



Highway 61 Planning and Preliminary Design Study from Arthur Street to Loch Lomond Road GWP 6033-17-00

Study Design DRAFT

May 2018, Revision 1

Revision History

Revision	Date	Description of Major Change
1	May 1, 2018	Section 1.2 Project Orientation added
2	May 1, 2018	Sectio 5.0 Traffic – Traffic volumes amended

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1.0 Introduction

The Ministry of Transportation (MTO) has retained BT Engineering (BTE) to undertake a Planning, Preliminary Design and Class Environmental Assessment (Class EA) Study for a 9.2 km section of Highway 61 from 0.5 km south of Arthur Street to 0.5 km south of Loch Lomond Road. This study follows the recent highway planning and Environmental Assessment (EA) for the Thunder Bay Expressway completed by MTO for a controlled access freeway from Arthur Street to northerly Balsam Street, GWP 6001-13-00. The continuation of this planning to the south is a proactive step by MTO to achieve design consistency on the Provincial road network. The study will define an operational improvement plan to satisfy both short term and long term planning horizons, and will consider the transition between the future freeway and highway sections. Defining the future plan will allow proactive property protection of the highway corridor that can minimize environmental and land use impacts.

This draft Study Design Report (SDR) is the initial public document for the study and presents:

- the proposed problem and opportunity statement;
- a blueprint of the proposed Work Plan; and
- the Study Process for the planning and design to meet the requirements of the Ontario Environmental Assessment Act.

The draft Study Design allows early review by the public and stakeholders of:

- proposed alternatives to the undertaking (alternative planning solutions);
- proposed alternative methods (initial preliminary design alternatives for improvements being considered by the study which will be presented at PIC No. 1 in greater detail);
- the proposed evaluation process (to compare alternatives); proposed public, agency and Indigenous Peoples consultation; and
- proposed documentation.

The draft SDR outlines the key activities required to complete the study and the EA preliminary planning and design process. The draft SDR will be circulated at the initiation of the study to various agencies, and will be presented to the study's Technical Advisory Committee (TAC) and Stakeholder Advisory Committee (SAC), and to the general public by posting the document on the study's website and at the first Public Information Centre (PIC). The early distribution of this draft report is intended to solicit early input on the planning process. Following the first PIC, the Study Design Report will be finalized including revisions based on input received and will then be posted on the study website.

Included in this document is a Consultation program for obtaining input from potentially interested and affected persons during the planning of this project. Consultation is undertaken early in the study to identify interested persons, government agencies, and Indigenous Peoples groups, and establish how they can be engaged in the study.

This Study will be completed as a Group B project under the MTO Class EA.

1.1 Study Areas

Initiated by MTO in October 2017, this project involves a MTO Planning, Preliminary Design and EA study to determine the appropriate strategy for the future widening for two sections of Highway 61 (Part A and Part B). The study will consider two distinct corridor sections:

- Part A: Chippewa Road to 0.5 km south of Arthur Street
- Part B: 0.5 km south of Loch Lomond Road to Chippewa Road

The study area has been divided to allow for two levels of analysis. The “Local Study Area” will include a focus on the Highway 61 corridor generally within or adjacent to the MTO right-of-way where improvement alternatives will be considered. **Figure 1** illustrates the Local Study Area.

1.2 Project Orientation

For the purposes of this study, Highway 61 is described as a north-south corridor.

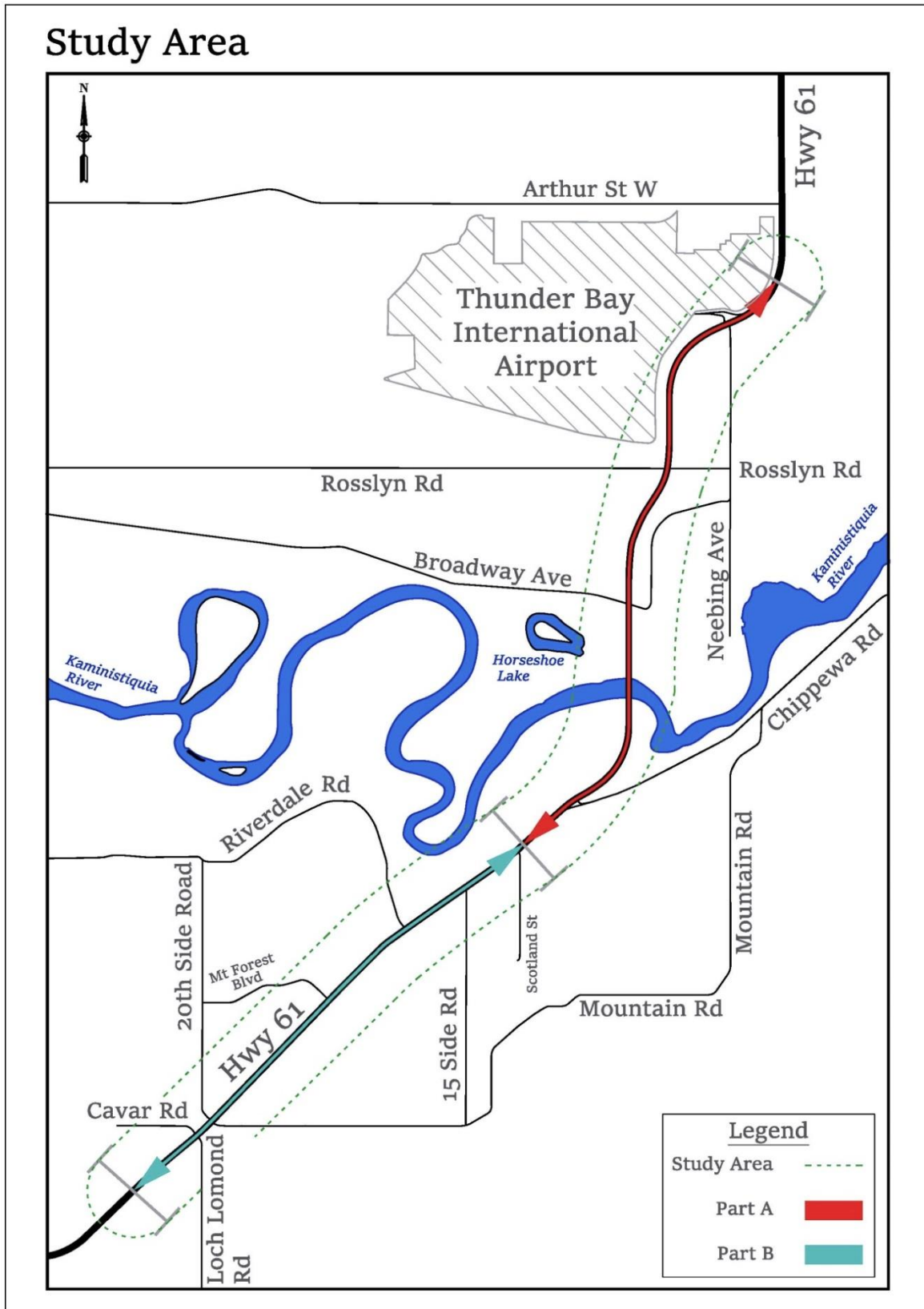


Figure 1: Local Study Area

2.0 Background

2.1 Background Studies

Other internal MTO studies that have been completed, with their relevance to this study include:

