

Study Design Report (DRAFT)
Caledonia Arterial Road and New
Highway 6 Interchange Class
Environmental Assessment

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1.0 Introduction

Haldimand County (County) has initiated an Environmental Assessment (EA) Study to develop a transportation plan for: a new Arterial Road from the intersection of Argyle Street South and the Sixth Line extension to a new intersection at McKenzie Road; and a new Highway 6 interchange in a location to be determined between Sixth Line and Argyle Street. The EA Study will document the transportation need and establish the new facility form and function of the new corridor and interchange to accommodate existing and future traffic volumes in Caledonia. All alternatives will consider the operation and safety of all modes of transportation including vehicles, trucks, pedestrians and cyclists. The Study will define long term property protection for a future interchange and the alignment for the connection to a new arterial road.

The new road infrastructure will be to accommodate future growth in Caledonia that is prescribed in the Places to Grow legislation of the Province of Ontario. This legislation is a plan for municipalities in the GTA to meet population and employment thresholds.

This Draft Study Design Report (SDR) is the initial public document for the Harmonized Municipal Class Environmental Assessment (EA) and Ministry of Transportation's (MTO) Class Environmental Assessment for Provincial Transportation Facilities. It presents a description of the work plan, preliminary alternatives, consultation plan and overall study process. The Draft Study Design will be circulated to various agencies and the Study's Technical Advisory Committee (TAC) and is available to the general public on the County's website.

Note: At the time of release of the Draft SDR, the Province of Ontario has implemented a State of Emergency requiring measures to deal with the COVID-19 pandemic, and as such the distribution of materials is relying on web-based communications with the public. Subsequent stages of the study are expected to revert to conventional public events to review the sequential planning decisions of the study.

1.1 Study Area

The Study Area is located in the Town of Caledonia and is illustrated on **Figure 1**. The Study Area reflects the initial coarse screening of interchange locations as described in **Section 7.1**.

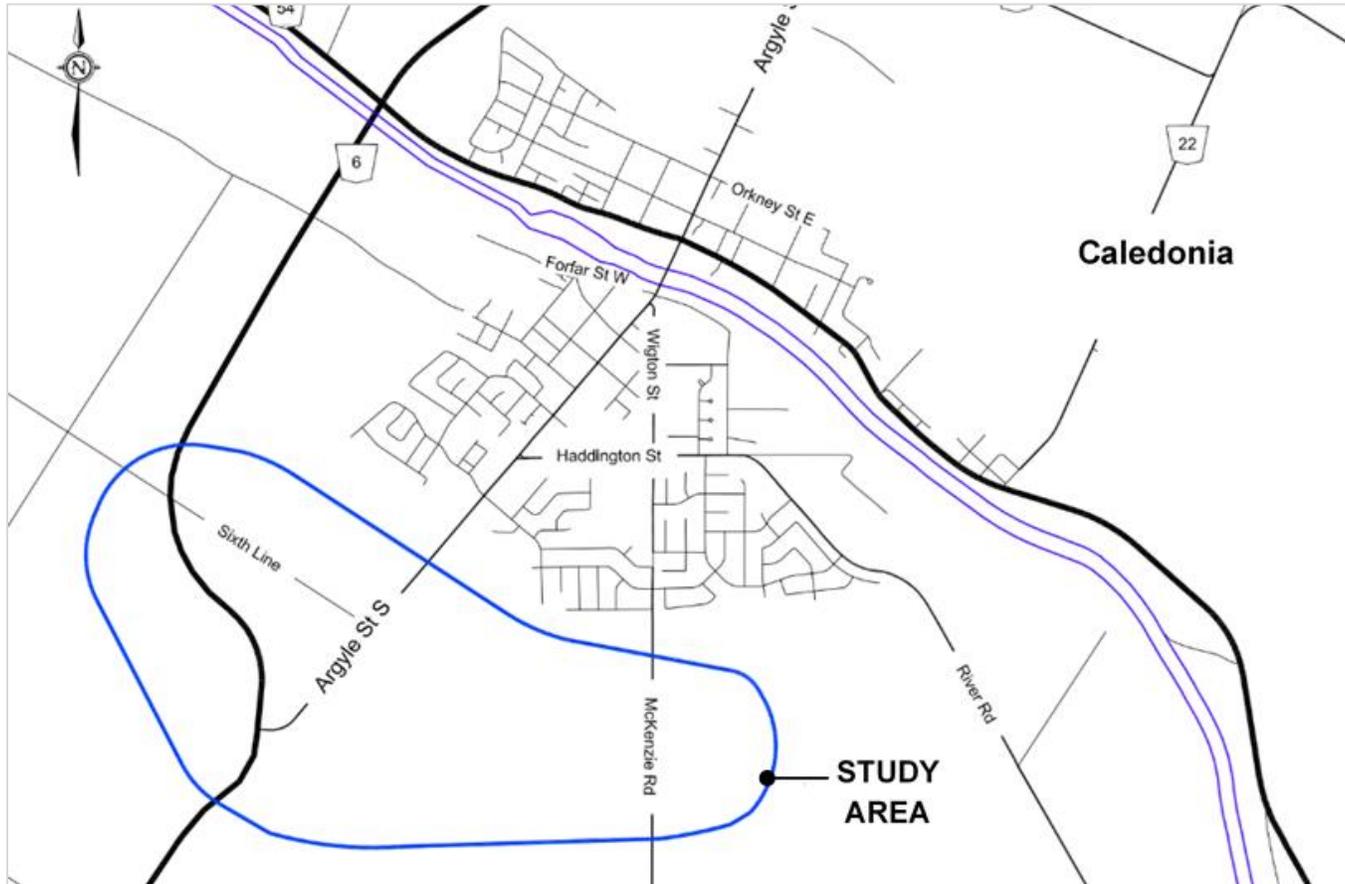


Figure 1: Study Area

1.2 Study Design Report (SDR) Purpose

This Study Design Report (SDR) is the initial consultation document that outlines EA process commitments leading to the submission of an Environmental Study Report (ESR)/Transportation Environmental Study Report (TESR). The distribution of this report is intended to solicit early input on the planning process. Following the first public meeting, the SDR will be finalized based on input received and will be posted on the County's website as the Final SDR.

The purpose of this report is to:

- Define the need and justification of the project;
- Identify Planning Alternatives (Alternatives to the Undertaking) as described in **Section 6.0**;
- Describe the Harmonized Class Environmental Assessment process;
- Solicit input from the public, agencies and stakeholders; and
- Define the scope of work that will be undertaken as part of the study.

Based on the range of anticipated alternatives, their effects and capital costs of the project, the study is being initiated as a Municipal Schedule Group C / Provincial Group B project as defined by the Municipal Class Environmental Assessment (EA) and Ministry of Transportation's (MTO) Class Environmental Assessment for Provincial Transportation Facilities. The County will be the proponent of the project and will consult with the MTO regarding all aspects of the Class EA.

2.0 Background

The southern limits of Caledonia will be experiencing an increase in traffic volumes as a result of planned/proposed development shown on **Figure 2**. Improvements are required for the safe and efficient movement of all modes of transportation (i.e. vehicles, pedestrians and cyclists). Major corridors within the Study Area include:

- **Argyle Street:** Argyle Street is a major north-south arterial road providing access to residential and commercial properties and access to the wider transportation network. Argyle Street provides a connection to the Highway 6 bypass and provides the only crossing of the Grand River within the Town. Argyle Street currently has a 2-lane rural cross-section and is posted at 50 km/h within the Study Area.
- **McKenzie Road:** McKenzie Road is also a major north-south arterial road providing access to residential properties and planned/proposed development (i.e. McKenzie Meadows, Beattie Estates). McKenzie Road currently has a 2-lane rural cross-section and is posted at 50 km/h within the Study Area.
- **Sixth Line:** Sixth Line is an east-west arterial road providing access to residential and commercial properties and the Six Nations Reserve. A highway underpass is currently located at the Highway 6/Sixth Line crossing (Highway 6 goes under Sixth Line). Sixth Line currently has a 2-lane rural cross-section and is posted at 60 km/h.
- **Highway 6:** Highway 6 is currently a 2-lane undivided highway through the study area. The highway bypasses the Caledonia urban area and a former section of Highway 6 (now Argyle Street) to the west of downtown Caledonia and is referred to as the Caledonia Bypass. The Caledonia Bypass is posted at 80 km/h.

2.1 Functional Classification System

MTO has a Functional Classification System for highway network planning, engineering, and other uses. This system identifies the role, function, and design characteristics for each provincial highway.

Highway 6 through the Study Area is classified as 2A-Principal Arterial. The function of an Arterial roadway is to provide mobility by moving traffic between collector roads and freeways. Arterials are the highest classification level of highways where freeways are not warranted.

2.2 Provincial Highway Access Management

Access management is the process that MTO uses to manage entrances (access connections) onto provincial highways and onto roads in the vicinity of a provincial highway, within MTO's permit control area. Access management preserves the safety, efficiency and sustainability of the provincial highways for people and goods movement.

Access management seeks to limit and consolidate access connections (entrances) to Provincial Highways while promoting a supporting municipal roadway system that will sustain land use development. The result is a Provincial Highway system that functions safely and efficiently. The goals of access management are accomplished by applying the following principles:

1. Limit the number of direct access connections and increase their separation.
2. Locate signals in a way that favours through movements of traffic.

