conduct the archaeological survey and to remove and curate any artifacts that might be discovered was granted by Chris Miller, in advance of the property survey.

The archaeological assessment was undertaken in accordance with the requirements of the Environmental Assessment Act (R.S.O. 1990) and the Standards and Guidelines for Consultant Archaeologists (2011). All archaeological consulting activities were performed under the Professional Archaeological License of Laura McRae (P248). The Ontario Ministry of Tourism, Culture and Sport has designated this assessment as PIF P248-0163-2012. This project is further identified as CAGI-2013-LM49 under CAGI records. All records pertaining to this project area currently housed in the corporate office of The Central Archaeology Group Inc. in L'Amable, Ontario.

1.3 Historical Context.

Under the current standards and guidelines, the required standard outlined in Section 7.5.7.2 for the *Historical Context* portion of this report should include statement/s concerning the rationale for fieldwork strategies (MTC 2011:125). Fieldwork strategies are provided at the end of the *Historical Context* section. The purpose is to confirm the presence or absence of archaeological remains and, if archaeological remains were determined to be present, to determine if they showed heritage value as defined in Table 3.2 of the standards and guidelines (2011:60-61). These comments satisfy Section 7.5.7.2 of the 2011 standards and guidelines. A more detailed discussion of the events leading up to the fieldwork that is described in this report is presented below.

In order to competently provide rationale for this requirement, archival research was conducted into the past and present land-use and settlement history of the project area as required by Section 7.5.7.1 of the standards and guidelines (2011:125). This section of the report therefore contains brief summaries of the environmental setting and changes over time and the pre-contact and historic First Nations and Euro-Canadian histories represented in the history of the area.

Environmental Setting. The assessment of physical and environmental conditions of a region is important to analyzing past human settlement behavior and interpreting features and site patterns on the landscape. The cultural development of every society is strongly influenced by the surrounding natural environment which provides a finite set of resources which humans use to fulfill a variety of needs. Geomorphology, soils, water sources, climate, and vegetation of the study area are significant factors in understanding patterns in the landscape. Changes in the landscape over time may have an influence on the types of materials found during an assessment and subsequent visibility. The following information is a brief history of the environmental setting of the project area.

Location. Stormont County is located in eastern Ontario and is bounded to the north by Prescott County, to the west by Glengarry County, to the south by the St. Lawrence Seaway, to the west by Dundas County, and to the northwest by Russell County. The Geographic Township of Cornwall is located within the southeastern portion of Stormont County and encompasses one large urban centre, a number of small villages, and a heavily populated rural region. The study area is located approximately 2.2 kilometres northwest of the St. Lawrence River (Image 1). It is situated at 59 metres above sea level (a.s.l.).

The closest First Nation to the project area is the Akwesasne First Nation No. 59. Of Mohawk descent, this community is unique in that the Territory crosses the International Border between Canada and the USA.

Geomorphology. The property lies within the Lancaster Flats physiographic region, a region characterized by extremely flat land and relatively poor drainage. The till deposits common to the Glengarry Till Plain, located to the north, are buried beneath water-laid deposits leaving exposed the tops of drumlins and ridges (Chapman and Putnam 1973:353). These materials range from clay to very fine sand. This region encompasses an area approximately 414.4 km² and extends into the province of Québec. The majority of this physiographic region is present within Glengarry County to the east.

Of particular interest to the study area is the inundation of the area by the Champlain Sea following the glacial melting and retreat. The Champlain Sea existed for a short time as a temporary inlet for the Atlantic Ocean, between the end of the last ice age until approximately 10,000 BP. Although the maximum extent of the marine inundation is not yet known in specific terms, it has been posited that its limits would have extended to the clay beds found within Leeds County, just east of the Precambrian Shield (Chapman and Putnam 1973:117; Karrow 1961:99). The geology present today in this area represents the deposits of the shrinking sea as it retreated across the landscape during isostatic rebound of the North American landmass.

Soil Development. Soil, in terms of its morphological characteristics, is defined as unconsolidated surface material forming “natural bodies” made up of mineral and organic materials and the living matter within them. The formation of soils is heavily influenced by its parent material, climate, vegetation, drainage and time; it is a dynamic entity with material continually and simultaneously added, removed and transformed (Leahey 1961:148). However, it is mainly the combined effects of climate and living matter that convert a material to a soil. For example, in temperate rainy environs, moisture and dense vegetation may lead to deep, richly organic soils. In deserts, with a lack of moisture and subsequent vegetation, soils may be thin and remain highly mineral. Human disturbances, such as dwelling, agricultural practices, grave sites and garbage dumps may also affect soils, giving them other unique characteristics.

The soils of the project area include Allendale sandy loam (Asl) and Mountain sandy loam (Msl) (Table 1). Allendale sandy loam is a dark grey gleisol (Matthews and Richards 1954). These soils consist of sand and are medium textured, lacustrine materials usually found in areas of imperfect drainage. They are found on slightly undulating topography and are relatively stone free. Allendale series soils can only be used for agriculture if drainage is improved and fertilization is augmented with the introduction of phosphorus and potash (Chapman and Putnam 1973:436; Matthews and Richards 1954).

Mountain sandy loam is a brown podzolic soil which developed on outwash material underlain by lacustrine clay. Very similar to Manotick sandy loam, Mountain sandy loam differs in that it has imperfect drainage (Matthews and Richards 1954). It is found on slightly undulating topography and if drainage can be perfected, the soil can be used for general farming and some small specialized crops.

Table 1. Soil characteristics of the project area.

Soil Type	Drainage	Texture	Relief	Great Group
Allendale sandy loam (Asl)	poor	stonefree	level to depressional	Dark Grey Gleisolic
Mountain sandy loam (Msl)	imperfect	stonefree	slightly undulating	Brown Podzolic

Historical Forest Patterns. The last ice age completed disturbed vegetation patterns throughout Ontario. However, deglaciation initiated plant recolonization. As vegetation migrated northwards with the receding glacial front, different species populated the ice free margins. However, the process of recolonization depended on the production rates of different species and their ability to grow on freshly exposed terrain which may have reduced pH levels (Matthews 1992:122). Initially, following the retreat of the glacial ice across Northern Ontario, species more common to tundra-like environments grew, followed by spruce woodlands. Pine dominated these woodlands, especially during the Hypsithermal period (approximately 5.0 ka). Warming temperatures encouraged coniferous growth like pine and hemlock and modern vegetation patterns emerged between 2.5 ka and 3.0 ka.

The forests of this region, before it was stripped and forever altered by Euro-Canadian farmers, lumbermen and settlers, consisted of relatively dense forests interspersed with open park-like woodland. Referred to as the Southeastern Mixed Forest, it is located within the Great Lakes-St. Lawrence Forest Region, and is dominated by sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), American basswood (*Tilia americana*), yellow birch (*Betula lutea*), eastern hemlock (*Tsuga canadensis*), eastern white pine (*Pinus strobus*), red maple (*Acer rubrum*) and white ash (*Fraxinus americana*) on upland surfaces (Dean 1994:12; Kershaw 2001). Drier stretches of land commonly exhibited white spruce (*Picea glauca*), which replaced the red and white pine (*Pinus resinosa* and *Pinus strobus*). Over thin soils and on high ground, species more representative of a Boreal Forest persisted. Species common to a Boreal environment include: white spruce and black spruce (*Picea mariana*), interspersed with balsam fir (*Abies balsamea*), scrubby stands of jack pine (*Pinus banksiana*), trembling aspen (*Populus tremuloides*), red oak (*Quercus borealis*) and paper birch (*Betula papyrifera*) (Dean 1994:12).

Modern arboreal vegetation patterns reflect two centuries of logging and land clearance, and the large numbers of balsam poplar (*Populus balsamifera*), black spruce, tamarack (*Larix laricina*), eastern hemlock, eastern white pine, red pine, eastern white cedar (*Thuja occidentalis*), American elm (*Ulmus americana*), American beech, paper birch, large-toothed aspen (*Populus grandidentata*), trembling aspen, pin cherry (*Prunus pensylvanica*), staghorn sumac (*Rhus typhina*), American basswood, sugar maple, mountain maple (*Acer spicatum*), and white ash found today are the result of disruption to the natural, mature hardwood forests indigenous to the drumlinized till plains of southern Ontario (Kershaw 2001).

Ontario wildflowers such as common yarrow (*Achillea millefolium*), wild bergamot (*Monarda fistulosa*), white aster (*Solidago ptarmicoides*), purple loosestrife (*Lythrum salicaria*), oxeye daisy (*Leucanthemum vulgare*) and Canada thistle (*Cirsium arvense*) were present within the subject property (Kershaw 2002). Grasses present included bottle-brush grass (*Hystrix patula*), sweet vernal grass (*Anthoxanthum odoratum*), foxtail (*Alopecurus ssp.*), common plantain (*Plantago major*) and crab grass (*Digitaria sanguinalis*) (Brown 1979). Shrubs included ground hemlock (*Taxus canadensis*), sweet fern (*Comptonia peregrina*) and beaked hazel (*Corylus cornuta*) (Soper and Heimburger 1994). These vegetation types are characteristically found within areas where the mature forest patterns have become disrupted by lumbering, accidental forest fires, and land clearance that began in the project area during the early nineteenth century and continues to this day.

Water Sources. There were many stages of glacial and post-glacial lakes that covered Ontario during advancement of the Laurentide Ice Sheet and subsequent isostatic rebound following glacial recession at the end of the Pleistocene Period. This was due, in part, to blockage of drainage outlets by ice dams. Consequently, substantial areas were inundated by the copious flow of meltwaters at levels well above modern lakes and rivers. As these glacial water sources drained, the zone created could have supported an extensive variety of animal, insect, bird, and vegetation species. Resource exploitation of this zone by early peoples is supported by the discovery of Archaic period archaeological sites along the edges of ancient shorelines (palaeo-shorelines).

Now located within eastern Ontario and within the Atlantic Ocean watershed, the project area is drained via a number of waterways which were formed during the recession of the Laurentide Ice Sheet. Present within, or within close vicinity to the project area are rivers (i.e., St. Lawrence River, Raisin River, etc.), creeks and streams (i.e., Fly Creek, Donihee Drain, Grays Creek, Hoople Creek, etc.) and a number of low-lying and wet areas identified as marsh or swamp.

Climate. Modern climatic variation depends almost entirely upon location and human impacts on the environment. Stormont County, located in eastern Ontario, is heavily influenced by the St. Lawrence and Adirondack Mountains to the south and to a lesser degree by the Great Lakes. This environment tends to add moisture to the air in the autumn and winter in conjunction with protecting the region from the worst of the cold during the winter months, and during the spring and summer they act to moderate the temperature of the region.

First Nations Cultural Summary *Palaeoamerican Period.* The Palaeoamerican Period represents the arrival of First Nations groups in Ontario around 11,500 years ago following the retreat of the Laurentide ice sheets that covered most of Canada and the northern United States beginning approximately 95,000 years ago. Although there is considerable debate about whether the Palaeoamerican people were the first to cross into the Americas from Asia via Beringia, they are most likely the first culture to inhabit Ontario (Adovasio 2003). The Palaeoamerican Period is represented by two distinct cultures based on the use of different tools. The Clovis culture comprised the early part of the Palaeoamerican Period, whereas the Plano culture occupied the latter half.

The Clovis culture is defined by distinctively fluted and chipped stone projectile points that are generally lance-shaped or lanceolate. These points lack notches or stems but have a concave base with grinding present on the lower side edges. Although it is certain that these points were used as projectiles based on evidence of distinctive tip damage, it is unknown whether they were hafted onto long shafts and used as a thrusting spear or in combination with an atlatl or spear-thrower.

Plano projectile points differ in that they lack the Clovis flute but exhibit fine ripple flaking that is distinctive of the latter half of the Palaeoamerican Period. A number of sites dating to approximately 9,000 years ago have been found along the north shore of Lake Superior and on Manitoulin Island. High quality siliceous stone quarries exploited by Plano people have also been found along the shore of Lake Huron.

The Clovis and Plano cultures likely shared similar subsistence strategies. They hunted migrating herds of caribou along the shores of glacial lakes that appeared as the massive ice sheets receded. They also hunted large mammals such as mammoth and mastadon. Palaeoamericans groups likely hunted smaller mammals and fish as well, and gathered wild fruits and berries.

Palaeoamerican occupations in the Upper St. Lawrence River Valley, and in general, are difficult to define due to small group size, frequent migrations, and overall antiquity. The limited remains from most Palaeoamerican camp sites have tended to discourage systematic excavation beyond habitation and major kill sites. Evidence of Palaeoamerican occupation in the general project area comes from a few finds in the Napanee Valley, Cornwall, and the Rideau Lakes region. Mason (1981) noted a site near Cornwall that produced Plano type points.