- 1991: Highway 61 from Highway 130 to Highway 11/17 Feasibility Study Report (WP 656-89-00) – this study evaluated options for upgrading Highway 61 along its existing alignment, or constructing a new corridor.
- 1992: Highway 61 From Arthur Street to Broadway Avenue Preliminary Design Report (WP 240-91-00) – this PDR defined improvements to Highway 61 to accommodate heavy truck traffic and improve safety. The short term plan recommended improvements to the Neebing Avenue and Broadway Avenue intersections; the long term plan examined the potential for a 4-lane divided highway with interchanges at intersecting roads.
- 1995: Highway 61 – Highway 11/17 Interchange Improvements from Harbour Expressway Southerly to Broadway Avenue Planning Study Report (WP 374-90-00) – this study examined the long term plan for interchange requirements at Arthur Street, Neebing Avenue and Broadway Avenue. The Study recommended a diamond interchange at Broadway Avenue, a tight diamond interchange at Neebing Avenue/Princess Street, and a wide diamond interchange at Arthur Street.
- 1995: Highway 61 – Four-Laning Improvements from Neebing Avenue Southerly to Broadway Avenue – this project was undertaken to widen Highway 61 to 4 lanes between Neebing Avenue and Broadway Avenue, and to channelize the eastbound right turn movements at the Broadway Avenue/Highway 61 intersection.
- 2010: Thunder Bay Expressway (Highway 61 from south of Broadway Avenue to north of Arthur Street & Highway 11/17 from south of Balsam Street to the Current River Bridge) Design and Construction Report (GWP 6021-06-00) – this study assessed improvements to Highways 11/17 and 61 including geometric changes, intersection and operational improvements.
- 2014: Highway 61 Roundabout Feasibility Study – this study reviewed the feasibility of a roundabout at the following intersections with Highway 61: Cavar Road/Loch Lomond Road; 20th Side Road/Mountain Road; and Chippewa Road. The evaluation concluded that the roundabouts were suitable to accommodate 2020 future traffic volumes with a level of service A.
- 2015: Highway 61 at Chippewa Road Intersection Traffic Engineering and Preliminary Design Report (No. 6014-E-0010-001) – this study reviewed intersection improvements and recommended a signalized intersection with turning lane improvements.
- 2016: Thunder Bay Expressway (Highways 11/17 & 61) from 1 km south of Arthur Street to 1 km north of Balsam Street Transportation Environmental Study Report (GWP 6001-13-00) – this EA defined immediate, interim and long term improvements to the TBE to address future transportation needs. The EA recommended an interchange at Arthur Street.

This current study will review and consider the above background studies. While these studies can provide valuable information, they were typically completed without public consultation and it is recognized that there has been no formal MTO acceptance/endorsement of many of the recommendations.

2.2 Existing Conditions

The existing Highway 61 corridor carries an average annual daily traffic (AADT) that ranges from approximately 9,000 vehicles/day south of Loch Lomond Road, to 24,000 vehicles/day at Arthur Street. It represents the primary access to an international crossing and a wide range of competing land uses including: industrial, commercial, institutional and residential development. As an existing Kings Highway with limited parallel route alternatives, segments of the corridor also serve as an access route for pedestrians and cyclists.

Traffic safety will be considered as part of this study which will include an examination of current roadway geometry, traffic demands and an analysis of the collision history along the corridor. Reported historical collision data has been highly variable from year to year. Collision rates have fluctuated from near the provincial average to significantly above the provincial average in other years.

3.0 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. MTO's access management objectives help to support the Planning Act; Provincial Policy Statement; provincial plans, supporting guidelines and legislation; and municipal official plans. 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. The corridor designation of provincial highways is to assist municipalities in implementing access management policies in their Official Plans. All Official Plans and decisions affecting a planning matter in Ontario are required to be consistent with the policies set out in the Provincial Policy Statement. The Provincial Policy Statement provides policy direction on matters of provincial interest related to land use planning and development, including specific direction on land use policies that can support access management principles (e.g. protection of major goods movement facilities and corridors and planning in the vicinity of major facilities).

Within the study area the section of highway Arthur Street to Chippewa Road will consider fully controlled access (no access except at interchanges) and from Chippewa Road to south study area limit it will be an arterial designation. In this arterial section the design will attempt to minimize driveway and intersection access to improve safety.

4.0 Problem and Opportunity Statement

4.1 Project Problem

Highway 61 is a major north-south link in the City of Thunder Bay transportation network and carries a mix of local, regional and long-distance traffic. It connects to Highway 11/17 (the Trans-Canada Highway) and extends south to the international border (State of Minnesota). A review of traffic operations and safety is required, to assess if potential interim and ultimate highway improvements are required to accommodate the projected growth in traffic demands.

The Province of Ontario is committed to provide and maintain a safe and efficient transportation system throughout Ontario. The following preliminary list of potential objectives has been identified on Highway 61 in the study area:

- Improve highway safety;
- Achieve design consistency with the Thunder Bay Expressway to the north;
- Provide adequate level of service for traffic operations that will be required for the 25-year planning horizon;
- Accommodate both an international travel route to the USA and accommodate local travel within the City;
- Define a plan for roadways, bridges and utilities; and
- Accommodate/plan for all modes of travel expected in the corridor.

The study will define the short term operational improvements necessary in the 0-25 year planning horizon as well as the long term Provincial plan (beyond 25 years) for Highway 61 within the study limits. Environmental and property impacts and the capital cost of the project can potentially be reduced by defining a long term property plan well in advance of construction.

Key issues which the study will consider include:

1. Congestion at intersections during peak traffic periods.
2. Minor geometric deficiencies (acceleration and deceleration lanes, horizontal and vertical alignments).
3. Increased traffic demand along Highway 61 due to the closure of the James Street South swing bridge.
4. Existing land uses adjacent to the corridor including the Thunder Bay Airport, major industrial development (Resolute Forest Products), Mountain View and St. Patrick's Cemeteries, and residential/commercial developments.
5. Accommodating all modes of transportation in and adjacent to the corridor (i.e. snowmobiles, cyclists, pedestrians). This will include review of pedestrians and cyclists using the corridor and their prohibition on a controlled access freeway.

6. Thunder Bay International Airport flight-path envelope restrictions (height of structures and street-lights)
7. Kaministiquia River and Mosquito Creek crossing (structure replacement, new structures, and construction impacts in watercourse).
8. CPR Overhead crossing at the Thunder Bay Airport.
9. CNR subway crossing north of Broadway Avenue and rail detour or rapid replacement for highway twinning.
10. Close proximity of the CN Rail right-of-way east of Highway 61 in Part A.

The study will document the up-to-date need and justification for the project and define the implementation plan for construction including mitigation measures.

4.2 Project Opportunities

Opportunities with this planning approach include:

- A bridge management plan may be developed for rehabilitation and future replacement of the Kaministiquia River Bridge and other bridges, without requiring long detour routes along municipal roads.
- Supporting future area growth of the City of Thunder Bay south of the Kaministiquia River.
- Consideration of active transportation to accommodate pedestrian and cycling, removing them from the CAH.
- Designing an appropriate transition between the freeway (where access is provided only at interchanges) to the slower speed of the King's Highway south of Chippewa Road.
- Consideration of the regional change in traffic travel patterns associated with the closure of the James Street Bridge over the Kaministiquia River. The study will review and consider highway improvements to accommodate these changes in travel patterns.
- Implementation of staged construction to reduce the overall cost of the project.

At the conclusion of the study, following agency and public review of the TESR, it is expected that all appropriate environmental approvals will have been secured for future implementation. A Recommended Plan will assist municipalities, landowners and businesses with planning and development near the study area.

5.0 Traffic

As a major north-south transportation link within the City of Thunder Bay, Highway 61 has experienced increased travel demands as a result of:

- Development growth within the City.
- Continued regional and long distance traffic as a link between the Trans-Canada Highway (Highway 11/17) and the international border.
- Closure of the James Street South Bridge, leaving Highway 61 as the only crossing of the Kaministiquia River within the City of Thunder Bay.