3. Preserve the functional intersection / interchange areas.
4. Remove turning vehicles from through-traffic lanes.

Planning and design alternatives on municipal roads which connect to Provincial Highways should be considered, to comply with access management standards and to maintain or improve local traffic capacity and operation. Planning considerations include:

1. Appropriate distance between the Provincial Highway and the first intersection of the municipal crossing road.
2. New or improved municipal roads, including service roads, to better service and distribute local traffic.
3. New or improved municipal road intersections to provide a single point of access to a number of local developments.

Highway 6 through the Study Area is classified as a 2A-Principal Arterial under MTO’s Access Management Classification System and is a fully Controlled Access Highway (CAH). This study will consider an interchange on Highway 6 between Sixth Line and the Argyle Street development.

Residential developments are planned within the study area including McKenzie Meadows (Phases 1 and 2) and Beattie Estates (see **Figure 2**). Phase 1 of the McKenzie Meadows development is proposed for 229 residential units with full build-out anticipated to occur by 2021. The site plan for Phase 2 of McKenzie Meadows has not been developed. Beattie Estates is proposed as 700 residential units.

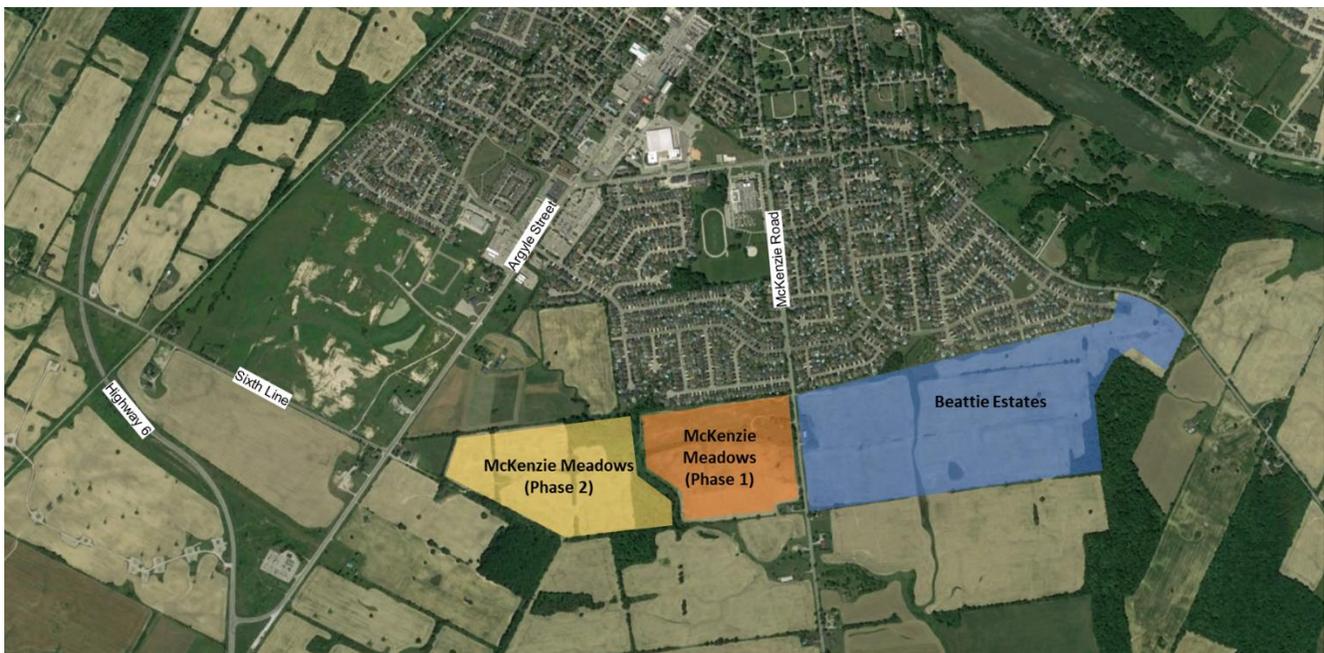


Figure 2: Planned/Proposed Development in South Caledonia

2.3 Background Studies

Background studies have been completed in the Study Area to document the proposed land uses and recommended improvements to the transportation network. These reports are summarized in the following sections.

2.3.1 Haldimand County Official Plan

The Haldimand County Official Plan creates a framework for land use planning within the County by “protecting and managing the natural environment, directing and influencing growth patterns and facilitating the vision of the County as expressed through its residents” (Haldimand County Official Plan, 2006). Argyle Street is identified as an intensification corridor in Caledonia. Schedule B.1 of the Official Plan identified the majority of the land throughout the study area as agricultural with exception of a band of land along the length of the Douglas Creek that is classified as Riverine Hazard Lands, and the lands adjacent to Argyle Street south of Sixth Line which are identified as Community Commercial. These land uses are described as:

- **Agricultural:** These lands are intended to be preserved and protected for agricultural uses. The land use includes all forms of farming, and resource-oriented land uses.
- **Riverine Hazard Lands:** These lands can be used as stormwater management facilities subject to the approval of the Grand River Conservation Authority (GRCA).
- **Community Commercial:** These lands form the business district and considered the core of each urban area.

In addition to the general land use classifications, Section A.1.1 states that continued development south of the Grand River will increase traffic congestion and a long-term solution will be required. This is illustrated on Schedule F.4 of the Official Plan - the Caledonia Urban Area Transportation Plan, provided as Figure 3, which identifies a Study Area for a Class Environmental Assessment for a new transportation corridor in the area of this study.

The Haldimand County Official Plan was completed in 2006 and provides a framework for the 20-year planning horizon. The County is currently completing an update to the Official Plan. Under the Planning Act, all municipalities are required to revise and update their Official Plan every 10 years to ensure that it conforms to provincial plans or does not conflict with them, has regard for matters of provincial interest, and is consistent with the Provincial Policy Statement.

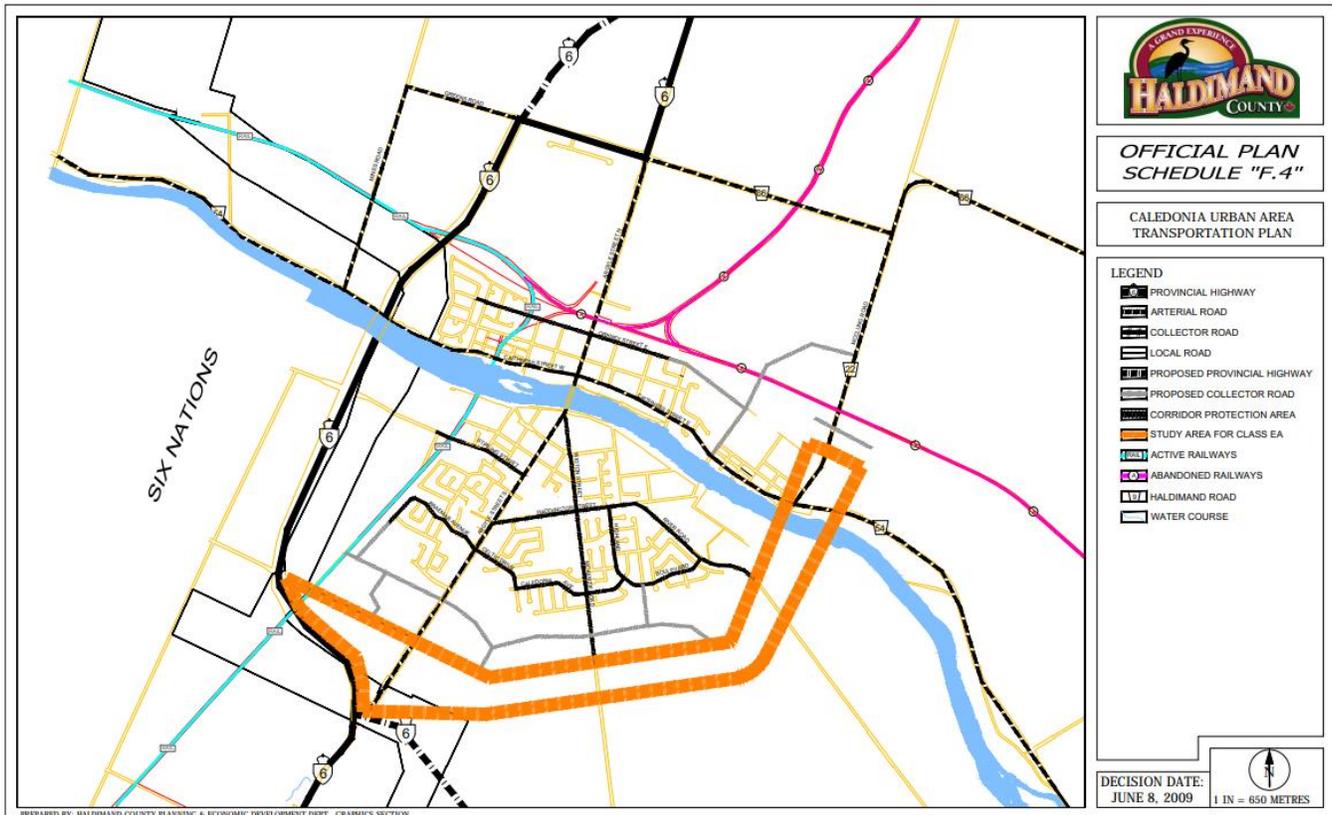


Figure 3: Schedule F.4 of Official Plan

2.3.1 Master Servicing Plan

Haldimand County prepared the Caledonia Master Servicing Plan (Philips Engineering Ltd., 2006) which was updated by CIMA in 2019.