Archaic Period. Solid evidence of the beginning of the Archaic Period in Ontario dates to about 4,000 BCE with the advent of the Laurentian Archaic. The early Archaic culture likely evolved from the Palaeoamerican Period. However, it is possible that as more people migrated into the region, there was an introduction of new ideas and technology. The elaborately manufactured points representative of the Palaeoamerican Period were abandoned in favour of more crude manufacturing techniques but with a greater variety of stone being exploited. This likely represents a change in the types of flora and fauna available for consumption. There is certainly a shift in subsistence practices by early Archaic groups from long seasonal migration movements to a focus on regionally available food sources.

The Archaic Period also represents a technological shift in the methods used in the manufacturing of stone tools with the introduction of grinding and pecking. A wide variety of axe forms are introduced, indicating a shift from a more sub-arctic environment to a temperate climate. It was also during the Archaic Period that the atlatl superseded the use of handheld thrusting spears predominately used during the Palaeoamerican Period. Elaborately polished and decorated stone tools believed to be atlatl counterweights appear in the archaeological record. Archaic people were also producing tools and ornaments manufactured from native copper found along the north shore of Lake Superior.

While the Palaeoamerican and early Archaic origins of the Upper St. Lawrence culture are poorly defined, a widespread and distinctive Laurentian Archaic tradition is evident by 4,000 BCE thanks to increased archaeological visibility with cultural elaboration and population growth following the trend to a more broadly based subsistence pattern (Mason 1981). A number of finds dating to the Archaic Period have been found near Cornwall, including a point recovered from a ploughed field suspected to date to the period on typological grounds (Wright 2004:95) and a site near Brockville discovered very early (Reynolds 1856) consisting of several burial with chipped stone, ground stone, and copper implements. Investigations into Archaic Period sites in the Lake St. Francis expansion of the St. Lawrence River, east of Cornwall, uncovered projectile points very similar to those found at the John's Bridge site in northwestern Vermont, suggesting a wide distribution of that particular Middle Archaic assemblage (Wright 2004:80).

Woodland Period. The Woodland Period in Ontario is marked by the introduction of pottery during the Early Woodland Period around 900 BCE. Although Early Woodland groups in Ontario began using pottery, there was little change from the Late Archaic Period. However, they seem to have been in close contact with the Ohio Valley, evident from the appearance of Adena-like material found in burial contexts.

The Middle Woodland Period is defined by a shift in the style and shapes of tools and materials chose in manufacture. There is also evidence of group identification with marked differences in tool styles from various regions of Ontario. Middle Woodland pottery vessels tend to have conical bases and are manufactured using the coil method and decorated with various stamps and incised motifs. In northern Ontario this culture tradition is referred to as Laurel, in eastern and south-central Ontario, Point Peninsula, and in southwestern Ontario, Saugeen. There is also a shift in seasonal subsistence patterns, where from the spring to autumn, groups tend to congregate at the mouths of rivers and lakeshores to fish, collect shellfish, and hunt. As the temperature decreased with the onset of winter, these groups would disband into smaller family units and return to the interior to hunt.

The Late Woodland Period is usually defined by the large-scale use of cultigens, such as maize, beans, squash, and to some degree, sunflowers and tobacco. Maize appears in Ontario sometime after 500 BCE, but is not widely adopted until approximately 900 CE. This transition is marked by dramatic socio-economic and technological changes. A matrilineal clan system emerged, longhouses were constructed (multi-family) and the coil method of pottery manufacture is largely abandoned for the use of the paddle-and-anvil method and decoration by cord-wrapped stick. Although seasonal fishing and hunting camps continue to be used, larger, more permanent settlements are constructed near agricultural fields.

Hostilities often erupted between groups, evident from the number of stockades and ditch defences by 1,000 CE.

A number of archaeological finds dating to the Woodland Period have been made in the area near Cornwall. Extensive excavations at Pointe-du-Buisson on Île de Salaberry between Cornwall and Montréal have provided a great deal of information relevant to Early to Middle Woodland occupation of the Upper St. Lawrence Valley. Belonging to the Early Woodland Meadowood complex, sites of which have been found throughout southern Ontario, adjacent parts of New York, and southern Québec, Point-du-Buisson 5 is a cemetery of four burial pits covered by stones with various grave goods; Pointe-du-Buisson 4 is the nearby habitation site, probably for occasional brief occupations of Meadowood hunters and gatherers while they buried their dead (Spence et al. 1990:141). Two excavated mounds on Long Sault Island near Cornwall can also be identified as Early Woodland, though belonging to the Middlesex Complex which is less well-known in Ontario.

Although multi-component with occupations from the Middle Archaic through the Late Woodland, the dominant component of the Ault Park site on Sheek Island, a few kilometres west of Cornwall, is from the Middle Woodland Point Peninsula complex. Point Peninsula occurred in south-central and eastern Ontario and extended into southern Québec and northern New York State. Ault Park was a large spring-summer macroband site perched on bluffs overlooking major rapids, so oriented for the intensive exploitation of spawning fish (Spence et al. 1990:168). A Point Peninsula component is also present at the abovementioned Pointe-du-Buisson site, which was similarly located for the same purpose.

Of particular importance during the Late Woodland Period is the materialization of regional identities. Nations such as the Neutral, Petun, Huron-Wendat, Iroquois, Wenro, Erie, Susquehannock and, most important to this discussion, the St. Lawrence Iroquois, emerge. They are identified archaeologically by stylistic and typological differences illustrated in their material culture (particularly pottery) excavated by archaeologists.

St. Lawrence Iroquois. Material culture recognized as belonging to this culture group is most commonly identified through pottery: either pots with little or no collar with simple motifs or pots with well-demarcated collars decorated with complex motifs of parallel incised lines and chevrons. Complex motifs are often beautifully done with circular reed punctates, ladder designs or corn ear styles.

From his seminal work on three sites, the Salem, Grays Creek and Beckstead sites, Pendergast (1966) identified four main categories: Type A is described as incised chevron and punctate circles on overhanging castellations; Type B decoration, while similar to A, is applied using a dentate stamp or dentate stamps and incised lines; Type C vessels are low-collared or collarless with dentate, corded, ovoid or rectangular stamp decoration at the top and; Type D are crude vessels with low, channeled convex collars decorate with horizontal or oblique lines of chevrons.

St. Lawrence Iroquois sites tend to be comprised of either large villages situated in the interior or small, special purpose occupations such as fishing stations, located on the St. Lawrence and other major waterways in the valley. One such special purpose site is located near present-day Morrisburg. A fishing camp, the Steward site is comprised of two

longhouses with internal house-pit features and a deeply stratified midden. The Glenbrook site, located on the South Raisin River, is between two to three acres in size and is one of sites in the Summerstown Cluster of St. Lawrence Iroquois village sites (cluster includes the Summerstown Station site, the Salem site, the Sugarbush site, the Grays Creek site, and the MacDougall site).

The St. Lawrence Iroquois have the distinction of being the first Iroquoian nation to encounter Jacques Cartier in 1534 in the Gaspé and Cartier has the distinction of being the first and last European to encounter the St. Lawrence Iroquois before they disappeared. Few historical accounts exist beyond those written by Cartier during his voyages in the sixteenth century. Among the villages that he encountered during his journeys, from east to west, *Ajoaste* (possibly on the Cap Tourmente plain), *Starnatan* (near Sainte-Anne-de-Beaupré), *Tailla* (on a mountain, perhaps near Château-Richer), *Sitadin* (near Beauport), *Stadacona* (Québec City), *Tequenonday* (near Cap Rouge, on a mountain), *Achelay* (near Portneuf) and *Hochelaga* (the large, fortified settlement at the foot of Mount Royal). By the time Champlain returned to the St. Lawrence Valley, the St. Lawrence Iroquois had vanished. Many theories exist to explain this phenomenon, the most widely accepted being that they succumbed to European disease and warfare. Although both hypotheses are based on inference, there is no doubt that exposure to European diseases took a heavy toll on indigenous populations of the Americas (i.e., the epidemics that decimated the Huron in the 1600s) and that warfare commonly accompanied trade.

The Mohawk Nation of Akwesasne. The following description is a summary of Aren Akweks discussion on the migration of the Mohawks from the banks of the Mohawk River to their current home in Akwesasne (1948:23-27). This account expands on the brief synopsis provided at the beginning of this section and is largely based on oral history.

The St. Regis Mohawk, People of the Flint, once lived along the banks of the Mohawk River in New York State. Their land was covered with large, dense forests and they lived in long bark homes. Their land, situated at the top centre of a giant turtle's back, was the centre of the world. Water flowed in all directions from this location, north, south, east, and west. The main clans of the Mohawks were the Bear Clan, the Turtle Clan, and the Wolf Clan.

The main Mohawk villages were located at strategic points along the Mohawk River; Te-uge-ga was located at the mouth of the West Canada Creek; Sko-har-le was situated near the outlet of the Schoharie Creek; Ta-la-que-ga was near Little Falls; and Ga-ha-oose was positioned near Cohoes. In these locations were many animals to hunt, fish to catch, and birds to snare. The People practiced agriculture and grew fields of corn, beans, and squash. They also warred against one another.

Great men, Deganawida and Hayowentha, wanted to stop the fighting and bloodshed between the Nations and asked the Creator to assist them in this task. They planted the tree of peace and spoke at many council fires; People of the Great Mountain (Senecas), People of the Mucklands (Cayugas), People of the Hills (Onondagas), People of the Upright Stone (Oneidas), and People of the Flint (Mohawks). For five years they spoke and the men of the Five Nations began to listen.

The Five Nations came together for a great council, they made peace and smoked the Pipe of Friendship. They wore a sacred wampum belt, the belt of peace, its design representing a chain of four links with a white tree at its the heart. The Five Nations were now as One.

They compared their league to that of a long house. The Mohawks were the Keepers of the Eastern Door of the Long House, the Senecas were the Keepers of the Western Door of the Long House, the Onondagas, in the centre, were the Keepers of the Council Fire. However, soon after peace was declared, a cloud of darkness descended upon the Ho-de-no-sau-ne, the People of the Long House.

From across the great salt water came the white man, the French and the English. They desired furs and the lands of the Five Nations. They gave the Iroquois guns, tomahawks, and firewater for beaver skins. Their duplicitous nature offered in one hand the hand of friendship, and in the other the rattlesnake whose bite was poison and death.

Both French and English, desiring the whole of the fur trade, talked various Nations into making war against their rivals and to those Nations who brought furs to their rivals. Most of the Iroquois sided with the English and easily defeated the French and their allies.

The Jesuit missionaries (Black Robes) came and persuaded many Iroquois to migrate to Canada. They founded a new community on the St. Lawrence River and named it Caughnawaga. On the other side of the river was the French town of Montreal. Once again, wars followed and forgotten were the words of the two wise prophets, Deganawida and Hayowentha, as blood fought against blood.

After the war, traders from Montreal would cross the river and bring with them firewater. The missionaries tried to stem this evil influence and moved the People many times. Diseases such as smallpox, measles, and whooping cough began to appear amongst the communities. The elders and the Jesuit Fathers agreed that they must vacate their homes and leave the evil across the river. Consequently, they packed their homes and possessions and headed up the St. Lawrence.

A location was found where many small rivers flowed into the St. Lawrence River, where the soil was fertile, and where there was good hunting and fishing. They were alone and away from the harm generated by outside influences. A church was erected on a point of land that extended into the river. Around the church they built their homes. They called their new land, Akwesasne, or Place Where the Partridge Drums.

Euro-Canadian Cultural Summary. *The Contact Period.* Beginning in the early seventeenth century with the French, explorers such as Samuel de Champlain and Étienne Brûlé, encountered groups of people speaking an Algonquian language along the Ottawa River Valley. These were the Weskarini, Onotchataronon, Kichesipirini, Matouweskari, and Otaguotouemini Algonquians (Trigger 1976:279). The loosely aligned First Nations groups subsisted by hunting, fishing, and gathering, and undertook limited horticulture. Champlain first met the Algonquians in 1603 at the trading centre of Tadoussac near the mouth of the St. Lawrence River (Hessel 1993:14). Searching for the Northwest Passage in 1613, Champlain entered Algonquin territory and explored the Ottawa Valley as far north as Morrison's and Allumette Islands. The main body of the Kichesipirini lived on Morrison's Island and controlled the portages at the base of Allumette Lake. From their strategic location, the Kichesipirini collected tolls from all French trade to and from the interior nations such as the Nipissing, Huron, Ottawa, and Ojibway (Hessel 1993; Trigger 1976). Since at least the late sixteenth century, the Algonquin groups were at war with the Mohawk Iroquois, the easternmost group of the Five Nations Iroquois over control of the upper St. Lawrence trade routes.