Preliminary projections of the average annual daily traffic (AADT) for Part A and Part B of the study area over the 2016 to 2042 time period are provided in **Table 1**. During the summer months, area traffic demands have been observed to increase between 10 and 20%.

Table 1: Highway 61 Traffic Projections

	2016 AADT	2026 AADT	2042 AADT
Part A – South of Arthur Street to Chippewa Road			
Neebing Avenue/ Princess Street to Broadway Avenue	13,500	16,000	20,000
Broadway Avenue to Chippewa Road	12,300	17,000	24,000
Part B – Chippewa Road to Loch Lomond Road			
Chippewa Road to Riverdale Road	8,800	10,000	12,000
Riverdale Road to Loch Lomond Road/ Cavar Road	6,500	7,500	9,000
South of Loch Lomond Road/ Cavar Road	4,250	4,300	4,500

A widened/ improved Highway 61 within Part A of the study area could improve road safety by:

- Providing increased opportunities for safe passing;
- Physically separating opposing lanes of traffic;
- Eliminating turning movements along the highway by providing grade separated interchanges with ramps at key crossing roadways, and eliminating all other direct access to the highway;
- Reducing congestion; and

- Removing all existing pedestrian and bicycle traffic demands from the controlled access highway (CAH) portion of Highway 61 by accommodating them elsewhere.

A widened/ improved Highway 61 within Part B of the study area could improve road safety by:

- Providing increased opportunities for safe passing;
- Accommodating turning movements along the highway by providing roadway improvements to meet travel demands;
- Limiting the number of driveways and intersections along the highway;
- Reducing congestion; and
- Providing for pedestrians and cyclists on the Highway 61 corridor.

The potential benefit of a widened/improved Highway 61 within the study area is expected to be a transportation system with improved reliability, safety and convenience that will support economic growth by accommodating area residents, commercial and international traffic while attracting tourists to northern Ontario.

6.0 Proposed Study Approach

The planning for improvements to Highway 61 will follow the Environmental Assessment process for Group 'B' projects as outlined in the MTO Class EA. This draft Study Design Report will be circulated to external agencies and will be posted on the study web site at the study initiation. The draft Study Design Report will present an initial description of the problem, potential design alternatives and the process/steps to complete the study. This approach provides early input from agencies and the public, and can allow agencies to comment on the process and technical work programs at the Study initiation. This document will continue to be described as a draft report, being updated and amended as comments are received by the public and agencies. It will be finalized after PIC No. 1 and posted as final on the study's web site. The Planning and Design Process for a Provincial Class EA Group B project is illustrated in **Figure 2**.

6.1 Purpose of Study Design Report

The purpose of this Study Design Report (SDR) is three-fold:

- Outline the study process that MTO proposes to follow for the study and thereby provide a focus for early consultation as an important element in the Environmental Assessment process.
- Document, for stakeholder review and comment, the planning decisions that have been made on a preliminary basis with respect to:
 - transportation needs and corridor management for assess control;
 - Preliminary identification and screening of alternatives to the undertaking; and
 - Selection of the corridor for highway alternatives.
 - Categories of design alternatives that can be considered
- Provide the basis for moving the study forward with confidence once any stakeholder comments regarding the above have been addressed. These comments can include agency and public comments on the technical work programs which are tied to the range of alternatives expected to be assessed.

6.2 Class Environmental Assessment for Provincial Transportation Facilities

A Class EA is an approved planning document that defines groups of projects and activities and the EA processes which MTO is committed to follow. The process provides a decision making framework allowing the requirements of the *Environmental Assessment Act* (EAA) to be met in an effective manner.

The Ontario Ministry of Transportation developed the *Class Environmental Assessment for Provincial Transportation Facilities 2000* (Class EA), 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;

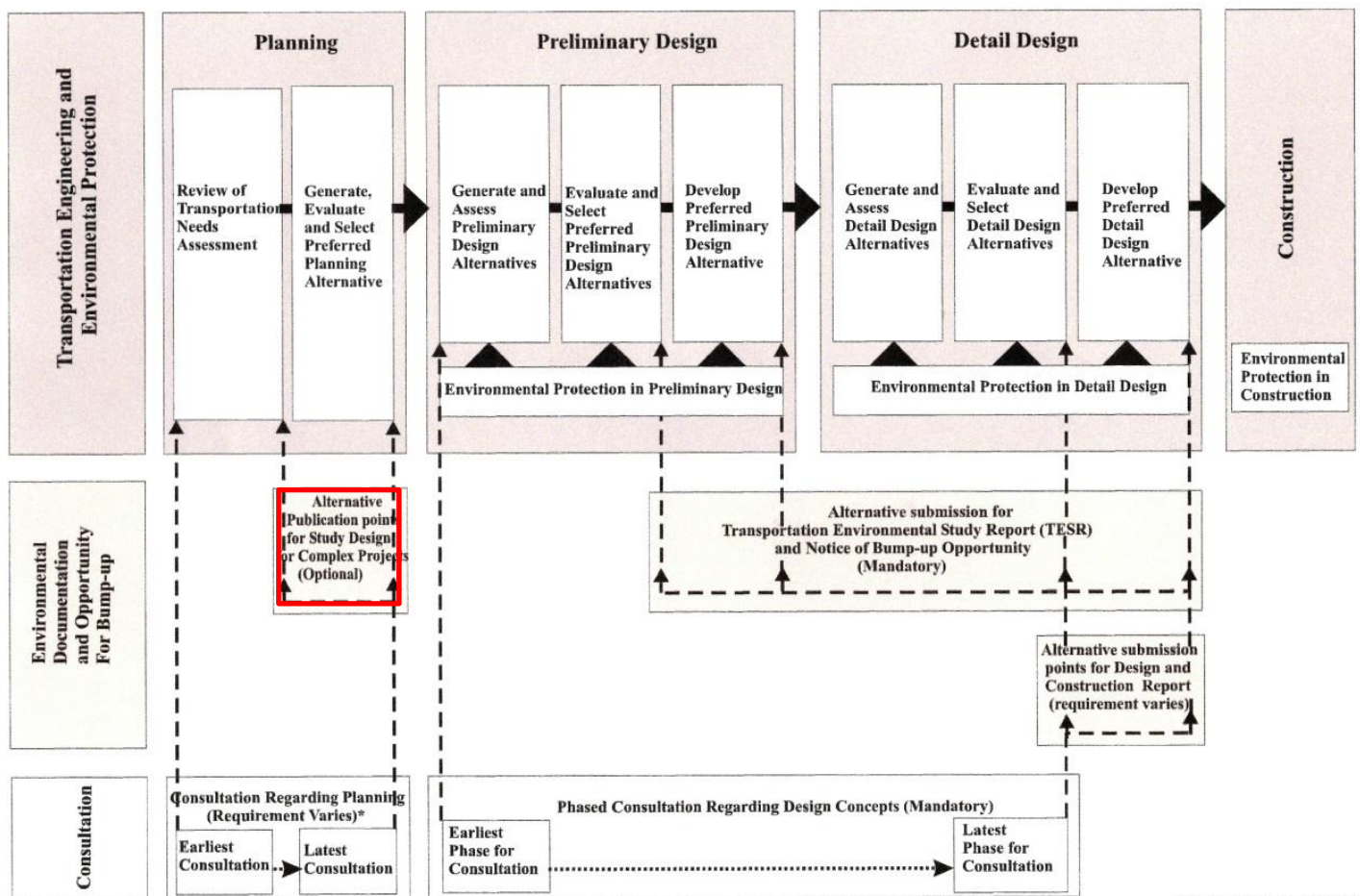
- Documentation and “bump-up” principles and processes; and
- Environmental clearance process.