The 2006 report evaluated alternatives for improving access to the Highway 6 Bypass including: provision of a new interchange at either Stirling Street or Sixth Line; and a new arterial roadway connecting Argyle Street to a new crossing of the Grand River. A new interchange was not recommended within the planning horizon of the 2006 report; however, a new 2-lane arterial roadway was recommended from Argyle Street northeast to McClung Road.

In 2019 CIMA reviewed and updated the findings of the 2006 Master Servicing Plan. The 2019 report evaluated traffic operations for the 2035 horizon year and accounted for planned/proposed development including the Beattie Estates and McKenzie Meadows. Recommendations included implementation of a Ring Road (new arterial roadway) from the Argyle Street/Sixth Line intersection to McKenzie Road with the potential future extension to McClung Road. The Ring Road would eliminate the need for traffic generated by future development to travel through residential developments/local roads to access the Highway 6 (Caledonia) Bypass. Intersection improvements at the intersection of Argyle Street/Sixth Line are recommended to accommodate left-turning movements from the east and west approaches.

2.3.2 Haldimand County Trails Master Plan

The Haldimand County Trails Master Plan (2009) identified the following facilities:

- Sixth Line: signed on-road bicycle route west of Argyle Street;
- Argyle Street: bike lane south of Haddington Street;
- McKenzie Road: wide shared lane (south of the new Arterial Road) and a paved shoulder (north of the new Arterial Road)
- Caledonia Arterial Road: multi-use trail

Active Transportation facilities do not currently exist on any of these roadways.

2.3.3 Growth Plan for the Greater Golden Horseshoe

The Province of Ontario has prepared a Growth Plan for the Greater Golden Horseshoe (May 2017). The plan recommends “growth and development in a way that supports economic prosperity, protects the environment, and helps communities achieve a high quality of life¹”. The growth targets identified in this report identify population and employment in Haldimand County of 64,000 and 25,000 respectively by the year 2041.

2.3.4 MTO Planning Reports

The Ministry of Transportation (MTO) completed a Preliminary Design Report for Highway 6 from Caledonia to Nanticoke (November 1976). This Report defined the alignment for a joint highway-utility corridor from Nanticoke to Caledonia (as illustrated in **Figure 4**) and recommended a 4-lane controlled access highway. This section of Highway 6 was proposed to originally operate as an arterial road with at-grade intersections with ultimate construction of interchanges to meet freeway standards.

Due to the topography and location of the hydro corridor, it was not possible to provide intersection access on the Caledonia Bypass at Sixth Line, and a grade-separated underpass was constructed. For the ultimate 4-lane freeway plan, an interchange was recommended at Argyle Street/Existing Highway 6 where the new Highway 6 was planned to follow a new north-south alignment to the east of the existing alignment (as illustrated in **Figure 4**).

The MTO also prepared an Environmental Assessment and Preliminary Design Report for Highway 6 (New) from Hamilton to Caledonia (December 1987). This report was prepared for the planning of a 4-lane (ultimate 6-lane), fully controlled access, divided rural freeway from Highway 403 in Ancaster to the Caledonia Bypass (Greens Road). The transportation corridor was proposed to encourage residential/industrial growth (including the Nanticoke Industrial Area), improve access to the Hamilton Airport, and address deficiencies on existing Highway 6 through Hamilton. Highway 6 was constructed as a 2-lane highway (staged freeway) from Highway 403 to the John C. Munroe (Hamilton) Airport and opened to traffic in 2004.

At the time that these studies were prepared in the 1980’s, the Province and area municipalities had plans to develop Nanticoke as a major heavy industry node, providing thousands of jobs along with a planned service community (Townsend). To service the growth of the area, a joint-use utility and 4-lane freeway corridor was proposed (as described above). However, in the following decades, the Nanticoke Hydro Generating Station was closed (and demolished) and planned industrialization/development was

¹ A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019)

not realized. Based on the existing/projected land uses, the Highway 6 corridor is expected to remain for the foreseeable future as a 2-lane rural arterial highway from Caledonia to Port Dover.

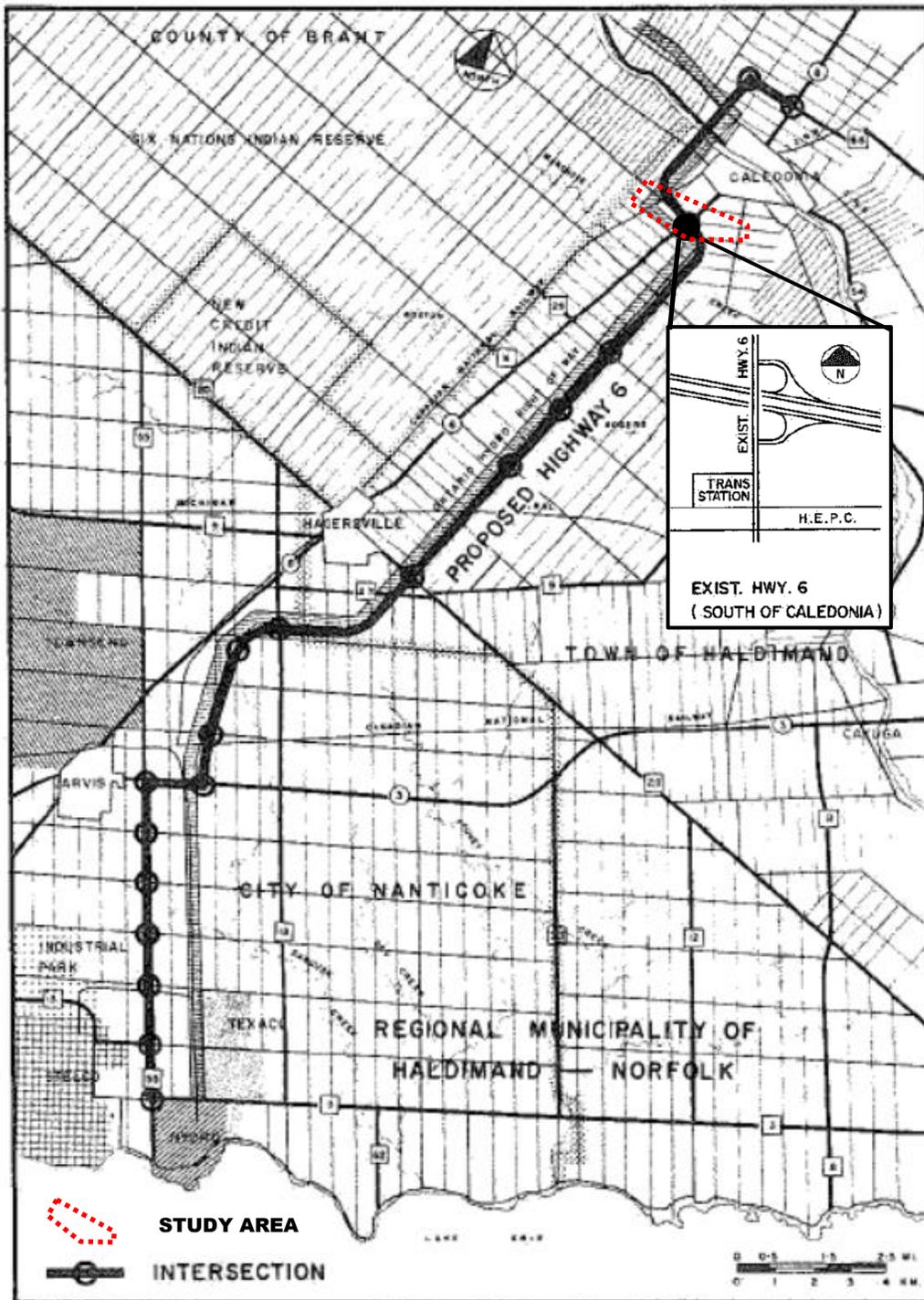


Figure 4: Recommended Highway-Utility Corridor and Proposed Interchange Location from November 1976 PDR

3.0 Need and Justification

3.1 Problem and Opportunity Statement

Road network improvements are required within the southern urban boundary of Caledonia to accommodate planned/proposed development south of the Grand River. Access between the areas north and south of the Grand River is limited to the two river crossings (Argyle Street and Highway 6 Bypass), and the lack of east-west arterial roads. A transportation management plan is required to provide improvements or new facilities (i.e. new corridor, interchange) that can safely and reliably serve all modes of travel including vehicular traffic, goods movement, cyclists and pedestrians.

The Study will provide an opportunity to: improve efficiency of the road network; improve access and reduce traffic delays; and define a long-term transportation plan to support travel within the County. The Study will support future growth within Caledonia and improve transportation for all road users.

3.2 Key Issues

Key issues, constraints and commitments within the study area include:

Transportation – Improvements are required to accommodate planned growth in Caledonia south of the Grand River. The proposed arterial road and new interchange will accommodate traffic travelling to/from the southern part of town. It will also serve commuters destined to/from the Highway 6 Bypass and provide improved access to the Grand River bridge crossings.

Land Use – There are several planned/proposed subdivisions located within or adjacent to the study area within the southern boundary of the Town. Alternatives will consider the proposed site plans to avoid impacts to existing subdivision plans. Preference will also be given to alternatives that are within the Urban Boundary to discourage expansion of the boundary.