By the mid-seventeenth century, the French traders and missionaries began to resent the Algonquin self-proclaimed role as middlemen along the Ottawa River. This soon resulted in adversarial relations between the Algonquin leaders and the French colonial officials. The endemic warfare of the age, and severe smallpox epidemics in 1623-1624, and again between 1634 and 1640, brought about drastic population decline among the Algonquin peoples (Hessel 1993). The French unwillingness to provide military support to the Algonquin against their mutual enemy, the Mohawk, led to the defeat and dispersal of the known Algonquian bands by the Five Nations Iroquois between 1640 and 1650 (Trigger 1976:610, 637-638). Survivors of the various bands coalesced as a single First Nation people to the north of the Ottawa Valley, and at the French posts of Montréal, Sillery, and Trois-Rivières.

Following the dispersal of the Ontario Iroquois and the Ottawa Valley Algonquin, the Five Nations of New York State (Mohawk, Oneida, Onondaga, Cayuga, and Seneca) eventually occupied a series of winter hunting bases and trading settlements near the mouths of the major rivers flowing into the north shore of Lake Ontario (Konrad 1981). The first recorded Five Nations settlement to relocate northward were two Cayuga villages established at the northeastern end of Lake Ontario. Two French Sulpician missionaries joined the Cayuga in 1668 at their settlement known as Kente, now Carrying Place, near the narrows separating the western end of Prince Edward County from the Hastings County mainland. A second Cayuga settlement, known as Ganneious, may have been near the mouth of the Napanee River, or further south on the Bay of Quinte (Edwards 1984:10). As a result of increased tensions between the Five Nations and the French, and a declining population from disease and warfare, the Cayuga settlements were abandoned in 1680 (Edwards 1984:17).

Euro-Canadian Settlement. Following the American Revolutionary War (1775-1783), the British government encouraged disbanded and discharged soldiers as well as families and individuals loyal to the Crown, to re-settle their families in English territory (Belden 1879:5). Stormont and Dundas Counties, as well as New Johnston (now the City of Cornwall) were settled by the King's Royal Regiment of New York (the Royal Yorkers) and their families, and Glengarry County was settled by Highland Scotch Catholics (Belden 1879:5; Harkness 1946:42-45).

Stormont and Dundas Counties were predominantly settled by former soldiers from the Valley of the Mohawk in New York State. The majority of these settlers were German immigrants who had settled in America before the American Revolutionary War, mostly on land that had been presented to the Queen by Mohawk Chiefs, when on tour of London under the guidance of Peter Schulyer and Colonel Nicholson, in 1710 (Harkness 1946:12). Having served British sovereignty during the war, in 1783 these soldiers (known as United Empire Loyalists) found themselves enemies of the victorious, and newly formed, American government and ousted from their homes. As compensation for their lost estates and property, England provided them farmland in what would become known as the Province of Upper Canada (Belden 1879:5).

Sir Frederick Haldimand, a colonial administrator, under orders from the British government, decided that the Loyalists would be settled on Crown lands west of Rivière Beaudette, beyond the western boundary of the last seigneurie holding (Senior 1983:14). Sir John Johnson requested that the granted lands be laid out from the upper end of Mr. Longueuil's seigneurie, as the land was reported to be rich and fertile (Senior 1983:15). The families of the soldiers marched from their homes in the Valley of the Mohawk to Whitehall and were then ferried by boat to Isle aux Noix. After spending a winter in the barracks, the Loyalists and their families traveled up the St. Lawrence via boat and arrived at Cornwall in the summer of 1784 (Belden 1879:5). The date of the first settlement at Cornwall is debated. It is reported that by the time the soldiers were disbanded in 1784 and directed to take their families to Cornwall, it had already been surveyed (Harkness 1946:42-45). However, Senior (1983:17) reports that the slowness of government surveyors to lay out the proposed townships irked Johnson and that he ordered Patrick McNiff and 26 of his own men to begin surveying the area in 1784.

Johnson traveled to Point Maligne (the site of Cornwall) and was met by chiefs and warriors from the aboriginal community of St. Regis. The land Johnson wanted surveyed was not occupied, and was considered a source of revenue for St. Regis as the French had paid them well for the timber they cut down in the area. This was the first indication that the land on the north side of the St. Lawrence, opposite that of the settlement of St. Regis, had been regarded as part of their seigneurie (Senior 1983:17). The chiefs informed Johnson that papers indicating ownership of this land - from the mouth of the Raisin River six leagues (33.336 km) to a creek a little above the Long Sault - had been destroyed in a Church fire. Johnson, believing the claim as groundless, returned to Montreal to consult with Haldimand. Haldimand could find no information indicating ownership in the register of Crown lands and decided to propose that St. Regis retain a tract of land running northwards between the new townships so that they could have direct access to their Algonquin allies of La Petit Nation. Joseph Brant proposed this offer to the St. Regis inhabitants that he found "reasonable enough about the land" and assured them they would still have three miles (or a little less) of river frontage on the north bank of the St. Lawrence as a throughway to the Petit Nation River (Senior 1983:20). They were also given land south of the St. Lawrence from which they would receive rent (Senior 1983:20).

Finally, on May 6, 1784, the plans for the settlement that would become the Township of Cornwall were agreed upon; settlement would begin near the Raisin River, and what would become the City of Cornwall was situated near the St. Lawrence River. The centre of the township was quickly surveyed, laid out, and settlement commenced immediately (Senior 1983:20). By June 1784, Pointe Maligne became known as Johnson's Point.

Upon arriving in Cornwall, the soldiers of the Royal New York Regiment were greeted by recently settled Loyalists who had traveled from the Isle of Jesus and acquired lots in Cornwall via lottery. Johnson decided to go against Haldimand's wishes and allowed his officers first choice of the lands they wished to settle. This granted land consisted of 100 acres along the river and 200 acres inland. As with the date of the original settlement of Cornwall, there are discrepancies between reports of the acreage received by Loyalist settlers through lottery. Harkness (1946:45) reports that captains sometimes received in excess of 2,000 acres, lieutenants received 500 acres, and privates received 200 acres with provisions made for their offspring. It is generally conceded though, that the lottery occurred in 1784 with the result that riverfront land in the Townships of Cornwall, Osnabrock, Williamsburgh, and Matilda of Stormont and Dundas Counties were simultaneously and successfully settled by a group of industrious Loyalist families and that Black Loyalists received land grants in Lake Township (Belden 1879:5; Senior 1983:41).

Before 1792, when Lieutenant-Governor Simcoe proclaimed that the Province of Upper Canada be divided into 19 counties, Stormont, Dundas, and Glengarry had been part of the District of Lunenburg. Lunenburg was one of the four districts created from the District of Lancaster (Upper Canada) by Lord Dorchester in 1788. Stormont, Dundas and Glengarry Counties are the only three united counties in all of Ontario (Belden 1879:5).

Glengarry County is comprised of the townships of Lancaster, Charlottenburgh, Kenyon and Lochiel; Stormont County is comprised of the townships of Cornwall, Osnabrock, Finch, and Roxborough; Dundas County is comprised of Williamsburgh, Matilda, Winchester, and Mountain. These twelve townships were created when six of the eight original Royal Townships of Upper Canada (namely: Lancaster, Charlottenburgh, Cornwall, Osnabrock, Williamsburgh, and Matilda) were divided. The townships were amalgamated back into six townships in 1998 and remain part of the three united counties.

The Early Development of Cornwall Township. The original post-contact settlers of Cornwall Township were disbanded members from the First Battalion of the King's Royal Regiment of New York, or the King's "Royal Yorkers." The Yorkers had been led by Lieutenant-Colonel John Johnson during the American War of Independence. Throughout the war they had been stationed at various posts, such as Montreal, St. Anne and Lachine, from which they conducted operations into rebel territory. The families of these exiled or escaped Loyalist soldiers, many of whom originated from the Mohawk Valley, typically endured residence in encampments elsewhere, albeit in nearby communities. Although they ultimately waited for a return to their American homes, the outcome of the war necessitated their resettlement north of the Great Lakes and the St. Lawrence River.

Cornwall Township was one of eight “Royal Townships” established to this end. The Royal Townships extended from Quebec’s most western Seigneurie – the “Longueuil Seigneurie” at Rivière Beaudette – to the mouth of the Gananoque River. Five additional townships were surveyed and settled further west, in the Kingston and Bay of Quinte area, known as the Cataraqui Townships. The Royal Townships were first identified by their numerical designations, of which Cornwall was Number 2, and the first to be settled. Apart from the fundamental need to designate land as compensation for displaced British subjects, they were selected and surveyed with a specific military purpose in mind: should hostilities with the newly formed United States arise, the distribution of officers and their men would be strategically designed to provide a bulwark against invasion. Soldiers and their families were actively discouraged, by the governor Frederick Haldimand, from purchasing attractive properties being offered to them in what is now the Province of Quebec.

Disbanded military units settled together in townships. Sir John Johnson's Royal Yorkers, for example, held the first five of the Royal Townships; at the settlers' request and with Lord Dorchester's approval, they were organized according to nationality, language and religion. Catholic Highlanders [Charlottenburgh], Scottish Presbyterians [Cornwall], German Calvinists [Osnabruck], German Lutherans [Williamsburg] and Anglicans [Matilda] occupied those townships in that order. Initially, administration of justice and local government continued according to military custom under the authority of former officers. In the earliest days, some civilians even received military rank, in order to fill the offices necessary for basic administration. [Payne 2006:2]

An interesting historical note comes from Harkness' history of the United Counties: “It is said that the Scotch, many of whom were Roman Catholics [Charlottenburg], were so placed as a buffer between the French Catholics [Quebec] to the east and the German Protestants [Osnabruck, Williamsburg] to the west.” [Harkness 1946:45].

While each township had its dominant national and religious character, these divisions were by no means exclusive, nor the townships homogenous. The study area, historically part of Cornwall Township, is associated with Scottish Presbyterian, as well as German Palatine Loyalists (Lutheran/Calvanist). Some of the properties are also associated with the influx of Scottish Catholic immigrants (“Highlanders”), who arrived in the area in 1786.

Following the American War of Independence, most of Southern Ontario was still a part of the Province of Quebec, whose boundaries had been extended by the Quebec Act of 1774. In 1788 four districts were carved out of its Southern Ontario portion. East to west these were the Lunenburg, Mecklenburg, Nassau and Hesse Districts. Cornwall Township was part of the Lunenburg District.

The Constitutional Act of late 1791 formally established the divisions of Upper and Lower Canada. The Lunenburg District was renamed the Eastern District (the others were renamed Midland, Home and Western, east to west) with its boundaries slightly altered, and 19 counties were created in the Province of Ontario. Three of these counties were Stormont, Dundas and Glengarry. Cornwall and Osnabruck Townships were a part of Stormont County. Whereas the new counties were political divisions based on electoral ridings, the districts were judicial in nature. The Upper Canada Act of 1792 stipulated that each district should establish a court house and jail. Cornwall, then called New Johnstown, was selected as a

judicial centre for the Eastern District.

Nearly all of the properties associated with the study area are intimately tied to the development of the Town, and later City, of Cornwall. Until 1834 the settlement was simply an unincorporated concentration of pioneers and pioneer-descendants within the township itself. When the township was surveyed by deputy surveyor Patrick McNiff in 1784, under the direction of surveyor general Samuel Holland, plans were made for the eventual establishment of a town. But even when Cornwall was incorporated in 1834, it was administered by a board of police. Several of the study area's property owners served as regular members on this board, or as its president.

Cornwall was incorporated as a "regular" town in 1846, adopting the usual system of municipal government of the day. Again, several study area property owners served as mayor or in other capacities integral to the town's development. Indeed, it is difficult to find a study area owner, in the first half of the nineteenth century, who was not in some way connected with the development of the town, township, or county; or who served as a provincial or federal representative. The most famous of these, John Sanfield Macdonald, was co-premier of the United Province of Canada, and later served as Ontario's first premier.

Many of the prominent elite associated with the study area were educated at the local grammar school, established by the Reverend John Strachan. Strachan, who would later become Bishop of Toronto, had travelled to Kingston 1799 where he tutored the children of prominent Loyalist families there, such as the Cartwrights. He was ordained as an Anglican Priest in 1803 and moved to Cornwall, where he opened the school. Strachan's grammar school would become famous for training the youths of conservative ruling class figures: the somewhat mythical, but firmly believed-in, "Family Compact." In her history of Cornwall, Elinor Kyte Senior writes:

In the first twenty-seven years of its existence, Cornwall's claim to fame was due more to three outstanding personalities than to any particular characteristic of the town itself. In their turn, Sir John Johnson, Patrick McNiff and John Strachan kept the tiny town on the north bank of the St. Lawrence from falling into obscurity. In fact, when John Strachan passed through the village for the first time on the night of 26 December 1799 en route to Kingston he scarcely noticed it. Little did he dream that he would, within three years, return to spend almost a decade of his life there and, by the sheer force of his personality, transform Cornwall into a unique centre of learning, attracting the sons of the most prominent families of York, Kingston, Montreal and Quebec City to his academy. [Kyte Senior 1983:72]

Sir Guy Carleton Wood, who owned the east part of Lot 3, Concession 2 for 30 years, was the brother of Strachan's wife, Ann Wood.