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

As required under the Class EA, a Transportation Environmental Study Report (TESR) will be prepared to document the work of this study, after a preferred plan is selected.

Figure 2: Provincial Class Group B Planning and Design Process

Overview Of Class EA Process For Group B Projects



3-11 Study Stages and Phases

Study process is here

6.3 Consultation Plan

Consultation will take place throughout the study, including Public Information Centres at key points in the study. The consultation program will comply with the requirements of the *Freedom of Information and Protection of Privacy Act*, and the obligations stipulated in the *Ontarians with Disabilities Act*.

The public and agency consultation program for this Study will include the following:

- Public notices;
- Value Planning Workshop;
- Community Café;
- External communications/presentations with stakeholders, including departments, ministries, agencies, Indigenous Peoples, municipalities and members of the public;
- Public Information Centres; and
- Project website to provide information to the public.

6.4 Public Consultation

The proposed public consultation process is illustrated in **Figure 3**. This consultation process is designed to allow an opportunity to involve all potential stakeholders at all key study milestones.

This will include, but is not necessarily limited to the public, private property owners, businesses and interest groups. It is essential that there be involvement and interaction with regulatory agencies.

6.4.1 Study Web Site

The EA study will include the use of a web site to post information and allow the public to monitor the study progress. The Web site is: **www.mtohighway61.com**. This tool will be used to: post notices for the Study Commencement, PICs and Study Completion; post the Draft Study Design Report and TESR; update the public throughout the Study; collect comments; and post the final Study Design Report. The website will also answer Frequently Asked Questions (FAQ's), and provide an overview of the study and the study schedule.

6.4.2 Public Notices

Notices will be published in local newspapers for the study commencement and all three PICs. Each notice will announce the date, time and location, identify key information to be presented and request input from interested and affected parties and invite them to the PIC. Finally, a Notice of Study Completion will be published announcing the commencement of the 30-day public review period for the TESR.

6.4.3 Public Meetings

Formal public consultation in the form of 3 Public Information Centres (PICs) and one (1) Community Café will be carried out at a local and accessible location. Notices of all three PICs will be published in Thunder Bay News Chronicle and the Thunder Bay Source along with letters mailed out to agencies, stakeholders, Indigenous Peoples, utilities and the public.

The consultation program includes regular project web site updates, including selected PIC materials and Frequently Asked Questions (FAQs) that will be updated as required to respond to study developments and emerging issues or concerns.

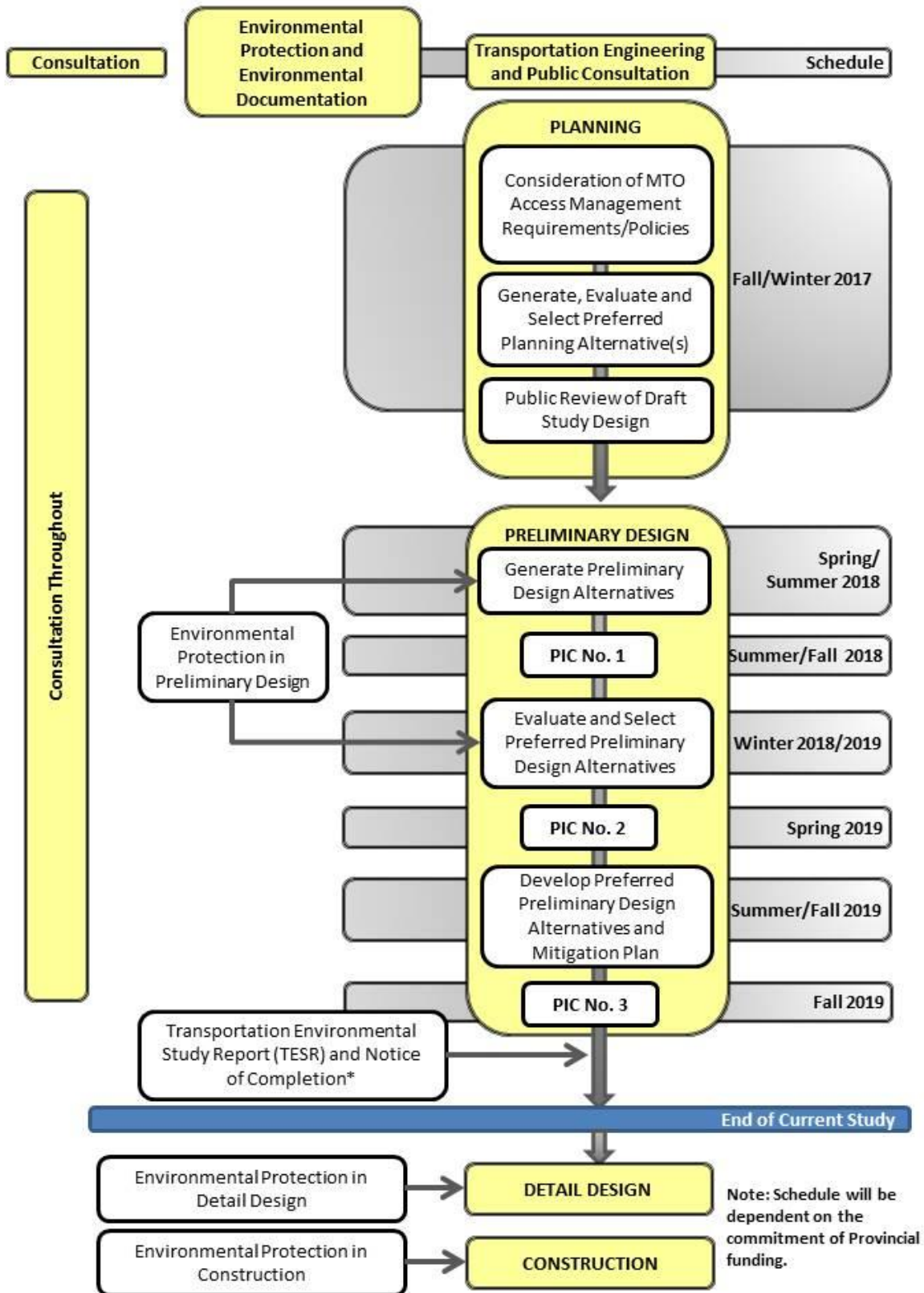


Figure 3: Overview of the MTO Class EA Process for Group B Projects

With respect to public involvement, the work program proposes the following key meetings:

- One Community Café will be held early in the study to listen to the community. This community event may be used to modify the Study Design.
- PIC No. 1 will present:
 - The project goals;
 - Problem and opportunity statement;
 - Draft Study Design Report (Work Plan);
 - Assessment of Alternative Planning Solutions/Alternatives to the Undertaking;
 - Environmental inventories;
 - Traffic analysis;
 - Potential interchange locations and general concepts to be considered and coarse screening of any that have major impacts (such as the airport or cemeteries);
 - Initial list of preliminary design alternatives (Part A and B);
 - Preliminary criteria for evaluation of alternatives; and
 - Median alternatives and preliminary evaluation presenting a preferred alternative.
- PIC No. 2 will present:
 - Interchange alternatives and evaluation;
 - Part B cross section alternatives and evaluation;
 - Part B intersection alternatives and evaluation; and
 - Technically preferred alternatives for Public comment.
- PIC No.3 will present:
 - Preliminary design of preferred plan;
 - Refinements (if there are any);
 - Mitigation plan (for any residual effects); and
 - Next steps.

6.5 Stakeholder Consultation

6.5.1 Municipal and Agency Consultation

Municipal and Federal consultation will be maintained during the study through a Stakeholder Advisory Committee (SAC). Meetings will be held at key milestones. SAC participation will include as a minimum the City of Thunder Bay, Fort William First Nation, Thunder Bay Airport, CN Rail and CP Rail.