Natural Environment – The majority of the landscape through the study area has been transformed from its natural state as a result of farming practices. A few woodlots and the Douglas Creek remain and contain potential for natural features/species. As documented in the Caledonia East-West Road Planning to the Southern Urban Boundary Memo (CIMA, 2018), the study area is not designated as a Core Natural Area and significant impacts to the natural environment are not anticipated.

Consultation and Engagement – Communication and consultation with the public and stakeholders will be a key component of the environmental assessment process; providing an opportunity for input, information exchange and identification of issues/desires.

The study will also take a proactive approach to consultation with Indigenous Communities, including Six Nations of the Grand River, Haudenosaunee Chiefs Confederacy Council (HCCC), Mississaugas of the Credit First Nation and Metis Nation of Ontario.

Utilities – The Study Area is constrained by existing utilities including: a 5-line hydro corridor from the Lake Erie (Nanticoke) Power Generation Station; Enbridge and Trans-Northern pipeline; and primary/secondary A/G hydro lines. Alternatives will consider utility conflicts and advanced relocations will be identified early in the study.

4.0 Study Process

This Study will be conducted as a Harmonized Municipal Schedule C Class Environmental Assessment and Group B Provincial Class Environmental Assessment meeting the requirements of the Municipal Class Environmental Assessment and Provincial Class Environmental Assessment for Transportation Facilities respectively. The study will culminate in the filing of an Environmental Study Report (ESR) / Transportation Environmental Study Report (TESR).

This Study will complete all requirements under the Class EAs by establishing the need and justification for the project, considering all reasonable alternatives with acceptable effects on the natural, social and cultural environments, and proactively involving the public in defining a Recommended Plan.

4.1 Guiding Principles

A Class EA is an approved planning document that defines groups of projects and activities and the EA processes which the County is committed to follow. The process provides a decision making framework for effectively meeting the requirements of the Environmental Assessment Act.

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

- Consider all reasonable alternatives;
- Provide a comprehensive assessment of the environment;
- Utilize a systematic and traceable evaluation of net effects;
- Undertake a comprehensive public consultation program;
- Provide clear and concise documentation of the decision-making process and the public consultation program;
- Documentation and “bump-up” principles and processes; and
- Environmental clearance processes.

The Ontario Ministry of Transportation (MTO) developed the Class Environmental Assessment for Provincial Transportation Facilities (2000), which provides, in part, the following:

- Classification of projects and activities
- Study stages and phases;
- Transportation engineering and environmental protection principles;
- Consultation principles and processes;
- Documentation and “bump-up” principles and processes; and
- Environmental clearance processes.

The approved Class EA process is extensive, with significant consultation and outreach to agencies and the public.

4.2 Environmental Assessment Act Requirements

The Environmental Assessment will follow the Class EA process, thereby meeting the requirements of the Municipal Engineer Association’s Municipal Class Environmental Assessment (2000 as amended in 2007, 2011 and 2015) and the MTO’s Class Environmental Assessment for Transportation Facilities

(2000). The Study is being initiated as a Harmonized Municipal Schedule C/Provincial Group B project based on the range on anticipated effects and capital cost of the project.

The Schedule C/Group B project will include two public information centres and conclude with the preparation of an Environmental Study Report (ESR)/Transportation Environmental Study Report (TESR). Following this approach, the public will be provided with a 30-day review period at the Study conclusion.

As the initial step in the Class EA process this Study Design Report is being made available to the public. This satisfies discretionary Step 1.2 of the Municipal Class EA process, as illustrated in **Figure 7**. The public and agencies will have this initial opportunity to comment on the proposed approach.

4.3 EA Phases

The Provincial and Municipal Class EA Processes are illustrated in **Figure 6** and **Figure 7** respectively. **Figure 5** provides a simplified breakdown of tasks, by phase, for a Schedule C/Group B project:

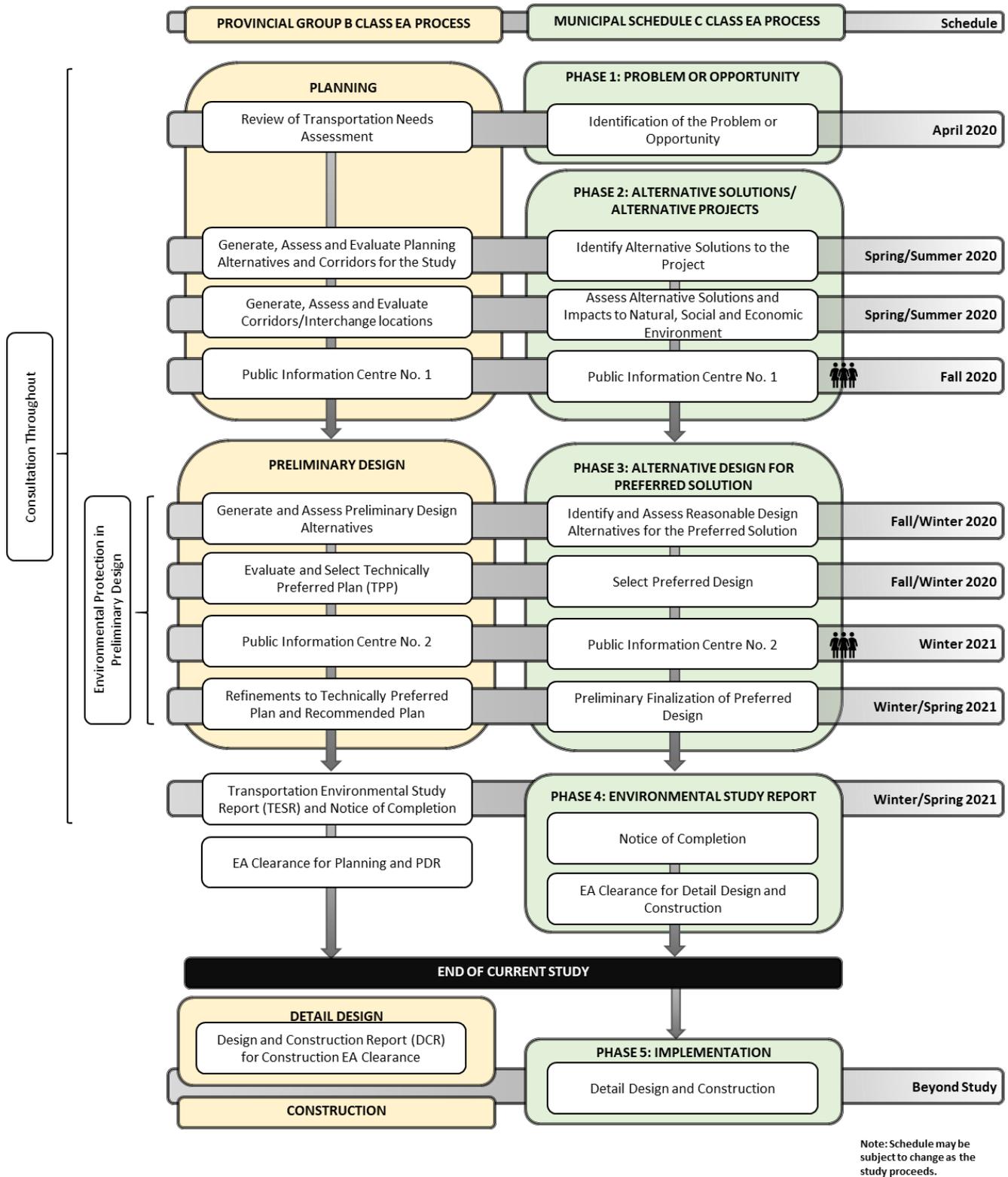
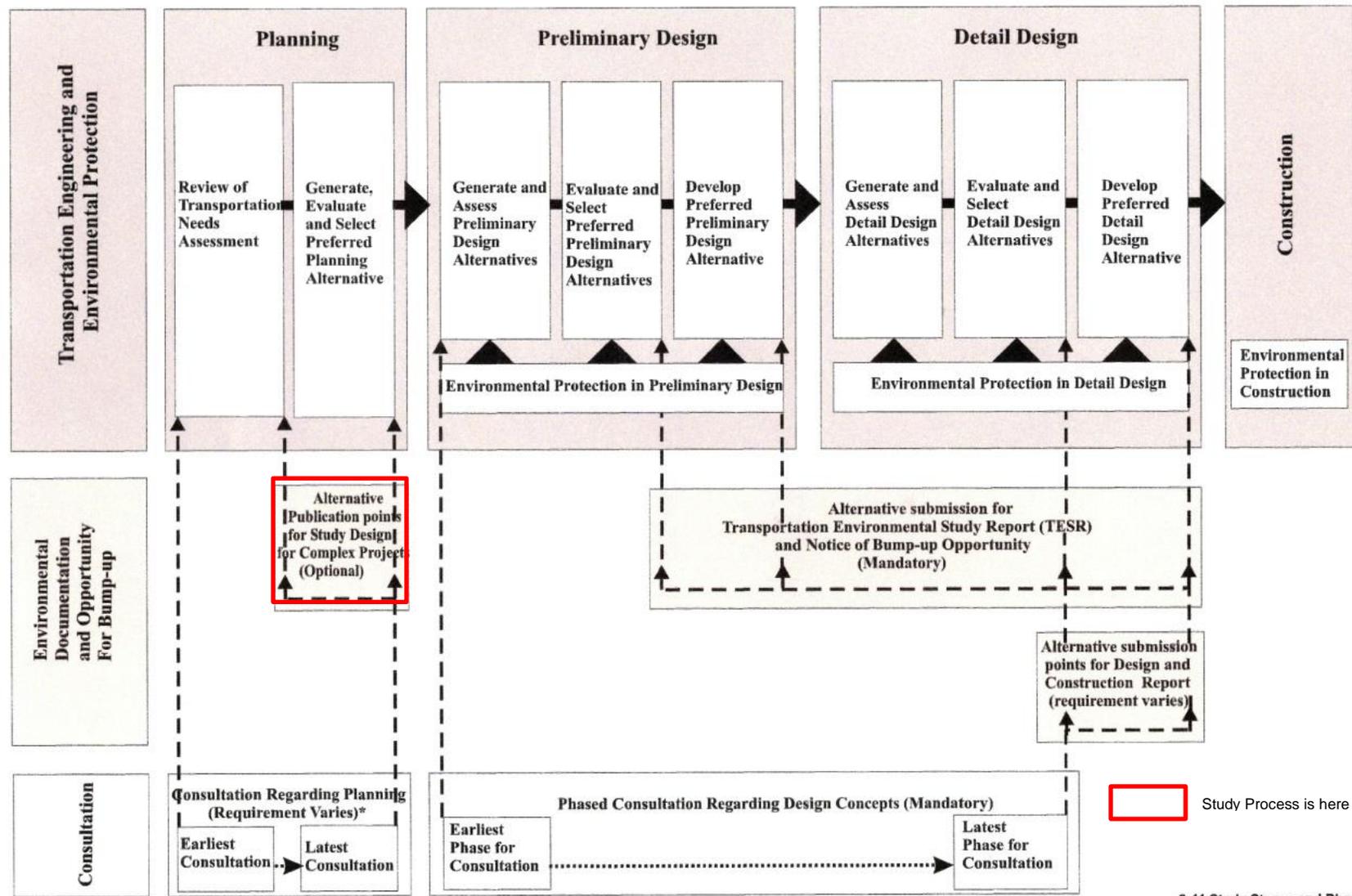