Although the settlement of Cornwall boasted an attractive bay on the St. Lawrence River, it was sorely lacking in mills sites. This problem was overcome by way of another project, the Cornwall Canal, constructed between 1838 and 1842. It was built to overcome the rapids of the St. Lawrence River, particularly those known as the Long Sault, just west of the town. The canal, as described in Beldon's 1878 Atlas of the United Counties, spanned 12 miles (19.2 km) from a point east of Cornwall, known as Dickinson's Landing, near the present-day

community of Ingleside. By 1879 three of the canal's seven locks were located at Cornwall, while three others were located within four miles (6.6 km) of the town. It was enlarged several times between 1876 and 1904, and replaced by the St. Lawrence Canal in 1957. Dickinson's Landing is one of several "lost villages", immediately west of Cornwall, which was flooded when the new canal was built.

In the meantime, the Cornwall canal contributed to the town's economic growth by providing a source of water power for mills. Several grist mills were built immediately, followed by saw and wollen mills. William Mattice, a major Cornwall politician, was the third owner of the town's first grist mill. Mattice, owned the west half of Lot 5 for over twenty years, and the east half of Lot 2 for over thirty years.

1.4 Archaeological Context.

For the purposes of context, this assessment examined data for a study area that encompassed a single kilometre buffer surrounding the project area. Four collective sources were examined in the course of the basic background research.

The first source was the Archaeological Sites Database of the Ministry of Tourism, Culture and Sport; it houses site record forms for registered sites as well as published and unpublished reports on past surveys, assessments and excavations. Data on registered sites within the study area were provided by Robert von Bitter, Archaeological Data Co-ordinator of the Ministry. As such, the registered sites data presented in this report satisfy the standard required by the first bullet of Section 1.1.1 of the standards and guidelines for archaeological resource assessments formulated by the Ministry of Tourism, Culture and Sport (2011:14).

Aside from the presence of nearby registered archaeological sites, other indicators of the presence of extant archaeological remains are the proximity of historical plaques to the study area that commemorate important events in a region's past, whether it be the birth of an individual, the site a specific battle, or the construction of a unique building. Generally, historical plaques and markers point to a specific locale on the landscape that can be visited by the public. Although plaques and markers may not be placed in the exact location that the event has occurred, generally it is in close proximity, taking into consideration access to the public. In Ontario, historical plaques may be erected by the federal government through the Historic Sites and Monuments Board of Canada (HSMBC), the Ontario Heritage Trust (OHT), and local heritage agencies or historical societies.

The third source for the assessment was the library/archives of The Central Archaeology Group Inc. It includes an extensive inventory of published and unpublished reports on past archaeological assessments in the one kilometre study area, as well as inventories of registered and unregistered archaeological sites in the area.

The background study also examined several different sources concerning the eighteenth and nineteenth Euro-Canadian settlement of the area.

This section of the report consists of several distinct elements as defined in Section 7.5.8 of the standards and guidelines (MTC 2011:125-126). They are described below.

Registered Archaeological Sites. Archaeological research in Ontario is often limited to discoveries made during development activities. However, this does not necessarily reflect the known and unknown, yet unrecorded archaeological history of the area. Throughout the eighteenth, nineteenth and early twentieth century, as Euro-Canadian settlers the interior of the region, some would encounter and collect evidence of past First Nations activities, in the form of stone and copper tools, or organic paraphernalia. This practice continued well into the twentieth century and is still carried out to this day by cottagers, tourists, and local residents, some who have amassed significant collections. Furthermore, there are oral references to evidence of pre-contact First Nations occupation made by the first Euro-Canadian settlers to the region, which sometimes results in sites being “recreationally” excavated by non-professional archaeologists.

With increased sensitivity towards the need to preserve cultural heritage within the Province, hundreds of archaeological projects have been undertaken within Ontario. Given the long and rich history of the St. Lawrence River Valley, the surrounding region has undergone quite extensive archaeological and historical research. With increased sensitivity towards the need to preserve cultural heritage within the Province, hundreds of archaeological projects have been undertaken along the Ontario’s lakes and rivers, their tributaries, and the interior. Often initiated by development projects, including infrastructure development and improvement, subdivision applications and construction activity, First Nations and early Euro-Canadian history of the region is being revealed.

The Ontario Ministry of Tourism, Culture and Sport maintains a database of all known registered archaeological sites in the Province. A search of the database one kilometre around the study area indicates that no archaeological sites have been recorded. However, given the cultural development of the region, including the discovery of undocumented archaeological resources, there is undoubtedly a significant potential for the discovery of more archaeological resources in the region. Furthermore, given the nature of archaeological assessment work, it may take several months to a couple of years before a site is registered by an archaeologist and the information is recorded at the Ministry of Tourism, Culture and Sport.

Historical Plaques. Aside from the presence of nearby registered archaeological sites, other indicators of the presence of extant archaeological remains are the proximity of historical plaques to the study area that commemorate important events in a region’s past, whether it be the birth of an individual, the site a specific battle, or the construction of a unique building. Generally, historical plaques and markers point to a specific locale on the landscape that can be visited by the public. Although plaques and markers may not be placed in the exact location that the event has occurred, generally it is in close proximity, taking into consideration access to the public. In Ontario, historical plaques may be erected by the federal government through the Historic Sites and Monuments Board of Canada (HSMBC), the Ontario Heritage Trust (OHT), and local heritage agencies or historical societies. Although there are no historical plaques or markers within the study area, there are 11 within the City of Cornwall. A list of these plaques and markers is provided in Table 2 along with the registering body or agency and whether it represents a person, building, or event.

Table 2. Historical plaques and markers within the City of Cornwall.

Plaque Name	Location
Captain Samuel Anderson 1736-1836	Montreal Road, Cornwall
Cornwall Canal	Lock 20 in Lamoureux Park, Cornwall
Cornwall Grammar School	Sydney Street, Cornwall
District Court-House and Gaol 1833	Pitt and Water Street, Cornwall
The Founding of Cornwall	Water Street, Cornwall
The French Presence in Cornwall	Montreal Road, Cornwall
The Glengarry Fencibles	Fourth Street, Cornwall
Inverarden	Montreal Road, Cornwall
The Reverend John Strachan in Cornwall	Second Street, Cornwall
Right Reverend John Strachan 1778-1867	Second Street, Cornwall
United Empire Loyalists	Second Street East and Sydney Street

Condition of the Project Area. As stated in the environmental setting section of this report, the lands within the project area are situated within the Lancaster Flats physiographic region which is characterized by extremely flat land and relatively poor drainage; these features were exemplified in the project area. Vegetation within the project area included the following species: white cedar, paper birch, staghorn sumac, maple, common yarrow, oxeye daisy, bullrush, cattail, Canada thistle, foxtail.

During the test pit survey of the project area, poor drainage was noted throughout the property as was a number of vegetation species which may indicate past disturbance (i.e., purple loosestrife, oxeye daisy, Canada thistle, staghorn sumac, paper birch, cedar, foxtail, bottlebrush grass, etc.).

This information is being included herein to satisfy Section 7.5.8.2 of the standards and guidelines (MTCS 2011:125).

Dates of the 2013 Archaeological Fieldwork. The Stage 2 archaeological fieldwork that forms the subject of this report was conducted by a crew of two people on October 12, 2013. The weather on October 12, 2013 was cool with sunny periods and an average temperature of approximately 9°C.

This information is being included herein to satisfy Section 7.5.8.3 and 7.5.8.5 of the standards and guidelines (MTCS 2011:125).

Previous Archaeological Fieldwork. A Stage 1 archaeological assessment was conducted by Ground Truth Archaeology in 2013 entitled *Stage 1 Archaeological Assessment of the*

Proposed Extension of Nick Kane Drive, Cornwall, Ontario. This archaeological assessment found that portion of the project area retained potential for below-ground archaeological remains and recommended that a Stage 2 property survey be conducted.

The information that is presented herein is being included to satisfy Sections 7.5.8.4 and 7.5.8.5 of the standards and guidelines (MTC 2011:126).

Relevance of Previous Archaeological Fieldwork. The fieldwork and reporting on the project area is being done in a series of stages. As such, the previous fieldwork is relevant to the fieldwork that is described in this report as they all form part of a greater whole.

This statement of the relevance of the previous fieldwork is being included herein in order to satisfy Section 7.5.8.4 of the standards and guidelines (MTC 2011:126).

2.0 Field Methods

A Stage 2 property assessment was undertaken on the proposed extension of Nick Kaneb Drive in the City of Cornwall in accordance with the recommendations forwarded in the *Stage 1 Assessment of the Proposed Extension of Nick Kaneb Drive, Cornwall, Ontario*. This study stated:

“The subject property has moderate to high potential for the presence of archaeological resources. A Stage 2 archaeological assessment is required for the subject property prior to ground disturbance.”

and

“As the subject property is either treed or semi-developed (street and railway right-of-way) and is not suitable for ploughing the appropriate approach for the Stage 2 assessment is a test pit survey at 5m intervals.”

As a result of the above recommendations, the Stage 2 property survey was undertaken by The Central Archaeology Group Inc. for GENIVAR on behalf of the City of Cornwall on October 12, 2013.

Section 2.1 of the *Standards and Guidelines for Consultant Archaeologists* (2011:28-30), states that the entire property, including lands immediately adjacent to built structures (both intact and ruins), must be surveyed. However, it is further stated that survey is not required where:

- 1) lands are evaluated as having no or low potential based on the Stage 2 identification of physical features of no or low archaeological potential, including but not limited to: permanently wet areas; exposed bedrock; and, steep slopes (>20°) except in locations likely to contain pictographs or petroglyphs;
- 2) land are evaluated as having no or low potential based on the Stage 2 identification of extensive and deep land alteration that has severely damaged the integrity of archaeological resources;
- 3) lands have been recommended to not require Stage 2 assessment by a Stage 1 report, where the Ministry has accepted the Stage 1 report into the Ontario Public Register of Archaeological Reports;
- 4) lands are designated for forest management activity without potential for impacts to archaeological sites, as determined through the Stage 1 forest management plans process (see section 1.4.3);
- 5) lands are formally prohibited from alteration such as areas in an environment easement, restrictive setback, or prohibitive zoning, where the constraint prohibits any form of soil disturbance. (Open space and other designations where allowable uses include land alterations must be surveyed.); and,

- 6) it has been confirmed that the lands are being transferred to a public land-holding body, e.g., municipality, conservation authority, provincial agency. (This does not apply to lands which a future transfer is contemplated but not yet confirmed.)

Furthermore, if the project area has been identified as needing a property survey, the survey should be undertaken when the weather and lighting conditions permit good visibility of land features. Survey should *not* take place when weather and lighting conditions (e.g., snow cover, frozen ground, heavy fog) reduce the chance of finding evidence of archaeological resources. During survey a Global Positioning System (GPS) should be used to record the locations of all diagnostic artifacts; sufficient artifacts to provide an estimate of the limits of the archaeological site; and all fixed reference landmarks. All field activities must be mapped in reference to fixed landmarks, survey stakes and development markers and all mapping must be accurate to five metres or to the best scale available. Photo-document examples of all field conditions encountered. Do not use heavy machinery to remove soil, except when removing sterile or recent fill covering areas where it has been determined that there is the potential for deeply buried or sealed archaeological sites (e.g., in urban areas, floodplains).

The Stage 1 archaeological background study has been accepted into the Public Register of Archaeological Reports. This study found that the portions of the study area, as delineated on Map 2, retained archaeological potential. It was these areas that were recommended for further assessment.

In addition to the above, Section 7.8.1.2 further posits that detailed and explicit descriptions be provided for:

- a. How each standard was addressed for property survey generally (Section 2.1, MTCS 2011:28-30).

Portions of the project area, as delineated on Map 2, were subjected to a Stage 2 test-pit survey (Map 3). Test pits were placed at five metre intervals across the recommended area. The Central Archaeology Group Inc. field crew (two people) test pitted the recommended area in this manner.

Survey took place under suitable lighting conditions; there was no snow cover, heavy fog or excessive precipitation. GPS co-ordinates taken on a Trimble GeoXH handheld GPS unit with Hurricane Antenna (using datum NAD 1983).

Field activities were mapped with the Trimble GeoXH handheld GPS unit, which after post-processing, provided accuracy of co-ordinates of less than 100 cm deviation. Photographs were taken of field conditions (Map 4; Photos 1 to 12) and a discussion of these can be found within the *Results* sub-section of this section of the report (Table 5). Heavy machinery was not utilized by The Central Archaeology Group Inc. for this project.

- b. How each standard was addressed for pedestrian survey and test pit survey (Section 2.1.1, MTCS 2011:30-31).