6.5.2 External Agencies and Regulatory Agencies

The following agencies will be kept on a study mailing list, which will be updated and maintained throughout the study:

- Ministry of Environment and Climate Change (MOECC)
- Ministry of Tourism, Culture and Sport (MTCS)
- Ministry of Natural Resources and Forestry (MNR)
- Ministry of Northern Development and Mines (MNDM)
- Ministry of Indigenous Relations and Reconciliation
- Indigenous and Northern Affairs Canada
- Ministry of Community and Social Services
- Ministry of Municipal Affairs and Housing
- Ministry of Energy
- Ministry of Infrastructure & Operations
- Ministry of Community Safety and Correctional Services
- Transport Canada (TC)
- NAV Canada, Aeronautical Information Management
- Northwestern Ontario Municipal Association
- Thunder Bay International Airport
- Ontario Provincial Correctional Centre – Northern Ontario
- Department of Fisheries and Oceans (DFO)
- Lakehead Region Conservation Authority
- Parks Canada
- Thunder Bay Police Service
- Ambulance Service
- City of Thunder Bay Fire Rescue
- Ontario Provincial Police (Thunder Bay)
- City of Thunder Bay
- Lakehead University
- Confederation College
- Thunder Bay Catholic District School Board
- Conseil Scolaire De District Catholique des Aurores Boréales
- Lakehead Public Schools

6.5.3 Community Interest Groups

The following community interest groups will be kept on a study mailing list, which will be updated and maintained throughout the study:

- City of Thunder Bay Chamber of Commerce
- Northwestern Ontario Association of Chamber of Commerce
- Municipality of Oliver-Paipoonge
- Thunder Bay Port Authority
- CN Railway
- CP Railway
- Thunder Bay Adventure Trails Snowmobile Clubs
- Greyhound Canada Transportation Group
- Ontario Trucking Association
- Canadian Ecology Center
- Ontario Federation of Snowmobile Clubs – NWOSTA
- Thunder Bay Community Economic Development Commission
- Old Fort William Historical Park
- Ontario Cycling Association

- GFL Environment
- Justice Ronald Lester Youth Center

6.5.4 Proposed Utilities

The following utilities will be kept on a study mailing list, which will be updated and maintained throughout the study:

- Bell
- Tbaytel
- Thunder Bay Water
- Thunder Bay Hydro
- Hydro One
- Union Gas
- TransCanada Pipelines
- Shaw Communications Inc.

6.6 Indigenous Peoples Consultation

Governments (and the private sector) have a constitutional duty to consult aboriginal groups. Consultation will be initiated (through MTO staff) at the beginning of the project, and Indigenous Peoples interests will be considered throughout the consultation program. Offers to meet during the study will be made to Indigenous Peoples. This study will also include liaison with Ministry of Indigenous Affairs and Reconciliation and Aboriginal Affairs and Northern Development Canada to identify the Indigenous Peoples that require notification and involvement. As a starting point this study will initially consult with the following:

- Aboriginal Affairs and Northern Development Canada
- Ministry of Indigenous Affairs and Reconciliation
- Anishinabek Nation
- Fort William First Nation
- Metis Nation of Ontario
- MNO Thunder Bay Metis Council
- Red Sky Metis Independent Nation
- Long Lake #58 First Nation
- Kiashke Zaaging Anishinaabek
- Nokiiwin Tribal Council
- Algonquins of Ontario

6.7 Issues/Concerns and Approaches Toward Resolving Concerns

Recognizing that the stakeholders who are expected to participate in this study process may have differing views, values, opinions and interests, and that consensus is not always possible, the MTO will consider various means to identify, address, and resolve issues in a fair or balanced way.

7.0 Alternatives to the Undertaking – Planning Solutions

Alternatives to the Undertaking (also being described as Planning Solutions) represent alternative ways or methods of addressing the Problem / Opportunity Statement specific to this study. These reflect different strategies and include the “Do Nothing” approach (maintaining the status quo but not addressing the Problem / Opportunity Statement).

Following the assessment of Alternatives to the Undertaking, those alternatives judged to address the Problem / Opportunity Statement will be carried forward and will form the Recommended Planning Solution or “Transportation Undertaking”. The selected “Transportation Undertaking” will be deemed to address the Problem / Opportunity Statement required to plan for the safety of the travelling public on Highway 61 and provide a cost effective interim and long-term plan for the corridor, while providing the best overall balance between the transportation engineering objectives, life cycle costs, and other environmental, cultural, socio-economic, and land use planning objectives.

In developing “Preliminary” Alternative Planning Solutions (Alternatives to the Undertaking), a number of general principles and MTO objectives are being considered for highway operation and safety. These include:

- Satisfy MTO design standards and corridor classification standards (as described in **Section 2.0**);
- Ensure the safety of the travelling public;
- Ensure the technical feasibility of construction, operation and maintenance;
- Improve the use of existing infrastructure;
- Improve access to commercial, residential and industrial land uses along the corridor to support and promote sustainable growth and economic development;
- Provide for the efficient movement of people and goods during the staging of the project by minimizing or avoiding long term multi-lane closures on Highway 61;
- Minimize the environmental impacts and the use of non-renewable natural resources such as aggregates; and
- Support emergency service response objectives.

Planning Alternatives (Alternatives to the Undertaking) are a mandatory step in the MTO’s Class EA. A preliminary list of Planning Alternatives (Alternatives to the Undertaking) includes:

- Do Nothing (Status Quo)
- Transportation Demand Management
- Diversion of Traffic to Local Roads
- Expanded/New Non Road Infrastructure Improvements to Highway 61 (existing corridor)
- Infrastructure Improvements in a New Corridor

Based on an evaluation of these planning alternatives, Preferred Planning Alternative(s) will be carried forward for more detailed investigations. The preferred Planning Alternative(s) will be presented to the public at PIC No. 1.

7.1 Descriptions of Planning Solutions/Alternatives to the Undertaking

The following describes the long list of Planning Solutions/Alternatives to the Undertaking and the assessments of these are described in **Section 7.2**. They can be described as alternative approaches. Planning Solutions/Alternatives to the Undertaking are described as follows:

Alternative 1: Do Nothing – The “Do Nothing” Alternative maintains the status quo of the corridor with no significant actions taken to accommodate increased traffic volumes or aging infrastructure. This approach would accept further deterioration within the 20 year planning horizon and would not address the transportation system capacity constraints. This alternative reflects a baseline from which other approaches can be compared.

Alternative 2: Travel Demand Management (TDM) – This strategy is to reduce vehicular demand and encourage trip reductions through more active modes of transportation (cycling, walking and transit), ride sharing or work at home. The focus of TDM is to manage demand on the transportation network to reduce the need for infrastructure improvements.

Alternative 3: Greater Use of Local Roads – This strategy would encourage the use of local roads to reduce the demand on Highway 61. A limiting factor to the local road network is that Highway 61 currently provides the only crossing of the Kaministiquia River within the City of Thunder Bay (the James Street South swing bridge, which previously provided a second crossing, has been closed to vehicular traffic since a fire in 2013). This alternative considers replacement of the James Street South Bridge as an alternative project.

Alternative 4: Expanded/New Non Road Infrastructure – This strategy can include any of the following:

- Local Transit – The provision of new or improved local transit service could divert people from private cars and relieve congestion on existing roadways;
- Freight Rail – Increased freight rail services for goods movement within existing rail corridors and/or along new rail corridors could encourage the diversion of freight from trucks. The ability to expand rail service and divert longer haul goods to rail may provide some relief to network congestion both on regional arterials and on the provincial highway network; and
- Inter-regional Transit or Passenger Rail– Providing new /increased inter-regional/provincial transit or passenger rail services could potentially relieve traffic congestion and reduce delays.