Figure 5: Simplified Breakdown of Tasks in EA Process

Overview Of Class EA Process For Group B Projects



* Mandatory if a Study Design is prepared.

Figure 6: Provincial Class EA Process

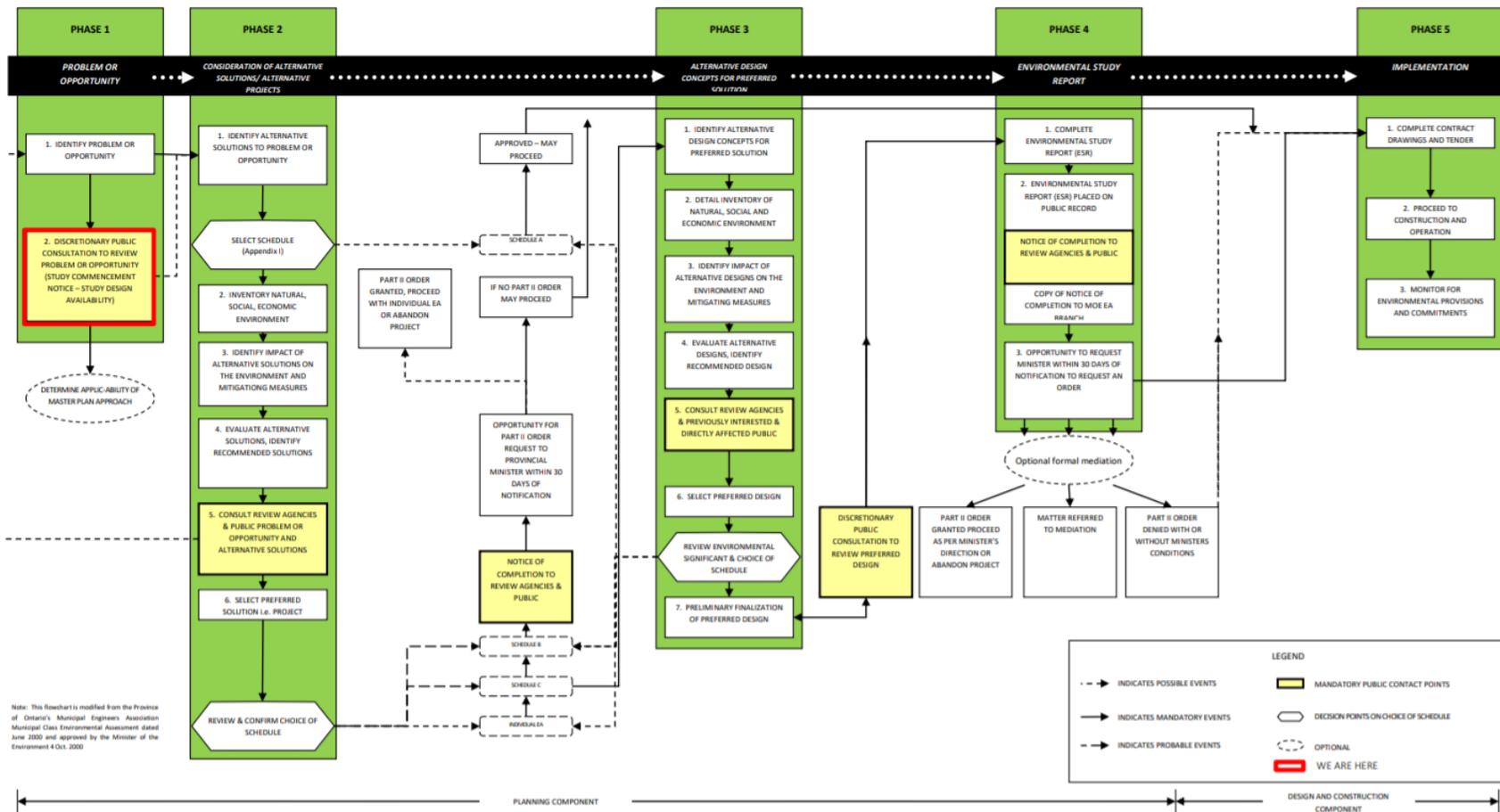


Figure 7: Municipal Class EA Process

5.0 Study Approach

Over the course of the study, input will be solicited from the public, stakeholders, agencies and Indigenous Communities. Input will be gathered through meetings, the project website, and discussions/communication with interested parties. The Study approach is to work collaboratively with interested parties to address issues and reach a consensus on the Recommended Plan.

5.1 Consultation Program

The Consultation Program identifies the opportunities for the Project Team to discuss the Study with the public/stakeholders, agencies and Indigenous Communities. This Study will use several processes to engage with interested parties and provide an opportunity for input. The Consultation Program will include:

- Notices published in local newspapers, issued as media releases and directly mailed/emailed to the study mailing list at key points over the course of the study including:
 - Notice of Study Commencement
 - Public Information Centre No. 1
 - Public Information Centre No. 2
 - Notice of Study Completion to account the start of the 30-day public review period
- Communication and coordination with agencies/consultants to obtain background information for input into the study and to obtain required approvals/permits
- Study updates on the project webpage located on the County's website
- Meetings with affected property owners, local residents, businesses and Indigenous Communities

5.1.1 Public Consultation

The study will use several techniques to proactively involve the public including Public Information Centres (PICs) and meetings with external stakeholders. Meetings will be organized with the stakeholders and may include adjacent landowners and other affected businesses or associations. These meetings will include representatives from the County and the consultant team.

Two Public Information Centres (PICs) will be held during the study. PIC No. 1 will present the project goals, problem and opportunity statement, Draft Study Design (Work Plan), environmental inventories, traffic analysis, assessment of Planning Solutions and seek public/agency input. PIC No. 2 will present the evaluation of design alternatives and the Technically Preferred Alternative (TPA) for the Study Area. Council members will be invited to an advance session of the PIC and the consultant will be available to present to Council in advance of the public meeting.

The public meetings will be an integral component of the study - seeking input and comments from the public and stakeholders. There will be an opportunity for the public to comment on the study at any time. All information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act* (2009). Anyone interested in the study will be added to the study mailing list upon request.

5.1.2 Agency Consultation

Agencies/Ministries will be contacted at the start of the study to inform them of Study Commencement and to circulate this Study Design. As the study progresses, meetings will be held with select agencies

(as required) to review the study and obtain approvals in accordance with the Municipal Class EA. Agencies will include:

- Ministry of the Environment, Conservation and Parks (MECP)
- Ministry of Heritage, Sport, Tourism and Culture Industries (MHTSCI)
- Ministry of Natural Resources and Forestry (MNRF)
- Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
- Ministry of Indigenous Affairs
- Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)
- Ministry of Community and Social Services
- Ministry of Municipal Affairs and Housing
- Ministry of Energy, Northern Development and Mines
- Ministry of Infrastructure
- Ministry of Community Safety and Correctional Services
- Ontario Provincial Police (OPP) and Emergency Services

5.1.3 Indigenous Consultation

Haldimand County has a constitutional duty to consult with Indigenous Communities with traditional land use or interests within the Study Area. Clear, effective and timely consultation with Indigenous Communities is essential to ensure the success of the project. This will include:

- Identification of interested/affected Indigenous Communities early in the decision-making process;
- Distribution and notification of relevant project-related information, including the Class EA process, environmental inventories and potential alternatives/impacts;
- Early identification of concerns/issues;
- Understanding of potential risk and impacts of the Study on Indigenous Peoples interests;
- Development of mutually acceptable solutions involving Indigenous Communities; and
- Ensuring regulatory compliance throughout the Class EA process.