All land subjected to a Stage 2 property survey was treed or semi-developed (street and railway right-of-way) and therefore, not suitable for ploughing. As a result, a test pit survey

was conducted by The Central Archaeology Group Inc. Test pits were placed at intervals of five metres. If archaeological resources were found, test pits would be placed at each cardinal direction (N, NE, E, SE, S, SW, W, NW), for a total of eight additional test pits. In those areas where test pitting was not possible (i.e., low-lying and wet), a visual assessment was undertaken after sporadic test-pitting confirmed the wet nature of the soils. Crew members surveyed these areas at five metre intervals. No cultural materials were encountered.

c. Address any differences in approach for areas possessing different conditions.

The approach discussed above was undertaken for the entire project area.

d. How each standard was addressed where alternative methods acceptable through guidelines of special conditions were used.

No alternative methods were applied during the Stage 2 property assessment.

Finally, Section 7.8.1.3 (MTCS 2011:137) requests estimates of the percentage of each of the following be provided:

a. The property surveyed, by coverage and survey interval.

Of the entire project area, 65%, was either treed, comprised of drainage ditches or overgrown and subjected to a test-pit survey at five metre intervals. Approximately 25% of the recommended area was comprised of a low-lying wetland and after sporadic test pits confirmed the wet nature of the soils, it was visually surveyed and the limits delineated on a map. As no cultural materials were recovered from these sections, intensification of test-pits was not implemented.

b. The property not surveyed because there were areas of no or low archaeological potential.

Approximately 10% of the project area was not recommended for a Stage 2 assessment.

c. The property where standard survey intervals could not be maintained due to pockets of exposed bedrock or other physical constraints.

Not applicable.

2.1 Results

The project area was assessed by way of test pit survey at five metre intervals as well as a visual assessment of the entire project area and outlying properties (Map 4). As outlined in section 2.1.2, test pit survey involves systematically walking the property along regularly spaced transects, excavating small pits by hand at regular intervals and examining their contents (MTCS 2011:31). Test pit survey was only undertaken on land as outlined by the Ministry of Tourism, Culture and Sport in section 2.1.2; the area was wooded with secondary growth. Test pits were spaced at intervals of five metres and were at least 30 cm in diameter. Every test pit was excavated by hand into the first five cm of subsoil and the pit was examined for stratigraphy, cultural features, or evidence of fill. Excavated soil was placed in hand screens and then sifted through six mm wire mesh. All test pits were backfilled. If archaeological resources were found, eight (8) additional test pits would be excavated 2.5 metres around the positive test pit and one or more one metre square unit would be excavated with at least one unit over the positive test pit (MTCS 2011:33).

The project area was accessed via a hydro corridor (between Marleau Avenue and Tenth Street East), Marleau Avenue, Tenth Street East and Virginia Drive.

Soil colours were identified using *Munsell Soil-Color Charts* (2009) to ensure uniformity in recording. Colours were noted when soils were freshly excavated and slightly damp. Although compaction was based on a slightly modified version of the clay and sand density tests provided on the Geotechnical Gauge by W. F. McCollough. Where the clay density test by W. F. McCollough identified six clay consistencies, only three consistency classifications for clay were used during the course of investigations, which included: loosely compacted, moderately compacted, and densely compacted. A comparison of the two methods is provided in Table 5. With sand, the Geotechnical Gauge by W. F. McCollough provided five soil types and the associated field test, whereas this was reduced to three categories for the purposes of this study as well, which included loosely compacted, moderately compacted, and densely compacted. A comparison of the two methods is provided in Table 6.

Table 3. Comparison of W. F. McCollough and CAGI clay compaction classification.

W. F. McCollough		CAGI
Clay Consistency	Thumb Penetration	CAGI Classification
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	LOOSELY COMPACTED
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	

W. F. McCollough		CAGI
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	MODERATELY COMPACTED
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	
VERY STIFF	Readily indented by thumbnail.	DENSELY COMPACTED
HARD	Indented with difficulty by thumbnail.	

Table 6. Comparison of W. F. McCollough and CAGI sand compaction classification.

W. F. McCollough		CAGI
Sand Consistency	Field Test	CAGI Classification
VERY LOOSE SAND	Easily penetrated with 1/2" reinforcing rod pushed by hand.	LOOSELY COMPACTED
LOOSE SAND	Easily penetrated with 1/2" reinforcing rod pushed by hand.	
MEDIUM DENSE SAND	Penetrated a foot with 1/2" reinforcing rod driven with 5-lb. hammer.	MODERATELY COMPACTED
DENSE SAND	Penetrated a foot with 1/2" reinforcing rod driven with 5-lb. hammer.	DENSELY COMPACTED
VERY DENSE SAND	Penetrated only a few inches with 1/2" reinforcing rod driven with 5-lb. hammer.	

The frequency of roots and stones within a soil horizon was divided into: a) small or low percentage; b) medium or moderate percentage, and; C) high or heavy percentage. This system of classification is based on the inclusions frequency chart within the Geotechnical

Gauge by W. F. McCollough, where a 3% to 15% frequency of roots and stones within the soil horizon was determined to be small or low; 15% to 40% was determined to be medium or moderate, and; 40% and above was considered high or heavy.

Stratigraphy, in general, was typically comprised of an O horizon (humus) of between 5 to 11 cm in thickness. It was a loose to moderately compacted and was comprised of a small to high percentage of small- to medium-sized pebbles, a small to high percentage of roots and rootlets and was either a silty sand texture (in the north) or a silty texture (in the south). Colours noted were: brown (7.5YR 4/4; 7.5YR 5/3; 7.5YR 5/4).

Below the O horizon was the topsoil (A horizon). This level was between 16 to 32 cm in thickness and consisted of a moderately compacted silty sand (south portion) to silty clay (north portion). Also recorded was a low to medium percentage of small- to medium-sized pebbles and a low to high percentage of roots and rootlets. The only colour recorded was strong brown (7.5YR 4/6; 7.5YR 5/8).

The subsoil (B horizon) was comprised of a moderate to densely compacted strong brown (7.5YR 5/8). This was intermixed with a low to high percentage of small-sized pebbles and a low to medium percentage of roots and rootlets. In some test pits, ground water was encountered (in the area near the low-lying wetland). Each test pit was excavated at least 5 cm into the subsoil.

Map 4 shows the location of the points from which the photographs were taken. A description of each photograph is provided in the table below (Table 7).

Table 7. Photo # and description.

Photo #	Description
1	Viewing south along the southern portion of the proposed extension. To the left is the hydro corridor and to the right is the low-lying and wet area.
2	Viewing north along the southern portion of the proposed extension. To the left is the low-lying and wet area and to the right is the hydro corridor.
3	Viewing northwest across Virginia Drive towards the R.R.C.A. Storm Water Retention Pond.
4	Viewing west from Tenth Avenue East towards a storm drain. This area was disturbed due to construction of the road right-of-way.
5	Viewing south towards Tenth Avenue East at a fire hydrant. This area was disturbed due to construction of the road right-of-way.
6	Viewing west along Tenth Avenue East. This area was disturbed due to construction of the road right-of-way.
7	Viewing north towards the R.R.C.A. Storm Water Retention Pond from the east side of Virginia Drive.

Photo #	Description
8	Viewing west from within a treed area to the north of Tenth Avenue East. This area was disturbed due to construction of the road right-of-way.
9	Viewing west along the CN rail line. Note the slope to the left of the railway.
10	Test-pitting along Tenth Avenue East. This area was not disturbed. No cultural materials were recovered.
11	Test pit from just north of Marleau Avenue. The stratigraphy of soils in this area was comprised of a thin (5 to 11 cm thick) level of sod/humus. It was silty in texture and brown (7.5YR 4/4) in colour. There was a high percentage of rootlets and a medium percentage of small pebbles. The A horizon consisted of a strong brown (7.5YR 4/6) silty clay with a medium percentage of rootlets and a medium percentage of small to medium pebbles. This level was 23 cm thick. The subsoil was comprised of a strong brown (7.5YR 5/8) silty clay with a low percentage of rootlets and a low percentage of small pebbles. It was densely compacted.
12	Test pit from just south of Marleau Avenue. The stratigraphy consisted of a 8 cm thick level of sod/humus. It was silty in texture and brown (7.5YR 4/4) in colour. There was a high percentage of rootlets and a low percentage of small pebbles. The A horizon consisted of a strong brown (7.5YR 4/6) silty sand with a medium percentage of rootlets and a medium percentage of small to medium pebbles. This level was 19 cm thick. The subsoil was comprised of a strong brown (7.5YR 5/8) silty clay with a low percentage of rootlets and a low percentage of small pebbles. It was densely compacted.

3.0 Record of Finds

Section 7.8.2, *Record of Finds*, of the *Standards and Guidelines for Consultant Archaeologists* (2011:137-138), formulated by the Ontario Ministry of Tourism, Culture and Sport requires that this section contain all finds but for non-archaeological cultural heritage features (i.e., built heritage, cultural heritage landscapes) unless those features are part of or relevant to the archaeological record (MTCS 2011:137).

The Stage 2 property survey of the proposed extension of the Nick Kane Drive project area did not recover any archaeological materials. In consequence, the requirements of Section 7.8.2 of the archaeological standards and guidelines do not apply to this report. Nevertheless, an inventory of the documentary record generated in the field is provided below (Table 6). Representative photographs and their locations indicated on maps are provided in Sections 10.0 and 11.0.

The documentation related to this project will be held by The Central Archaeology Group Inc. in their lab and office facilities in L'Amable, Ontario. Curation will continue until such a time that arrangements for their transfer to Her Majesty the Queen in right of Ontario, or other public institution, can be made to the satisfaction of the project owner (s), the MTCS, and any other legitimate interest group.

Table 6. Inventory of the documentary record.

Type	Location	Comments
Photographs - 21	The Central Archaeology Group Inc. office at 95A Detlor Road, L'Amable, ON K0L 2L0	Stored on CAGI computers, Project iPad and on CD
Field Notes - 1 page	The Central Archaeology Group Inc. office at 95A Detlor Road, L'Amable, ON K0L 2L0	Hard copy within project files. Digital copy on CAGI computers and Project iPad
GPS Data	The Central Archaeology Group Inc. office at 95A Detlor Road, L'Amable, ON K0L 2L0	N/A
Voice Notes - 78 m 42 s	The Central Archaeology Group Inc. office at 95A Detlor Road, L'Amable, ON K0L 2L0	N/A
Maps - 1 page	The Central Archaeology Group Inc. office at 95A Detlor Road, L'Amable, ON K0L 2L0	Stored on CAGI computers and on CD
Research and Reporting Materials	The Central Archaeology Group Inc. office at 95A Detlor Road, L'Amable, ON K0L 2L0	Hard copy within project files and digitally on computers and CD
Artifacts	N/A	N/A

4.0 Analysis and Conclusions

The standard specified within Section 7.7.3 of the *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011:138) requires that this section address the following statement: Summarize all findings from the Stage 2 survey, or state that no archaeological sites were identified.” The information presented below is intended to satisfy this standard.

As stated in the development context section of this report, a property survey was carried out on October 12, 2013 on the proposed extension of Nick Kaneb Drive project area. No archaeological remains were recovered during the Stage 2 assessment.

Further to the above, the standard that is articulated in Section 7.8.3.2b of the standards and guidelines (MTCS 2011:139) requires that this section of the report include a comparison against the criteria in Stage 2 Property Assessment to determine whether further assessment is required. Those elements of the standard are addressed below.

The standard that is specified in Section 7.8.1.2a of the standards and guidelines (MTCS 2011:137) requires that this section of the Stage 2 report provide detailed and explicit descriptions of how each standard was address for property survey. The standard that is articulated in Section 2.1.1 of the standards and guidelines (MTCS 2011:28) requires that the entire property be included in the survey. The present survey covered 100% of the recommended project area. Accordingly, the survey satisfies this standard.

The standard that is articulated in Section 2.1.3 of the standards and guidelines (MTCS 2011:29) requires that the property be surveyed when weather and lighting conditions permit good visibility of land features. The weather and lighting conditions that pertained during the assessment that is described within this report satisfies this standard. The standard that is articulated in Section 2.1.5 of the standards and guidelines (MTCS 2011:29) requires that assessment reports map all field activities (e.g., extent and location of field methods, survey intervals) in reference to fixed landmarks, survey stakes and development markers. The standard also requires that mapping must be accurate to a five metre scale or to the best scale available. The mapping in this report satisfies this standard.

As no archaeological resources were encountered during the Stage 2 property survey of the proposed extension of Nick Kaneb Drive project area, the archaeological assessment process as outlined by the Ministry of Tourism, Culture and Sport may be considered complete. It is therefore recommended that development be allowed to proceed within the project area.