Alternative 5: Widen/Improve Existing Provincial Highway 61 – Alternatives within this category include widening, operational improvements, and/or realignment of Highway 61. The

provision of improved capacity and operations on existing provincial highways, and/or accommodating required capacity on realigned provincial highways, could include lanes for HOV and lanes/shoulders for inter-regional bus transit, and could provide general purpose lanes to increase the performance of the area transportation system.

Alternative 6: New Corridor – This strategy would provide a new alternative north-south corridor to connect between Highway 11/17 and Highway 61. This would reduce demand on Highway 61 and provide a secondary connection should congestion, a collision or construction require diversion of traffic.

A Feasibility Study Report for Highway 61 from Highway 130 to Highway 11/17 (1991) was prepared to evaluate future corridors for Highway 61 from Highway 130 northerly to Highway 11/17. These corridor alternatives are illustrated on **Figure 4**. Based on the evaluation of alternatives, Alternative A: Widening of existing Highway 61, and Alternative E: New north-south corridor 1.5 km east of western city limits were recommended to be carried forward for future study.

Based on the previous Feasibility Study report, the current study could consider three highway corridors other than the existing Highway 61. These three corridors, as illustrated on **Figure 5** include:

- Outer bypass on Highway 130 corridors (Alternative D from 1991 study);
- Inner bypass within City boundaries (Alternative E from 1991 study); and
- Local Highway 61 bypass within study area (Alternative A1 from 1991 study).

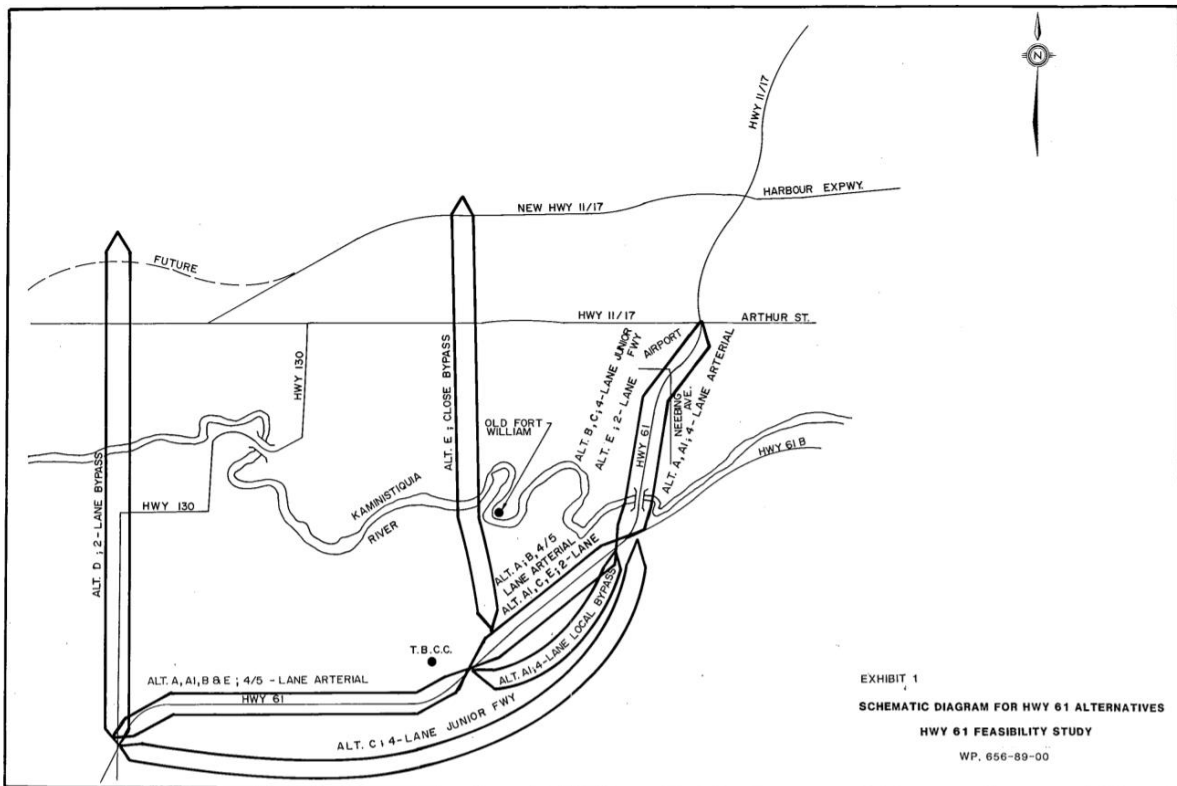


Figure 4: Schematic Diagram of Alternatives from Highway 61 from Highway 130 to Highway 11/17 Report (1991)

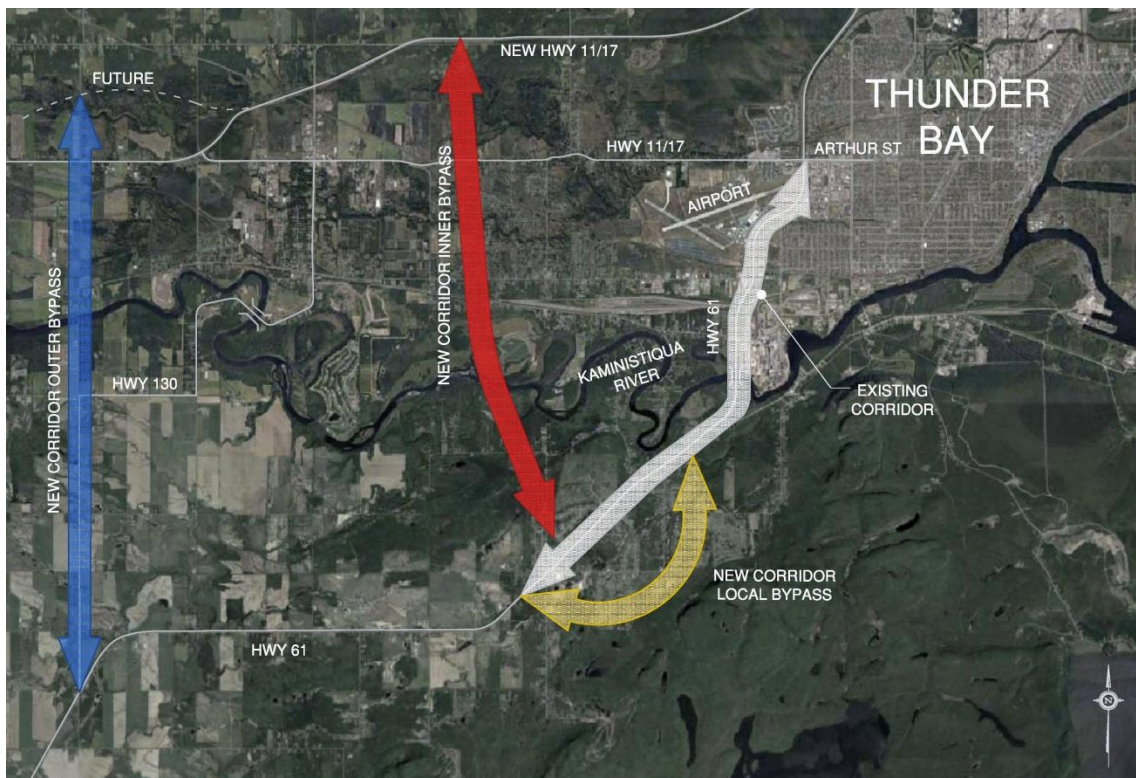


Figure 5: Alternative Planning Solutions – New Corridors

7.2 Preliminary Assessment of Planning Solutions/Alternatives to the Undertaking

A preliminary assessment of each alternative planning solution is presented in **Table 2**. This assessment of each planning solution is summarized as follows:

Alternative 1: Do Nothing

This alternative does not meet forecast travel demand which is estimated to warrant 4-laning of the highway in both Parts A and B. However the alternative will be considered the baseline to which other alternatives are compared.