Indigenous Communities will be consulted throughout the duration of the Study and presentations will be made to the Six Nations of the Grand River Council and Mississaugas of the Credit First Nation at their request.

5.2 Work Program

The major elements of the work program are described in the following sections.

5.2.1 Phase 1: Identification of the Problem/Opportunity

This phase of the Study will include: establishing the Study scope, schedule and approach with the Project Team and agencies; issuing the Notice of Study Commencement; the collection and organization of background information; reviewing and documenting existing conditions; and the transportation analysis to identify operational, safety and traffic concerns. The transportation analysis will build upon the previous work that has been completed. It will examine, in greater detail, the operational implications of existing and projected traffic demands and the distribution of traffic resulting from the planned developments.

In addition, the following Community Engagement tools will be undertaken to proactively engage stakeholders early in the Study:

- **Study Design:** This draft Study Design presents: the Problem/Opportunity Statement; the consultation plan; project schedule; and identifies the scope of the Study's technical requirements, design standards and proposed evaluation criteria. This document is available for public/agency review and will help establish the foundation for all remaining environmental planning and public consultation processes.
- **Value Planning Workshop:** A Value Planning workshop will be held with the Project Team and select agencies/stakeholders to allow an early discussion of the project and objectives. The workshop provides clarity on the problem to be solved and fosters creative brainstorming of a range of alternatives.

5.2.2 Phase 2: Development and Evaluation of Alternative Solutions

The list of Alternative Planning Solutions is provided in **Section 6.0**. Based on this evaluation, a Context Sensitive Design approach, reflecting the surrounding area, will be used in the development and evaluation of preliminary design alternatives.

The consideration of all reasonable alternatives is a guiding principle for EA studies. The corridor alignment, cross section, intersection alternatives and interchange configurations/locations will be generated through discussions with the County, agencies and the general public.

5.2.3 Phase 3: Alternative Design Concepts for the Preferred Solution

Preliminary Design Alternatives will be generated for the Preferred Alternative Planning Solution based on an inventory of the natural, social and cultural environment and results of technical investigations.

5.2.3.1 Environmental Inventories and Technical Investigations

Environmental inventories and technical investigations will be completed to assess the impacts of alternative design concepts. These investigations are summarized as follows:

Natural Environment: The environmental team will perform a desktop screening and site reconnaissance to determine the potential future field work, permitting and reporting Species at Risk (SAR) related requirements. Should additional biological services be needed, this will be revisited when the scope of work is fully developed following the preliminary site reconnaissance of the Study Area.

Archaeology: A Stage 1 Archaeological Assessment will be completed to: develop an inventory of archaeological resources in the proposed area; determine the presence of any archaeological sites in the area; and recommend appropriate strategies for future planning consideration. This will be accomplished by conducting detailed documentary research of the land use, archaeological history, and present condition of the property. Based on the outcomes of the Stage 1 Assessment, a Stage 2 Archaeological Assessment may be required.

Socio-Economic Assessment: An inventory of existing land uses within the Study Area will be undertaken. This will include documentation of recreational/residential development (access, emergency services, trails, etc.), commercial, institutional and utility corridor land uses. The inventory will also include consideration and identification of future land uses such as developments, right-of-way requirements, future transit and transportation facilities and development that could be implemented

complying with existing planning documents. Any land use changes that have occurred will be documented.

Stormwater Drainage: The drainage and stormwater management design criteria will be confirmed with the County. Hydrologic calculations will be performed to determine the flows for the 5 to 100 year return period rainfall events and to establish the capacities of the existing and required system. As the various alternatives are developed, the corresponding drainage and stormwater design will be developed and detailed in a Stormwater Drainage Assessment, sufficient to permit identification of constraints and prepare preliminary cost estimates.

Survey: A topographical survey of the preferred alignment and interchange location will be completed to determine existing elevations, sizing of existing utilities, watermains, sewers, gas mains, telephone, hydro and cable. Design locates will be obtained from all utilities.

Geotechnical: A geotechnical site investigation will be completed including: borehole investigation, physical soil testing and chemical soil testing. On completion of the site investigation and laboratory program, the findings will be summarized in a geotechnical report.

5.2.3.2 Evaluation of Alternatives

Preliminary Design Alternatives will be evaluated using the Multi-Attribute Trade-off System (MATS) evaluation process. Through this process evaluation criteria will be identified including potential factors such as roadway level of service, traffic safety, accessibility, property impacts, socio-economic environment, natural environment, cultural heritage, technical aspects/construction complexity and implementation. The evaluation process will assign a “weight” to the subfactors for each criteria and an iterative process will be used for the evaluation of individual competing alternatives. The iterative process will involve one, or possible two levels of evaluation and sensitivity testing.

The evaluation and analysis will identify all improvement alternatives and associated cost estimates including lifecycle costs, alternative construction/ material options, proposed timeline and innovative solutions.

Based on the results of the MATS evaluation results, a Technically Preferred Alternative (TPA) will be selected. A technical memorandum outlining the results of the evaluation will be completed and will include: the assessment of alternatives to the undertaking; generation and assessment of preliminary design alternatives; evaluation criteria (i.e. environmental inventories and technical investigations); and selection of the TPA.

This document will be presented to the public for input at PIC No. 2. Following the PIC, refinements will be made to the TPA (if applicable) and the refined alternative will become the Recommended Plan.

5.2.4 Phase 4: Environmental Study Report (ESR)/ Transportation Environmental Study Report (TESR)

The preparation of the draft and final EA report will follow the format and content for an Environmental Study Report accepted by MECP and MTO. The ESR/TESR will document the study methodology, findings, public involvement and recommendations. The Report will provide recommendations on the phasing of the proposed works and preliminary cost estimates. The public will be notified of the availability of the ESR/TESR for a 30-day public review period.

5.3 Study Schedule

A draft schedule for this Study is shown below in

Table 1.

Table 1: Proposed Study Schedule

Task	Date
Project Start-Up Meeting	February 2020
Study Commencement Notice	June 2020
Draft Study Design	June 2020
Information Gathering	Spring/Summer 2020
Environmental Review / Technical Investigations	Spring/Summer 2020
Generation of Preliminary Design Alternatives	Summer 2020
Public Information Centre No. 1	Fall 2020
Analysis and Evaluation of Alternatives	Fall/Winter 2020
Public Information Centre No. 2	Winter 2021
Preparation of ESR/TESR	Winter/Spring 2021
30-day Public Review Period	Spring/Summer 2021

6.0 Alternative Planning Solutions (Alternatives to the Undertaking)

The Class Environmental Assessment Act requires that all reasonable and feasible Planning Solutions (Alternatives to the Undertaking) be identified and evaluated at the start of the Study. Planning Solutions represent alternative ways or methods of addressing the Problem or Opportunity Statement specific to this study. These alternatives consider the overall needs of the study area and identify alternative approaches of addressing the need for improvements.

The Alternative Planning Solutions for this Study are summarized as follows:

1. Do Nothing – The Do Nothing Alternative must be considered as mandated by the Class EA. It represents a baseline from which other approaches can be compared. This alternative would maintain the existing road network and would not construct a new arterial road or interchange.
2. Transportation Demand Management (TDM) – This strategy would reduce vehicular demand and encourage alternative work hours, work at home, more active modes of transportation (cycling and walking) and the use of transit.
3. Greater Use of Local Roads – This alternative would encourage the use of local roads to reduce the demand on Argyle Street. A limiting factor to the roadway network is that Argyle Street provides one of the two crossings of the Grand River in Caledonia (the other crossing is provided on Highway 6). Additionally, local roads are generally not designed or maintained to the standards for high traffic volumes. They are intended to serve as area access roads and are characterized by slower-moving turning traffic.
4. Limit Land Use Development – This strategy would limit any new residential, commercial or industrial development and therefore reduce the generation of new trips.
5. New Infrastructure – Alternatives within this category include:
 - a. New east-west arterial road to connect between Argyle Street and McKenzie Road. This would provide a connection to Argyle Street and Highway 6.
 - b. New Highway 6 interchange between Argyle Street and Sixth Line. This would provide improved access to the second crossing of the Grand River and allow traffic to bypass downtown Caledonia.
 - c. New river crossing on the east side of Caledonia. This would provide a second crossing of the Grand River.

The evaluation of Alternative Planning Solutions selects the most reasonable alternatives that address the Problem and Opportunity Statement. A preliminary assessment of each Alternative Planning Solution is presented in **Table 2**.

Based on the preliminary review of Alternative Planning Solutions, New Infrastructure is recommended to be carried forward, consistent with the Master Plan. In addition, Transportation Demand Management will be considered as a complimentary solution. This does not constitute a reasonable standalone solution; however, it may form part of the overall Recommended Plan for transportation improvements.

The Preliminary Recommendation for Alternative Planning Solutions is summarized in this Study Design and will be presented at the first Public Information Centre (PIC) for public and stakeholder feedback.