5.0 Recommendations

Under the *Ontario Heritage Act* (R.S.O. 1990), it is a requirement of archaeological consulting licenses that consultants prepare and submit assessment reports to the Ontario Ministry of Tourism, Culture and Sport. Archaeological Review Officers of the Ministry then review each report to ensure that the assessment and the report satisfy consulting licence requirements under the Act and other pertinent legislation, and that they conform to current archaeological standards and guidelines. If the report and the assessment do so conform, the pertinent Archaeological Review Officer then issues a letter confirming that and accepting the report into the Provincial registry of archaeological reports.

The Central Archaeology Group Inc. (CAGI) was retained by GENIVAR to undertake a Stage 2 Property Survey on the proposed extension of Nick Kaneb Drive project area in Cornwall, Ontario. Our work was conducted under the provisions of the *Environmental Assessment Act*. The purpose of the work was to determine if there are significant heritage resources within the subject lands that may be impacted by the proposed development.

Permission to access the area and to carry out the activities necessary for the completion of the Stage 2 archaeological assessment was granted by Chris Miller, GENIVAR. Based on the results of the archaeological assessment, the following recommendations are provided for consideration to the Ontario Ministry of Tourism, Culture and Sport and the County of Peterborough, and are subject to approval by the Ontario Ministry of Tourism, Culture and Sport:

- 1) The Stage 2 archaeological assessment did not recover any material culture during excavation activities. Consequently, significant pre-contact and historic First Nations or historic Euro-Canadian archaeological sites are unlikely to be found in any undisturbed ground within the project area. Therefore, there are no significant archaeological concerns associated with the remainder of this project and it is recommended that the development area be cleared of archaeological concerns.
- 2) Notwithstanding the results and recommendations presented in this study, The Central Archaeology Group Inc. notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. Therefore, in the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the Ministry of Tourism, Culture and Sport should be immediately notified.

6.0 Advice on Compliance with Legislation

This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, C. 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regards to alterations to archaeological sites by the proposed development.

It is an offense under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Report referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 C. 4 and the *Funeral, Burial and Cremation services Act*, 2002, S.O. 2002, C. 33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

7.0 Bibliography and Sources

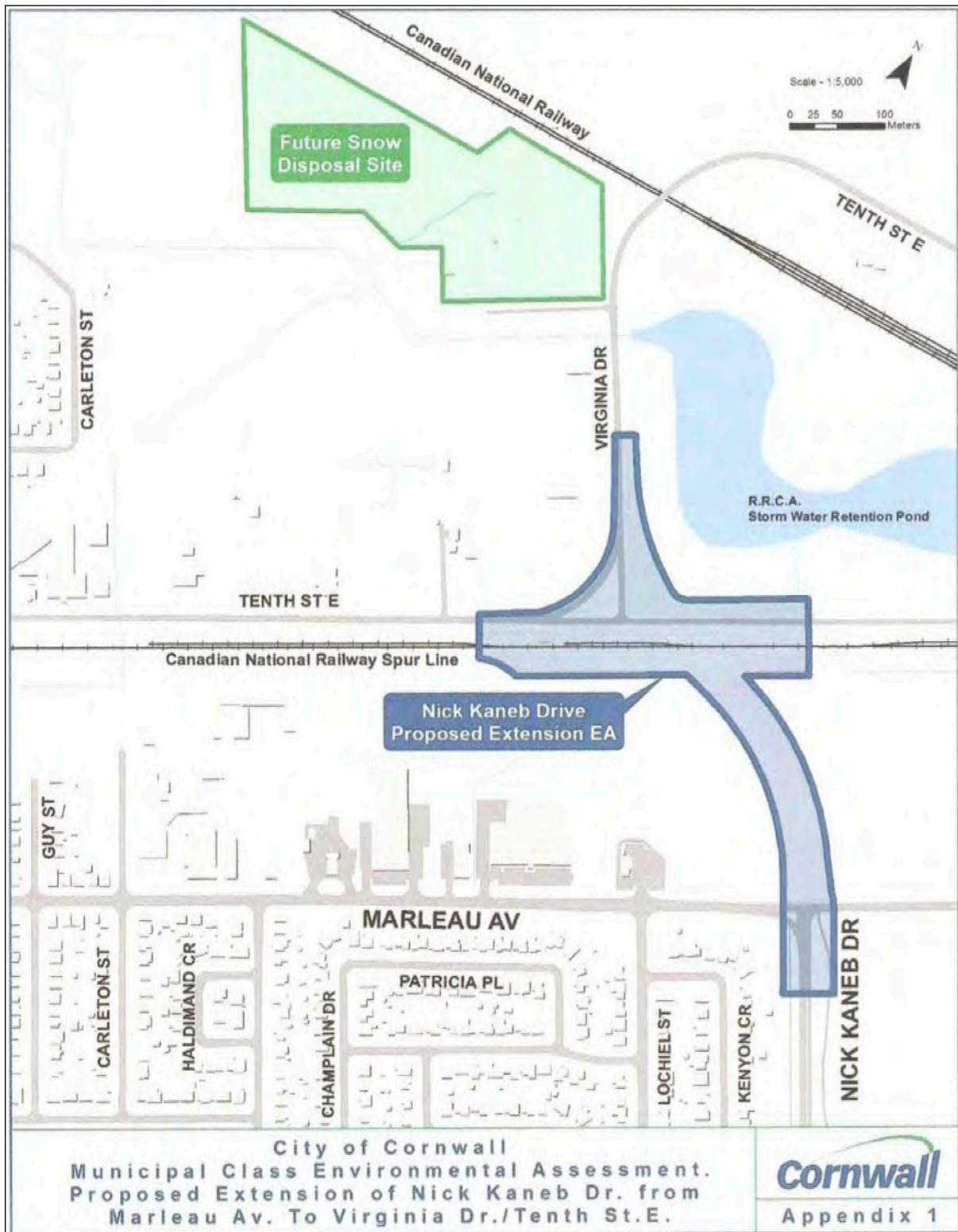
- Adovasio, James and Jake Page
2003 *The First Americans: In Pursuit of Archaeology's Greatest Mystery*. Random House, New York.
- Belden, H.
1879 *Illustrated Historical Atlas of the Counties of Prescott and Russell, Stormont, Dundas, and Glengarry Counties*. H. Belden and Co., Toronto.
- Brown, Lauren
1979 *Grasses: An Identification Guide*. Houghton Mifflin Company, Boston.
- Chapman, L.J. and D.F. Putnam
1973 *The Physiography of Southern Ontario*. Second Edition. University of Toronto Press, Toronto.
- Dean, William
1994 The Ontario Landscape, *circa* A.D. 1600. In *Aboriginal Ontario*, edited by Edward S. Rogers and Donald B. Smith, pp. 3-20. Ontario Historical Studies Series, Government of Ontario, Dundurn Press, Toronto.
- Edwards, F.B.
1984 *The Smiling Wilderness: An Illustrated History of Lennox and Addington County*. Camden House Publishing, Camden East.
- Government of Ontario
1990 *The Environmental Assessment Act, R.S.O. 1980*. Queen's Printer, Toronto.
1990 *The Heritage Act, R.S.O. 1990*. Queen's Printer, Toronto.
- Harkness, John Graham
1946 *Stormont, Dundas, and Glengarry: A History*. Mutual Press Limited, Ottawa.
- Karrow, P.F.
1961 The Champlain Sea and Its Sediments. In *Soils in Canada: Geological, Pedological, and Engineering Studies*, edited by Robert F. Legget, pp. 97-108. The Royal Society of Canada, Special Publications No. 3. University of Toronto Press, Toronto.
- Kershaw, Linda
2001 *Trees of Ontario*. Lone Pine Publishing, Edmonton.
2002 *Wildflowers of Ontario*. Lone Pine Publishing, Edmonton.
- Konrad, V.
1981 An Iroquois Frontier: The North Shore of Lake Ontario During the Late 17th Century. *Journal of Historical Geography* 8:129-144.

- Kyte Senior, Eleanor
1983 *From Royal Township to Industrial City: Cornwall, 1784-1984*. Mika Publishing Company, Belleville.
- Leahey, A.
1961 The Soils of Canada from a Pedological Viewpoint. In *Soils in Canada: Geological, Pedological, and Engineering Studies*, edited by Robert F. Legget, pp. 147-157. The Royal Society of Canada, Special Publications No. 3. University of Toronto Press, Toronto.
- Marin, Clive and Francis Marin
1982 *Stormont, Dundas and Glengarry, 1945 to 1978*. Mika Publishing Company, Belleville.
- Mason, Lyall
1975 "Stormont", from *Stormont, Dundas and Glengarry: lectures delivered in the discover Canadiana series*. Stormont, Dundas and Glengarry Historical Society, Cornwall.
- Mason, Ronald J.
1981 *Great Lakes Archaeology*. Academic Press, New York.
- Matthews, B.C. and N.R. Richards
1954 *Soil Suvey of Stormont County*. Report No. 20 of the Ontario Soil Survey. Experimental Farms Service, Dominion Department of Agriculture and the Ontario Agricultural College. Ontario Agricultural College, Guelph.
- Payne, Michael
2006 *Loyalists, Pioneers and Settlers of the West*. Online resource, <http://www.uelac.org/education/WesternResource/Western-Resource.php>, accessed October 2011.
- Reynolds, T.
1856 Discovery of Copper and Other Indian Sites near Brockville. *The Canadian Journal*, N.S. 64:265-287.
- Senior, Elinor Kyle
1983 *From Royal Township to Industrial City, Cornwall, 1784-1984*. Mika Publishing Company, Belleville.
- Spence, Michael W., Robert H. Pihl, and Carl R. Murphy
1990 Cultural Complexes of the Early and Middle Woodland Period. In *The Archaeology of Southern Ontario to A.D. 1650*, edited by Christopher Ellis and Neal Ferris, pp. 125-170. Occasional Publications of the London Chapter of the Ontario Archaeological Society, London.
- Trigger, Bruce
1976 *The Children of Aataensic: A History of the Huron People of 1660*. McGill-Queen's University Press, Montreal.

Wright, J.V.

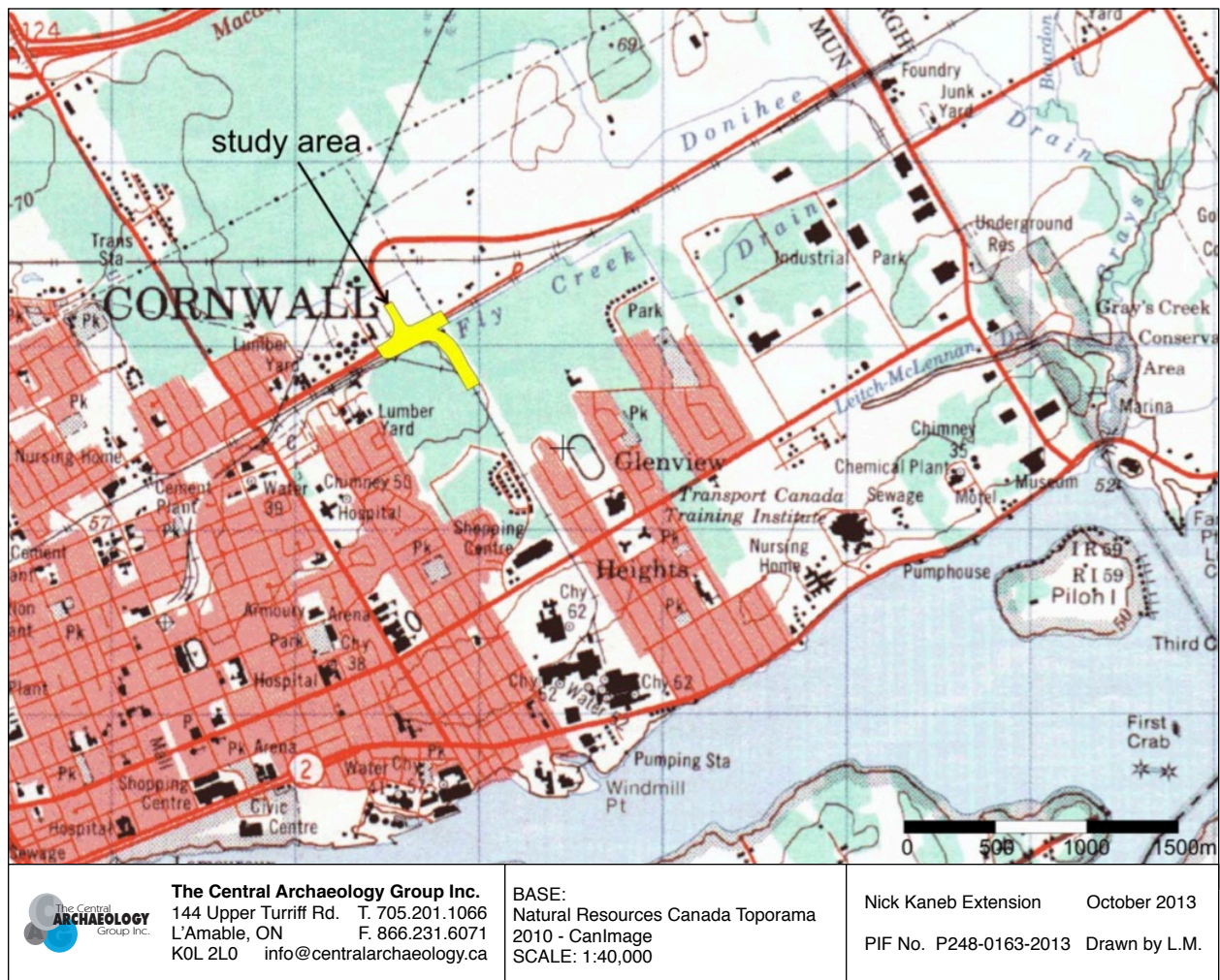
2004 *A History of the Native People of Canada: Volume 1 (10,000-1,000 BC)*. Canadian Museum of Civilization, Gatineau.