Alternative 2: Travel Demand Management (TDM)

This alternative will provide benefits; however, the length of trips using Highway 61 is considered too long to effectively shift vehicular trips to walking, cycling or transit. This alternative is not recommended as a standalone solution to improve the transportation system through the Study Area. However, this approach is considered as a complementary solution to those alternative solutions carried forward.

Alternative 3: Greater Use of Local Roads

Municipal Roads are not generally designed and maintained to the standards required for higher speed, long distance inter-regional travel that is required through this study area. They are intended to serve as area access roads, and are characterized by slower-moving and turning traffic. Mixing long-distance and local traffic creates other transportation network concerns. This alternative may result in minor reductions in traffic on the provincial highway system; however, it will increase congestion and negatively impact property owners on local roads. The reopening of the James Street South Bridge to vehicular traffic would be desirable but would not replace the need for the future 4-lane Highway 61 facility. As a result, this alternative is not recommended to be carried forward as a standalone solution. It may, however, be carried forward as a complementary solution by the authority having jurisdiction of the bridge.

Alternative 4: Expanded/New Non-road Infrastructure

The vast majority of trips in the study area are made using automobiles and trucks. The scattered origin/destination patterns of travel within and beyond the study area is not compatible with the use of non-road alternatives. The expanded/new non-road infrastructure alternative does not address the study problem statement and need for Highway 61 improvements, and it is not proposed to be carried forward.

Alternative 5: Widen/Improve Existing Provincial Highway

The use of the existing highway may include localized environmental and property impacts. By using an existing corridor, in comparison to choosing a new facility, many of the impacts can be reduced. Locating the project in the existing corridor minimizes changes in travel behaviour as land use planning by the City of Thunder Bay is based on Highway 61 serving as a major north-south arterial link connecting to the Thunder Bay Expressway.

Widening/improving the provincial highway would provide the following:

- Opportunity to improve highway safety and suitably accommodate future forecast highway demands;
- Provision of controlled access at interchanges within CAH limits or at intersections within KH designation limits;
- Maximize the previous investment in the existing Highway 61 corridor;
- Opportunity to improve the existing highway to meet current MTO design standards; and
- Opportunity to stage the improvements in such a way that they can be implemented as required.

This alternative has high potential to serve most modes of travel, accommodates existing land uses and has moderate (to be determined) environmental impacts. This alternative is recommended to be carried forward.

Alternative 6: New Corridor

The introduction of a new corridor to satisfy travel demand should be expected to attract only a limited volume of traffic from the existing Highway 61. It therefore is considered to have low transportation performance in comparison to expansion of the existing facility. It is also considered likely to have a higher environmental impact as it would introduce both a new transportation corridor and a new crossing of the Kaministiquia River. It would also have an estimated high cost in comparison to improvements to the existing corridor. As a result of this low transportation service, high environmental impact and high cost, the New Corridor alternative is not recommended to be carried forward.

7.3 Summary of Evaluation of Planning Solutions/Alternatives to the Undertaking

On the basis of this assessment, the alternatives to the undertaking being carried forward for further study are a combination that includes:

- Alternative 1: Do Nothing
- Alternative 2: Travel Demand Management (which will focus on accommodating pedestrian and cycling as well as accommodating transit travel routes if supported by the City of Thunder Bay)
- Alternative 5: Widen/Improve Existing Provincial Highways

The evaluation of Alternatives to the Undertaking is shown in **Table 2**.

Table 2: Assessment of the Alternatives to the Undertaking (Planning Solutions)

Screening Criteria	Alternative 1 Do Nothing	Alternative 2 Travel Demand Management	Alternative 3 Greater Use of Local Roads (James Street South Link)	Alternative 4 Expanded/ New Non Road Infrastructure	Alternative 5 Widen/ Improve Existing Highway	Alternative 6 New Corridor
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 warrant for a 4-lane highway.	Improves local road access and trips destined to Fort William First Nation but is not forecast to eliminate warrant to 4-lane Highway 61.	Expansion of rail, air and transit infrastructure is not forecast to reduce travel demand to eliminate need to widen Highway 61.	Meets forecast demand.	Diverted trips not forecast to eliminate need to widen Highway 61.
Does the approach improve safety?	No change in highway safety.	Can improve pedestrian and cycling safety.	No change.	Moderate improvements in safety with reduction in commercial vehicles if more goods movement can occur by rail or air.	Improves safety at all access locations.	No change.
Does the approach address all modes?	No change.	Addresses active mode of transportation.	Supports cycling and pedestrian modes and accommodating drivers who prefer to avoid high speed highways.	This alternative does not address all modes. Vehicular, pedestrian and cycling not accommodated.	Requires definition of travel routes for active modes of transportation.	New alignment may attract some cycling trips but not forecast to serve local trips in the Part B portion of the Study Area.
Environmental						
What is the magnitude of environmental impacts (natural, social and cultural environments)?	No Impacts.	No or low impacts. Low impacts may be associated with active transportation projects.	Low impact associated with James Street South bridge construction over the Kaministiquia River.	Low impacts for rail or air improvements on existing transportation corridors or facilities. Transit improvements may have potential effects if exclusive linear facilities extended to study area. However low population and employment in Section B study area do not support a dedicated transit facility.	Low to High environmental effects possible dependent on design through sensitive environmental areas (the Kaministiquia River, Mosquito Creek, Heritage resources at Broadway avenue, etc.).	High environmental effects possible within new corridor. Magnitude of effects subject to environmental mitigation.
Land Use/Property						
Does the approach support Municipal Official Plan?	Conforms to existing Official Plan.	Supports objectives of Official Plan for trip reduction and reduction in airborne emissions and health benefits of active transportation.	Provides connectivity between land uses and redundancy for trips over the Kaministiquia River.	Supports transit objective of Official Plan.	Serves expansion areas of City south of Kaministiquia River.	Not within Official Plan. Undefined if new corridor would potentially result in existing Highway 61 transfer to city of Thunder Bay.
Does the Approach Support MTO's corridor access Management Plan?	Does not support new access management guidelines.	N/A	N/A	N/A	Improves the accessibility management of provincial highway.	Potential to improve accessibility and Provincial objectives.
Does the approach support Fort William First Nation?	Does not improve access to the FWFN.	Undefined.	Supports land use and economic activity on the FWFN.	N/A	Improves accessibility to FWFN.	May have detrimental effect should trip diversion relocate trips from passing businesses on FWFN.
Preliminary Recommendation to Carry Forward?	x Carried forward as a baseline to compare other alternatives	✓ As a basket of strategies to be carried forward.	x As a strategy to be carried forward by others. This crossing is not under the jurisdiction of MTO.	x	✓	x

8.0 Preliminary Design Alternatives

Preliminary Highway Design Alternatives, described as “Alternative Methods” of the preferred “Alternative Planning Solutions/Alternatives to the Undertaking”, will be generated and assessed as part of the Study. The following section describes, at the start of the study, the range of alternatives that are expected to be investigated. The alternatives will be generated in sequence, assessed and presented to the public for comments. The alternatives carried forward may include refinements or sub-alternatives based on the comments received and the range of remaining environmental effects. The Preliminary Design Alternatives have been split into groups for each Part (A or B) for this study and are described below.