Table 2: Preliminary Assessment of Alternative Planning Solutions

Screening Criteria	Alternative 1: Do Nothing	Alternative 2: TDM	Alternative 3: Local Roads	Alternative 4: Limit Development	Alternative 5: New Infrastructure
Transportation					
Does the approach satisfy forecast traffic demand?	Does not address forecast demand.	May reduce vehicular demand by mode shift or work at home but will not eliminate need for new or improved infrastructure.	Improves local road access but does not eliminate need for new or improved infrastructure.	May reduce vehicular demand by reducing the number of trips generated by development but does not address existing demands and/or background growth.	Meets forecast demand.
Does the approach improve safety?	Safety would be impacted by not addressing forecast traffic growth.	Would mitigate some of the concerns resulting from the Do Nothing alternative. Will not address vehicular safety concerns but may improve pedestrian and cyclist safety.	Safety concerns for pedestrians, cyclists and motorists with increased traffic volumes on local (residential) roads.	No change in safety.	Improves safety within the overall Study Area by improving intersection control and reducing traffic congestion. However, the potential exists to add an additional conflict point on a controlled access highway.
Does the approach	No change.	Addresses active	Supports cycling	No change.	Accommodates all

Table 2: Preliminary Assessment of Alternative Planning Solutions

Screening Criteria	Alternative 1: Do Nothing	Alternative 2: TDM	Alternative 3: Local Roads	Alternative 4: Limit Development	Alternative 5: New Infrastructure
address all modes?		modes of transportation.	and pedestrian modes and accommodating drivers who prefer to avoid arterial/high volume roads.		modes of transportation.
Environmental					
What is the magnitude of environmental impacts (natural, social and cultural environment)?	No impacts.	No or low impacts. Low impacts may be associated with active transportation projects/ improvements (i.e. sidewalks, bike lanes).	Low impacts. Creates disruption to properties on local roads that would experience an increase in traffic.	No impacts.	Low to medium environmental effect possible with new corridor/ interchange. Magnitude of effects is subject to environmental mitigation.
Land Use/Property					
Does the approach support the Official Plan and Master Servicing Plan?	No.	Supports objectives of Official Plan to encourage the development of active transportation facilities within the Municipality.	No. Does not address the Caledonia access issues identified in Section A.1.16 of the Official Plan or the recommendations of	No. Does not support the objectives of the Official Plan or the policies of the Growth Plan for the Greater Golden Horseshoe.	Supports the objectives of the Official Plan and the recommendations of the Master Servicing Plan to improve access and network connectivity

Table 2: Preliminary Assessment of Alternative Planning Solutions

Screening Criteria	Alternative 1: Do Nothing	Alternative 2: TDM	Alternative 3: Local Roads	Alternative 4: Limit Development	Alternative 5: New Infrastructure
			the Master Servicing Plan.		within Caledonia.
Preliminary Recommendation to Carry Forward?	<p style="text-align: center;">✘</p> <p>Carried forward as a baseline to compare other alternatives.</p>	<p style="text-align: center;">✔</p> <p>Carried forward as a complimentary strategy (not a standalone solution).</p>	<p style="text-align: center;">✘</p> <p>Not recommended to be carried forward</p>	<p style="text-align: center;">✘</p> <p>Not recommended to be carried forward.</p>	<p style="text-align: center;">✔</p> <p>Carried forward.</p>

6.1 Coarse Screening of New Infrastructure Alternatives

A new crossing of the Grand River to the east of Caledonia is considered a long-term project that would be beyond the current Capital Works plan. Focussing on utilization of existing river crossings and the provincial highway network for the current planned development has a reduced cost and less environmental effects than the larger scale of a new river crossing. Therefore, the preliminary coarse screening of the new river crossing is being presented in the Draft Study Design for public review. Should no comments be received objecting to this recommendation and approach for staged development at the initial stage of the EA, the coarse screening will be accepted before proceeding to the subsequent stages of the study. This approach is illustrated in **Figure 8**.

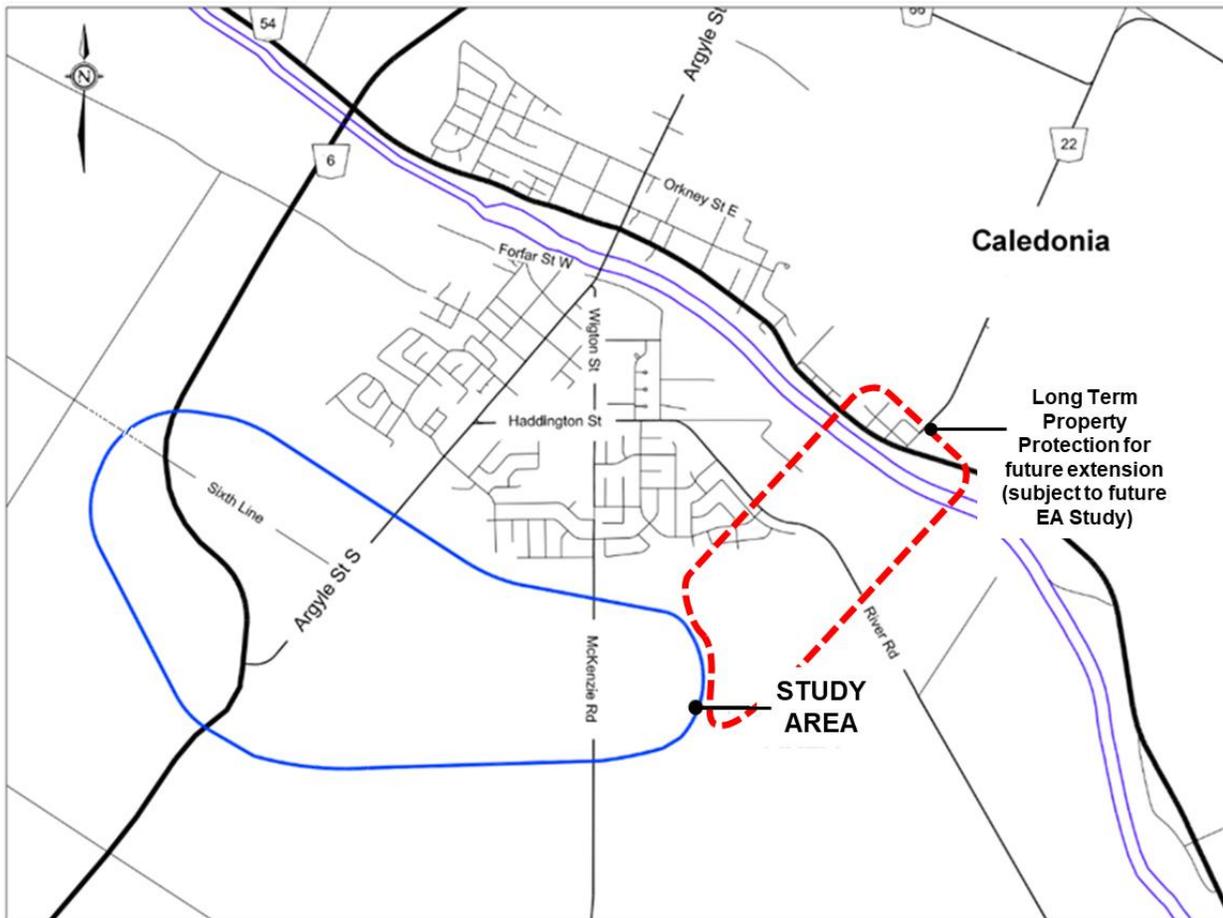


Figure 8: Limits of New Infrastructure Alternatives Carried Forward

7.0 Preliminary Design Alternatives

This Section describes Preliminary Design Alternatives for the recommended Planning Solution for New Infrastructure (see **Section 6.0**). The Environmental Assessment will identify the preferred alignment, intersection treatments and cross-sections for the new arterial road and the preferred configuration and location for a new interchange on Highway 6.

As an initial step in the generation of alternatives, this Study has identified alternative alignments and locations for the new arterial road and interchange. The alternatives carried forward for evaluation may include refinements or sub-alternatives based on the comments received and the range of environmental factors and effects.

The proposed alignment for the Caledonia Arterial Road was identified in the Haldimand County Master Servicing Plan (2019, CIMA) and is illustrated on **Figure 9**. This alignment was presented to the public at a Public Information Centre for the Master Servicing Plan in 2018. This alignment will be refined to determine the horizontal profile, property impacts and intersection locations. The alignment will be evaluated in consideration with connectivity to a future interchange.



Figure 9: Caledonia Arterial Road Alignment

Preliminary Design Alternatives have been developed for the proposed interchange with Highway 6:

Interchange Locations – Based on the existing municipal street network and infrastructure (i.e. hydro corridor, railway) the preliminary locations for the investigation of interchanges are:

- Highway 6 and Sixth Line;
- Highway 6 and Argyle Street;
- Highway 6 and Stirling Street/ Seventh Line;
- A new Highway 6/midblock connection.

These locations are illustrated on **Figure 9**.

Interchange Configurations – Interchange types that will be considered for technical feasibility include, but are not limited to:

- Full interchange or partial interchange:
 - Parclo A or B
 - Diamond
 - Single Point Urban
 - Buttonhook type
 - Trumpet A or B
 - Combinations of the above
- Intersections (including ramp terminals):
 - Unsignalized Intersection
 - Signalized Intersection
 - Roundabout

Construction of an intersection will be considered as an interim improvement.