8.0 Plans



Plan 1. Development plan (courtesy of GENIVAR).

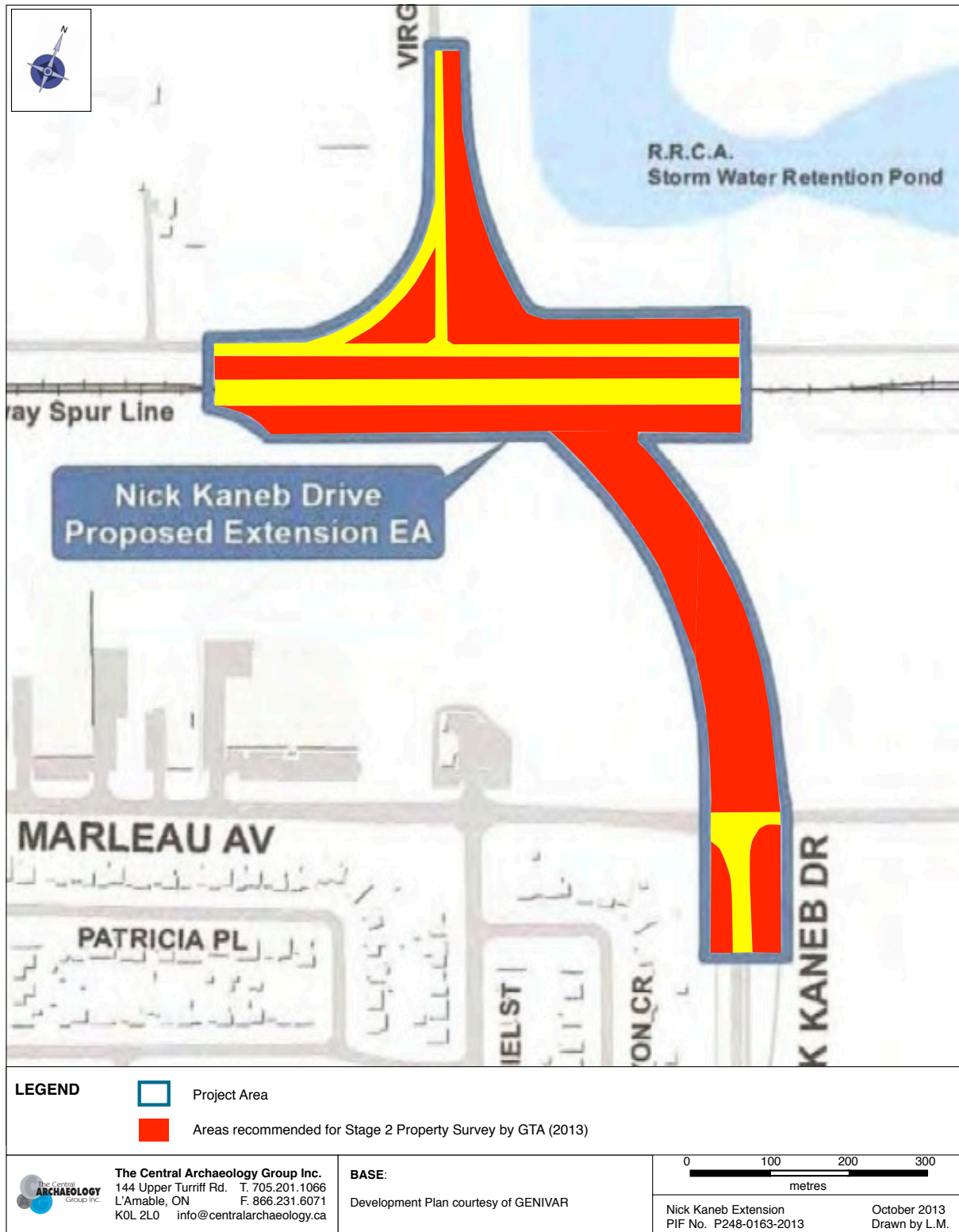
9.0 Maps



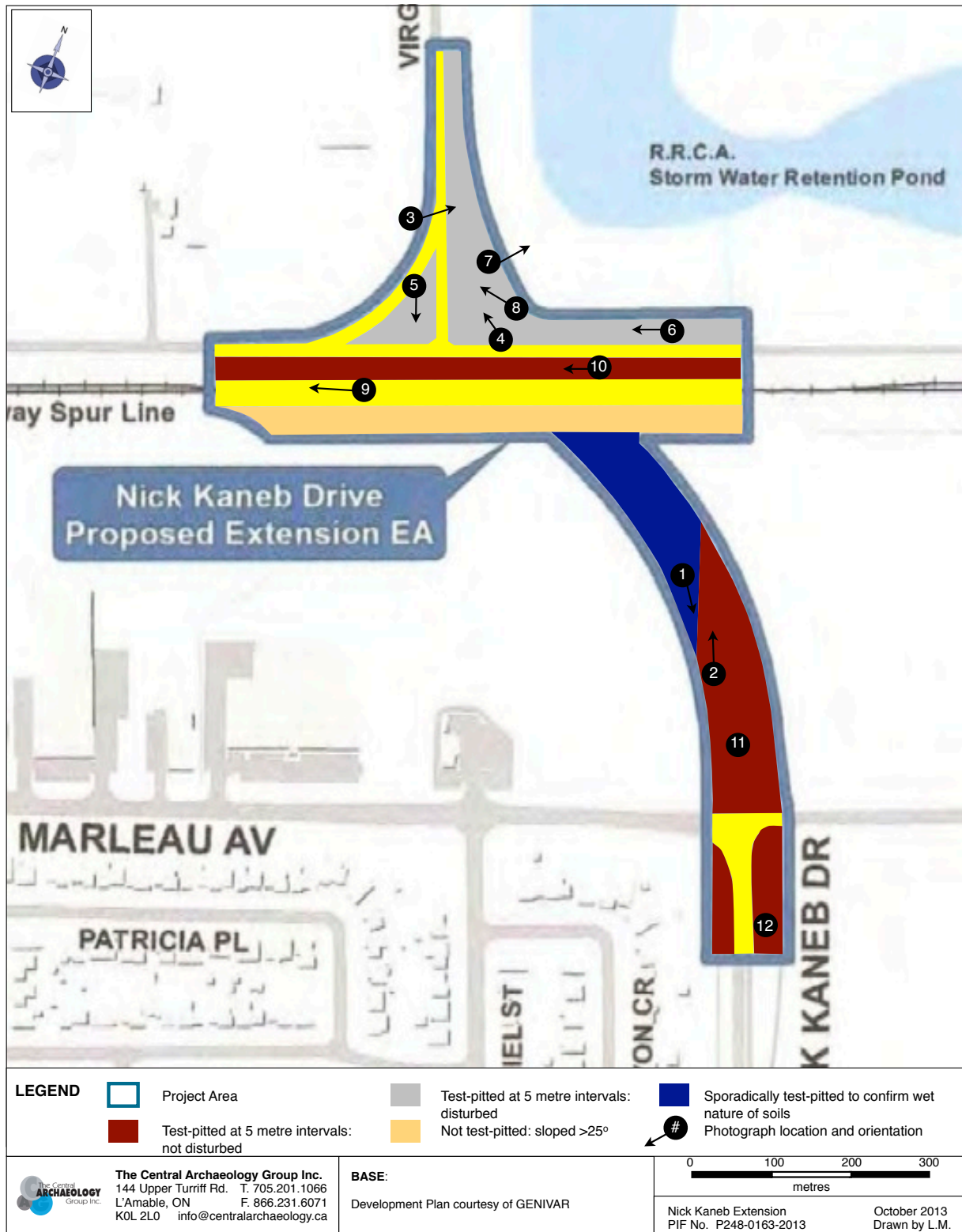
Map 1. Location of the project area.



Map 2. Area with moderate to high archaeological potential, requiring Stage 2 test pit survey (GTA 2013:19)



Map 3. Stage 2 property survey area on development plan.



Map 4. Results of the Stage 2 property survey.

10.0 Images

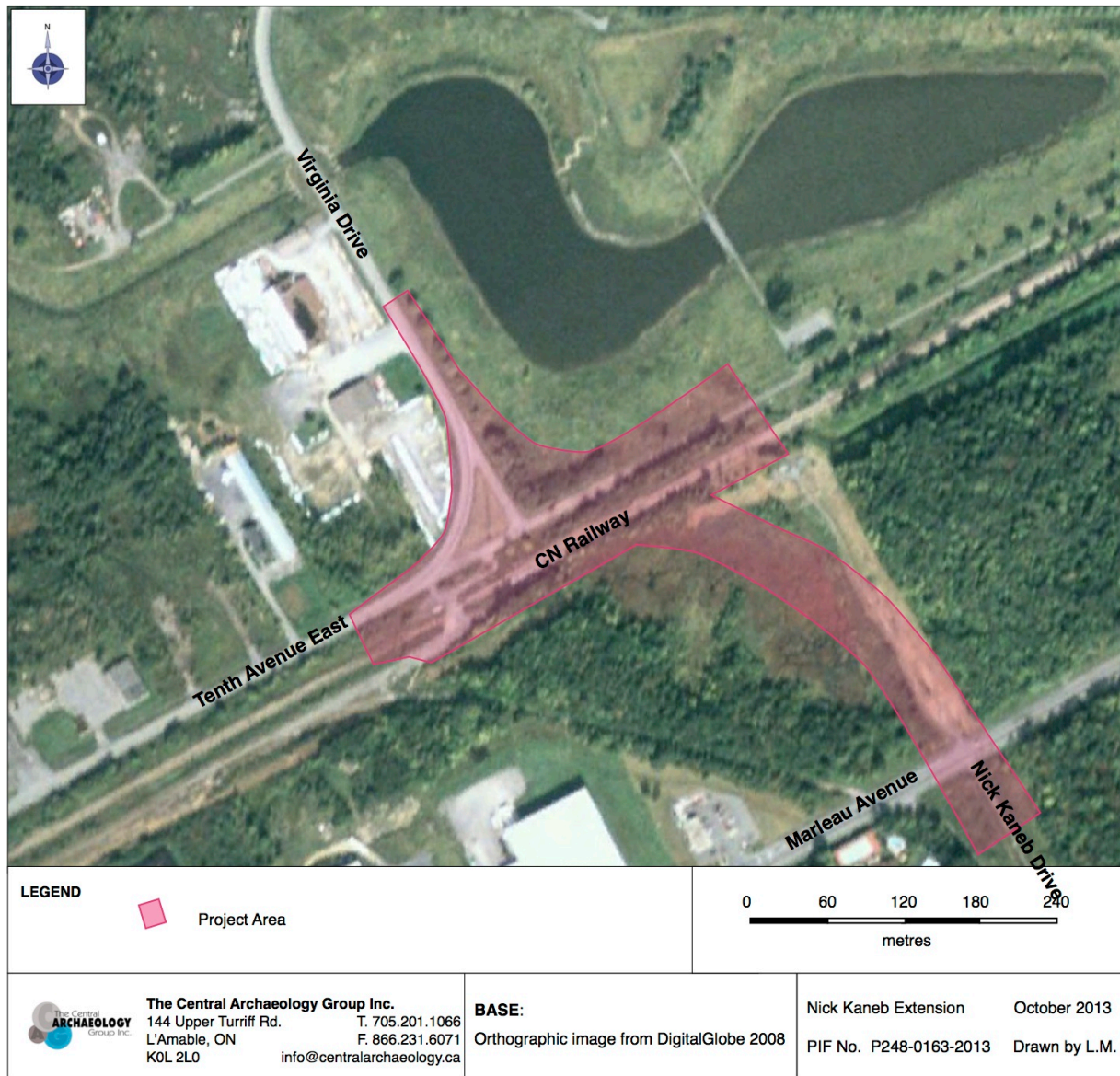


Image 1. Orthographic image (Google Earth 2008).