7.1 Preliminary Coarse Screening of Interchange Locations

An interchange at Stirling Street/Seventh Line and Highway 6 was identified in the 2006 Caledonia Master Servicing Plan to improve access to the Highway 6 Bypass. This 2006 Report did not recommend an interchange at this location; however, Stirling Street was included on the long list of interchange locations for this Environmental Assessment for completeness. Since the 2006 Report, the area south of the Grand River and along Stirling Street has experienced significant residential development. As a result, an interchange at this location has been coarse screened from further consideration because of the following impacts:

- Disruption to residential properties along Stirling Street (i.e. traffic generated by a new interchange, headlight glare, noise/pollution)
- Connectivity/accessibility between the interchange/proposed Caledonia Arterial Road and existing/planned developments (i.e. Beattie Estates and MacKenzie Meadows)
- Need for a new grade separated rail crossing at Stirling Street/Seventh Line

This preliminary recommendation is being presented in the Draft Study Design for public review and comment. Should no comments be received objecting to this recommendation, it will be accepted in the Final Study Design and the Study Area for environmental field investigations will not include this area in the Study scope.

7.2 Coarse Screening and Evaluation of Alternatives

As part of the technical investigations, an additional qualitative coarse screening may be completed to eliminate further alternatives which do not address the Problem Statement or have significant impacts such as natural environment, heritage resources or existing development (social environment) in comparison to other alternatives carried forward. The results of the additional coarse screening analysis will be presented at PIC No. 1.

For the evaluation of alternatives, the study will utilize a formal quantitative evaluation methodology described as the Multi Attribute Trade-off System (MATS). The use of this multi-criteria decision analysis involves scoring each alternative on each criterion and then totalling the scores using a system of weights to determine an overall ranking of each alternative.

The steps shown below will be undertaken to arrive at an overall score for each alternative.

- Development of Evaluation Criteria for the alternatives (coarse screening a long list of criteria to develop a short list of criteria to carry forward for evaluation). These factors and sub-factors are used to measure the differences between the alternatives.
- Public review and comment (PIC No. 1).
- Development of definitions and measurements for each sub-factor carried forward. (Data must be collected for each alternative under each sub-factor. Measurements for each alternative, under each sub-factor, are conducted using topographic plans, field surveys, numerical modelling etc.).
- Environmental inventories and engineering analysis of corridor alternatives to determine differences in performance and effects between alternatives.
- Weighting of Criteria (assigning weights to each Factor and Sub-factor based on their importance to each team member's discipline or area of expertise).
- Rating Alternatives.
- Selection of Technically Preferred Alternative(s) (TPA) – Highest Ranked Alternative.
- Sensitivity Testing.
- Public review and comment (PIC No. 2).
- Recommendations and presentation of a Recommended Plan.
- Refinements to Recommended Plan.

The quantitative approach for the evaluation of alternatives is consistent with MECP practices for the evaluation of numerous and complex alternatives. It avoids many of the limitations of other (qualitative) methods by using an analytical approach that measures scores based on a mathematical relationship, i.e. the degree of subjectivity by the evaluation team is minimized. This traceable process allows the evaluation team and the public an opportunity to assess trade-offs involved in the evaluation and use of this information in the decision-making process. Sample evaluation criteria include:

1. Global Evaluation Factors: Traffic and Transportation; Natural Environment; Social and Cultural Environment; Economic Environment; Land Use and Property; and Cost.

2. Local Evaluation Criteria (under each Global Evaluation Factor) which may include: temporary or permanent property impacts; loss of natural habitat; noise; built heritage resource impacts; emergency response; and capital cost.

Glossary of Terms

• AADT	Annual Average Daily Traffic – the average 24-hour, two-way traffic per day for the period from January 1st to December 31st.
• Alignment	The vertical and horizontal position of a road.
• Alternative	Well-defined and distinct course of action that fulfils a given set of requirements. The EA Act distinguishes between alternatives to the undertaking and alternative methods of carrying out the undertaking.
• Alternative Design Concepts	Alternative ways of solving a documented transportation deficiency or taking advantage of an opportunity. (Alternative methods of carrying out the undertaking).
• Alternative Project	Alternatives to the Undertaking, see above.
• Alternatives to the Undertaking	Alternative ways of solving problems or meeting demand (Planning Alternatives).
• Bump-Up	The act of requesting that an environmental assessment initiated as a class EA be required to follow the individual EA process. The change is a result of a decision by the proponent or by the Minister of Environment to require that an individual environmental assessment be conducted.
• Canadian Environmental Assessment Act (CEAA)	The CEAA applies to projects for which the federal government holds decision-making authority. It is legislation that identifies the responsibilities and procedures for the environmental assessment.
• Class Environmental Assessment Document	An individual environmental report documenting a planning process which is formally submitted under the EA Act. Once the Class EA document is approved, projects covered by the class can be implemented without having to seek further approvals under the EA Act provided the Class EA process is followed.
• Class Environmental Assessment Process	A planning process established for a group of projects in order to ensure compliance with the Environmental Assessment (EA) Act. The EA Act, in Section 13 makes provision for the establishment of Class Environmental Assessments.
• Corridor	A band of variable width between two locations. In transportation studies a corridor is a defined area where a new or improved transportation facility might be located.

<ul style="list-style-type: none"> • Criterion 	Explicit feature or consideration used for comparison of alternatives.
<ul style="list-style-type: none"> • Detail Design 	The final stage in the design process in which the engineering and environmental components of preliminary design are refined and details concerning, for example, property, drainage, utility relocations and quantity estimate requirements are prepared, and contract documents and drawings are produced.
<ul style="list-style-type: none"> • DFO 	Department of Fisheries and Oceans.
<ul style="list-style-type: none"> • EA 	Environmental Assessment
<ul style="list-style-type: none"> • EA Act 	Ontario Environmental Assessment Act (as amended by S.O. 1996 C.27), RSO 1980.
<ul style="list-style-type: none"> • Environment 	<ul style="list-style-type: none"> • Air, land or water, • Plant and animal life, including human life, • The social, economic and cultural conditions that influence the life of humans or a community, • Any building structure, machine or other device or thing made by humans, • Any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities, or • Any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.
<ul style="list-style-type: none"> • Environmental Effect 	A change in the existing conditions of the environment which may have either beneficial (positive) or detrimental (negative) effects.
<ul style="list-style-type: none"> • Evaluation 	The outcome of a process that appraises the advantages and disadvantages of alternatives.
<ul style="list-style-type: none"> • Evaluation Process 	The process involving the identification of criteria, rating of predicted impacts, assignment of weights to criteria, and aggregation of weights, rates and criteria to produce an ordering of alternatives.
<ul style="list-style-type: none"> • External Agencies 	Include Federal departments and agencies, Provincial ministries and agencies, conservation authorities, emergency services, municipalities, Crown corporations or other agencies other than MTO.

• Factor	A category of sub-factors.
• General Arrangement	Structural plan of the bridge and proposed works including elevations and cross-sectional views of the bridge.
• Individual Environmental Assessment	An environmental Assessment requiring the submission of a document for approval by the Minister, pursuant to the EA Act and which is neither exempt from the EA Act nor covered by a Class EA approval.
• MECP	Ministry of the Environment, Conservation and Parks.
• MHSTCI	Ministry of Heritage, Sport, Tourism and Culture Industries.
• Mitigating Measure	A measure that is incorporated into a project to reduce, eliminate or ameliorate detrimental environmental effects.
• Mitigation	Taking actions that either remove or alleviate to some degree the negative impacts associated with the implementation of alternatives.
• MNRF	Ministry of Natural Resources and Forestry.
• MTO	Ministry of Transportation Ontario.
• NED	Natural Environment Report
• NSA	Noise Sensitive Areas
• OP	Official Plan
• PIC	Public Information Centre
• Planning Alternatives	Planning alternatives are “alternative methods” under the EA Act. Identification of significant transportation engineering opportunities while protecting significant environmental features as much as possible.
• Planning Alternatives	That part of the planning and design process where alternatives to the undertaking and alternative routes are identified and assessed. Also described as “Alternative Project” under the federal EA Act.
• Project	A specific undertaking planned and implemented in accordance with the Class EA including all those activities necessary to solve a specific problem.
• Proponent	A person or agency that carries or proposes to carry out an undertaking, or is the owner or person having charge, management, or control of an undertaking.
• Public	Includes the general public, interest groups, associates,

	community groups, and individuals, including property owners.
• Realignment	Replacement or upgrading of an existing roadway on a new or revised alignment.
• Recommended Plan	That part of the planning and design process, during which various alternative solutions are examined and evaluated including consideration of environmental effects and mitigation; the recommended design solution is then developed in sufficient detail to ensure that the horizontal and vertical controls are physically compatible with the proposed site, that the requirements of lands and rights-of-way are satisfactorily identified, and that the basic design criteria or features to be contained in the design, have been fully recognized and documented in sufficient graphic detail to ensure their feasibility.
• SAR	Species At Risk
• Screening	Process of eliminating alternatives from further consideration, which do not meet minimum conditions or categorical requirements.
• SDR	Study Design Report.
• Sub-factor	A single criterion used for the evaluation. Each sub-factor is grouped under one of the factors.
• Technical Advisory Committee	The Advisory Committee will include the County and Consultant. It will act as the decision-making body for the study recommendations.
• TESR	Transportation Environmental Study Report. The final documentation for a Group B project, defining the project, consultation process, preferred solution and mitigation measures.
• TIS	Traffic Impact Study
• TMP	Transportation Master Plan
• TPA	Technically Preferred Alternative
• TPP	Technically Preferred Plan
• Traceability	Characteristics of an evaluation process which enables its development and implementation to be followed with ease.
• Undertaking	In keeping with the definition of the Environmental Assessment Act, a project or activity subject to an

Environmental Assessment.