11.0 Photographs













12.0 Glossary of Terms

A Horizon - mineral horizon at or near the ground surface. May be dark brown due to accumulated humus (Ah) or grey or lighter brown when clay, iron and humus have been leached out (Ae). It is most commonly disturbed by human activities.

Archaeology - is the scientific study of the physical evidence of past human societies recovered through excavation.

Archaeological Site - is a place in which physical evidence of past human activity is preserved and which has been, or may be, investigated using the discipline of archaeology.

Archaic Period - in Ontario is characterized by the appearance of ground stone tools, notched or stemmed projectile points, the predominance of less extensively flaked stone tools, increased reliance on local chert resources, a lack of pottery and smoking pipes, and an increase in the numbers and sizes of sites.

Atlatl - a tool used to throw spears faster and with more accuracy. It consists of a short pole with a handle at one end and a hook for engaging the spear in the other.

B Horizon - below the A Horizon. It could be enriched with iron (Bf), with iron and organic matter (Bhf), with organic matter (Bh) or with clay (Bt). If saturated for extended periods, B horizons show signs of gleying or mottling (Bfg, Btg, Bg).

Bioturbation - results in changes to the nature, form, and arrangement of archaeological deposits and sediments as a result of biological activity in the ground. This includes root action, animal activity, and the degeneration of organic matter.

BP - Before Present. Years before present (1950), used in dating sites and/or artifacts from an archaeological site.

Borden Number - a borden number is an identifier given to an archaeological site in Canada. It was created by Charles E. Borden and contains four letters and one to several numbers.

Burial Goods or Burial Paraphernalia - items interred with an individual (or group) burial that may give clues to their social and/or economic and/or political position within their culture.

Chert - is a fine-grained, sedimentary rock, similar to flint. In antiquity, chert was one of the universally preferred materials for making stone tools.

Contact Period - refers to the period when European and First Nations peoples were first exposed to one another. In Ontario from 450 BP to 200 BP.

Cultural Resources - are sites, structures, landscapes, and objects of particular importance to a culture or community.

Diagnostic - a distinguishing characteristic serving to identify or determine the artifact.

Disarticulated - this occurs when bones are found separated at the joints.

Disturbed - refers to a study area that has recently been excavated or altered.

Ecozone - classification system that defines different parts of the environment with similar geography, vegetation, animals, climate, topography and water sources.

Environmental Assessment Act - sets up a process for reviewing the environmental impact of proposed activities prior to the granting of government funds.

Erratic - large rock or boulder that differs from the surrounding rock and is believed to have been transported a long distance as a result of glacial action.

Excavation - is the systematic digging and recording of an archaeological site.

Flake - is a fragment of stone removed from a core or from another flake.

Feature - is a collection of one or more contexts representing some human activity that has a vertical characteristic to it in relation to site stratigraphy.

Fluted - grooved or channeled. A fluted point is a projectile point which has had one or more long thinning flakes removed from the base along one or both faces.

Glaciofluvial - sediments laid down by glacial meltwater action (i.e., rivers or streams).

Ground Stone - is a stone artifact shaped by sawing, grinding, and/or polishing with abrasive materials.

Historic Period - the period when written records become available.

Holocene - the most recent period. Began approximately 10,000 years ago following the end of the Pleistocene.

Knap - to shape a piece of stone material by striking it at specific angles. Term used by archaeologists to denote the manufacture of a lithic tool.

Lanceolate - lance-shaped, much longer than wide, widened at or above the base and opening to the apex.

Lithic - stone, or made of stone.

Maize - also known as corn, is a cereal grain that was first domesticated in Mesoamerica and then spread throughout the American continents.

Mitigation - measures undertaken to limit the adverse impact of construction methods on archaeological sites or cultural resources.

Ochre - used as a natural pigment, colour is commonly reddish-brown to yellow.

Ontario Heritage Act - allows municipalities and the provincial government to designate individual properties and districts in Ontario as being of cultural heritage value or interest.

Palaeoamerican Period - first evidence of human occupation in Ontario. This period is characterized by groups hunting large game and seasonal occupation along shore environments.

Pleistocene - an epoch within the Quaternary Period which began approximately 2,000,000 millions years ago and ended approximately 10,000 years ago. Immediately preceded the Holocene Period.

Projectile Point - is an artifact used to tip an arrow, atlatl dart, spear, or harpoon. Usually made of chipped or ground stone, however, some are also made of copper.

Stage 1 Background Study - The purpose of a Stage 1 assessment is to investigate the cultural land use, archaeological history, and the present conditions of a property. The majority of the Stage 1 process is conducted in the office and involves the examination of records such as historic settlement maps, land titles, and documents, historical land use and ownership records, primary and secondary documentary sources, and the Ministry of Culture's archaeological site database. The study may also involve interviews with individuals who can provide information about the property and consultation with local First Nations communities. The background study is followed by a property inspection to examine geography, topography and current conditions, and to determine the potential for archaeological resources. Stage 1 background research is usually completed in conjunction with a Stage 2 property survey.

Stage 2 Property Survey - A Stage 2 property survey is undertaken if the Stage 1 background study finds that a property retains archaeological potential. It involves the documentation of archaeological resources by collecting artifacts and mapping cultural features. Depending on the nature of the property environment, two methods are employed in the survey: 1) pedestrian survey on cultivable properties, and; 2) test-pit survey on properties not cultivable due to tree growth, rock content, etc.

Strata - are layers of rock, soil, cultural material, etc. with internally consistent characteristics that distinguish contiguous.

Stratigraphy - the layering of deposits on archaeological sites. Cultural remains and natural sediments become buried over time, forming strata.

Subsistence - obtaining food and shelter necessary to support life.

Survey - is used to accurately determine the terrestrial or three-dimensional space position of points and the distances and angles between them.

Woodland Period - is a period of time following the Archaic Period. It is sub-divided into Early, Middle, and Late.

Appendix E

Noise Analysis Memorandum

Date: November 18, 2013

To: Daniel Riendeau,

Copies: Chris Miller, GENIVAR; Angelo Renon, P. Eng., GENIVAR

From: Bhuwan Prasad, P. Eng., GENIVAR

Project: Nick Kaneb Drive Extension

Project No.: 121-26609-00

Subject: Nick Kaneb Drive/ Tenth Drive Intersection – Noise Analysis

Introduction

The purpose of this memo is to provide an opinion whether or not any noise mitigation measures, in terms of an acoustic barrier wall, will be required with the implementation of a recommended conventional T-intersection with projected traffic at the intersection of Tenth Street, Virginia Drive and the future Nick Kaneb Drive extension (between Marleau Avenue and Tenth Street) as shown on **Figure 1** below.

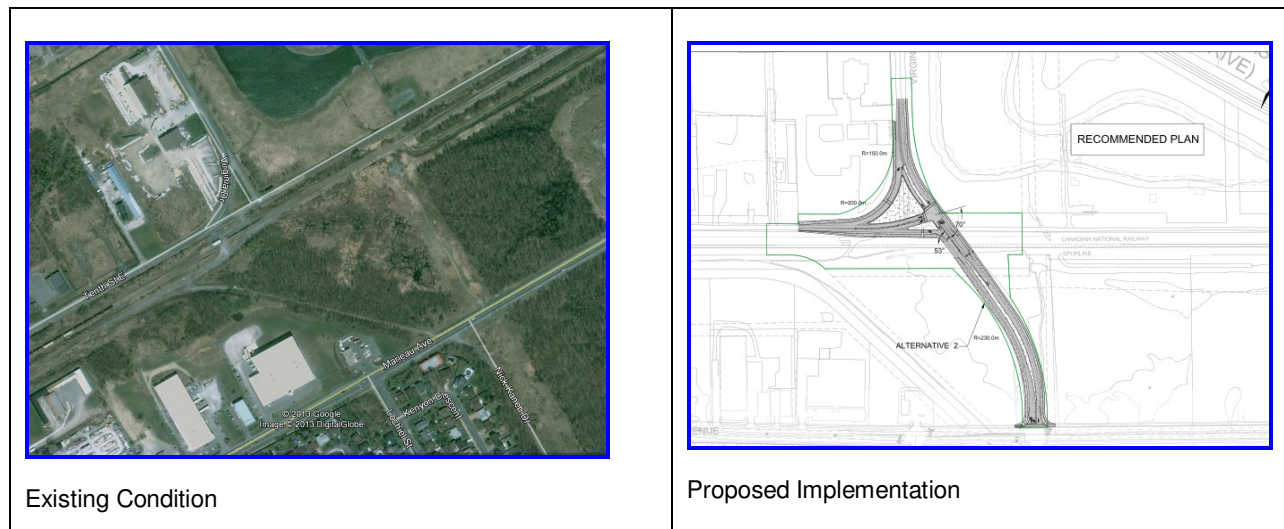


Figure 1 Existing Condition and Proposed Implementation at Nick Kaneb Drive/ Tenth Drive Intersection

Applicable Transportation Noise Guidelines

The Ontario provincial policies & guidelines from the Ministry of Transportation (MTO) and the Ministry of the Environment (MOE) which are applicable under the Environmental Assessment (EA) process for transportation projects are as follows:

- Ontario MTO Provincial Highways Directive A-1 (QST A-1) – Noise Policy and Acoustical Standards for Provincial Highways

- Ontario MTO/MOE Joint Protocol, “A Protocol for Dealing with Noise Concerns during the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments”, February 1986
- Ontario MTO, Environmental Guide For Noise, 2006, Version 1.1, July 2008
- Ontario MTO , Environmental Reference for Highway Design, June 2009

MTO published a new Environmental Guide for Noise in 2007, which, is said to have superseded the MTO/MOE Joint Protocol and its previous MTO Quality and Standards Directive QST-A1. However, the updated Guide has not yet been adopted by the MOE for municipal projects over which MOE has the jurisdiction, MTO guidelines have jurisdiction over provincial roadways and highways only. Therefore, it is our understanding that the Ontario MTO/MOE Joint Protocol document is applicable for this project.

The guidelines require that the future (or “Build-Out”) project sound levels with the proposed expansion or alteration be compared with the future sound levels without any alteration (“No-Build” or “do nothing”) scenario. The future sound levels represent at least a period of 10 years after the completion of the project when the roads are supposed to achieve its full capacity. As per the Guidelines, this noise impact assessment should be based on 16-hour daytime energy-equivalent cumulative sound levels for municipal roads.

The MTO/MOE Joint Protocol states that where sound levels are predicted to increase less than 5 dBA ten years after completion over the “No-Build” sound levels for the same period, no mitigation measures are required. If they are to increase more than 5 dBA and the overall noise impact is more than 55 dBA, an investigation of noise mitigation measures within the roadway right-of-way should be performed.

Off right-of-way mitigation, such as acoustically designing of windows or doors, window and air conditioning, etc., are not within the scope of this assessment. Roadway right-of-way mitigation measures include barriers, sound reducing asphalts, and changes in vertical profiles and horizontal alignments. Noise mitigation measures should be designed so that they can technically, administratively and economically at least achieve the future “No-Build” sound level or 55 dBA whichever is greater. Mitigation requirements are summarized in **Table-1** below.

Table-1 Summary of Road Traffic Noise Impact Criteria

Existing and Future Sound Levels	Change in Noise Level Above Ambient/Projected Noise Levels with Proposed Improvements	Mitigation Measure Requirement
< 55 dBA	0 to 5 dBA	• None
	>5 dBA	• None
> 55 dBA	0 to 5 dBA	• None
	≥ 5 dBA	• Investigate noise mitigation measures on right-of-way • Introduce noise control measures within the right-of-way if technically, administratively and economically feasible • When applied, noise mitigation measures should achieve a minimum of 5 dBA reduction, over first row of receivers • Try to mitigate close to ambient sound levels where administratively, economically, and technically feasible

Discussions and Recommendations

As can be seen in **Figure 1**, Nick Kaneb Drive will be a new roadway extension with no residential units within the study limits; in fact, the land is vacant commercial land with potential of future commercial development.

Noise from transportation projects have to be assessed at the existing residential/sensitive receptors and, if needed, mitigation measure (barrier walls, lowering of speed, etc.) need to be recommended. If development takes place after completion of the transportation project, it is the responsibility of the developer to carry out noise assessment and suggest measures to combat noise according to applicable regulatory norms, if necessary.

However, the existing residential units are so far away that the level of noise impacts at them by traffic noise would not be such as to warrant any noise mitigation measures. Noise impacts for transportation projects is defined as the difference between noise impacts from the projected (generally 10 years after) “Build-Out” (with Project) and projected “No-Build” (without Project) traffic volume and other related parameters and mitigation measures requirements are as per **Table-1** above.

Therefore, it seems that no detailed noise assessment/modeling is required since noise mitigation would not be warranted.

Conclusion

Based on the proposed road project of implementing the intersection at Tenth Street and Virginia Drive and the future Nick Kaneb Drive extension, no noise mitigation measures will be warranted.