8.1 Description of Initial Preliminary Design Alternatives: Part A – Chippewa Road to 0.5 km south of Arthur Street

The initial preliminary design alternatives that are under consideration for Part A from Chippewa Road to 0.5 m south of Arthur Street will consider the following groups. They are presented in the SDR for public review and comment, and will be presented in greater detail at PIC No. 1.

Access Alternatives: Interchange Locations

Based on the length of Part A and the existing municipal street network, the preliminary locations for the investigation of interchanges as illustrated in **Figure 6** are anticipated to include:

- Neebing Road
- Broadway Avenue
- Chippewa Road

To establish a corridor vision, the study will include an assessment of critical interchange locations. This could be used to establish priorities for a potential staged implementation of a freeway corridor.

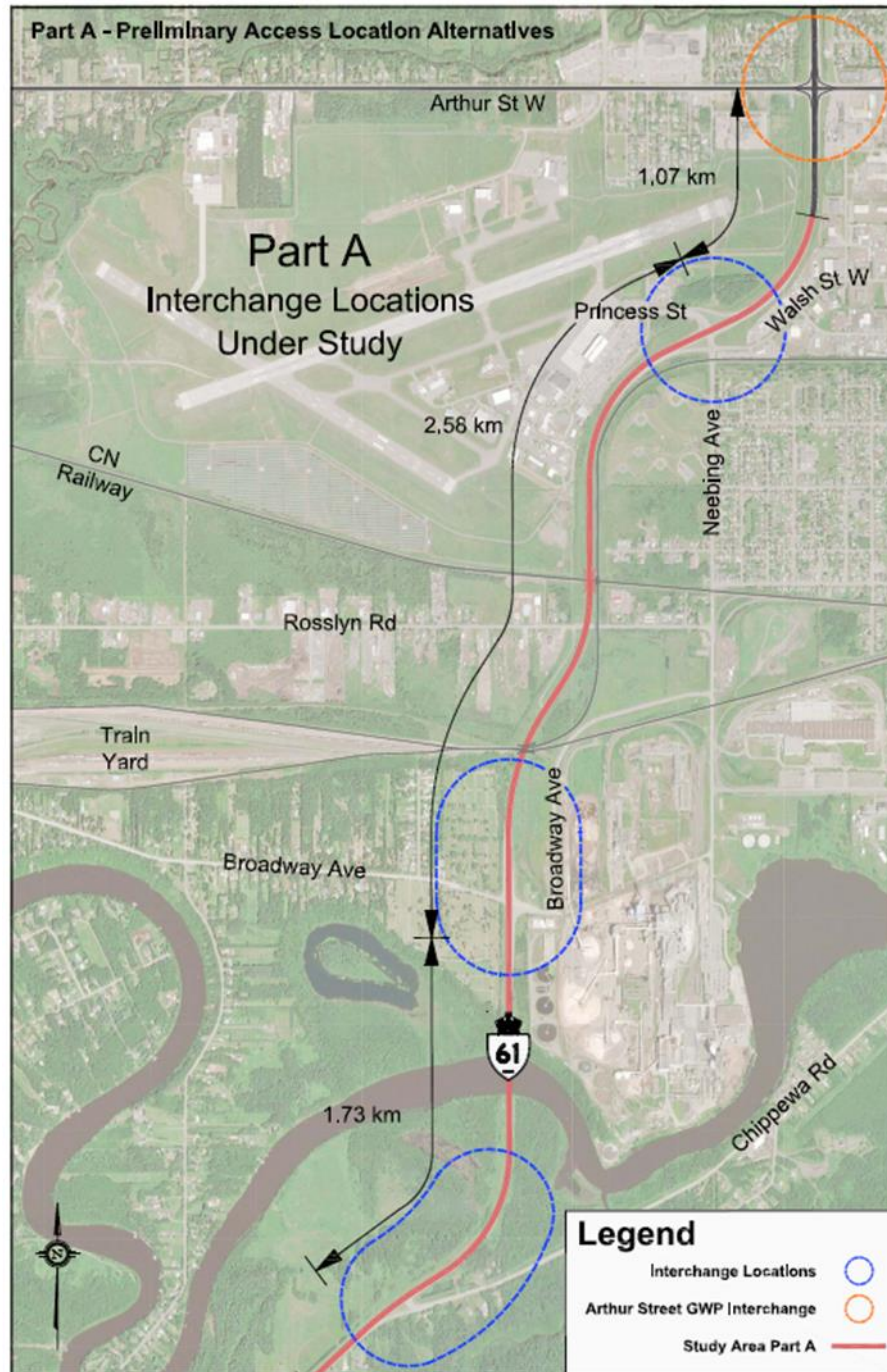


Figure 6: Part A – Preliminary Access Location Alternatives

Access Alternatives: Interchange Configuration Alternatives

Within Part A the types of interchanges that will be considered for technical feasibility include, but will not be limited to:

- Parclo (Partial Cloverleaf) types A2 and A4 (as illustrated in **Figure 7**)

- Parclo B2 and B4 (as illustrated in **Figure 7**)
- Tight and wide diamonds (as illustrated in **Figure 7**)
- Single Point Diamond (SPUI and SPI)
- Button hook type interchanges
- Diverging Diamond, as proposed at the interchange of Highway 61 and Arthur Street
- Combinations of any of the above for the east and west sides of the interchange, and the use of traffic signals or roundabouts, to minimize environmental and property impacts (see **Figure 8**)

Figure 7: Part A – Partial List of Interchange Alternatives

Figure 8: Part A – Preliminary Hybrid Interchange Alternatives

Preliminary Highway Alignment Alternatives

- Twinning to the west
- Twinning to east
- Widening on centre
- Variable alignment (using east, west or centre alignment to avoid most significant environmental effects)

Vertical Alignment Alternatives

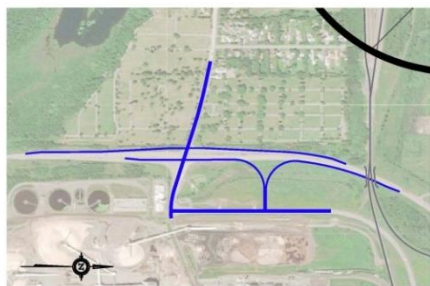
- Cross street grade separation over freeway
- Cross street grade separation under freeway

Cross Section Alternatives

- 4-lane rural divided freeway with 30 m median
- 4 lane rural divided freeway with 22.5 m median



Princess/Neebing - Roundabout ramp terminal on west side of highway



Broadway Ave Interchange - Tight diamond ramps west, buttonhook ramps east



Chippewa Road -Trumpet B interchange 500m north of existing and realign Chippewa road

- 4-lane rural divided freeway with 15 m median

- 4-lane divided urban freeway with 7.5 m median with centre median barrier

8.2 Description of Preliminary Design Alternatives: Part B - 0.5 km south of Loch Lomond Road to Chippewa Road

The preliminary design alternatives for Part B from 0.5 m south of Loch Lomond Road to Chippewa Road will consider the following groups. They are presented in the SDR for public review and comment and will be presented in greater detail at PIC No. 1.

Preliminary Access Alternatives: Intersection Locations

The preliminary locations for the investigation of intersections include:

- Cavar Road/Lock Lomond Road (as an individual or combined intersection)
- 20th Sideroad/Mountain Road
- Mount Forest Boulevard
- Riverdale Road
- 15 Sideroad
- Scotland Street

Preliminary Access Alternatives: Intersection Configuration Alternatives

- Conventional unsignalized or signalized intersections
- Roundabout intersection control
- Service roads

Preliminary Highway 61 Alignment Alternatives

- Do Nothing
- Widening to the west
- Widening to the east
- Widening on centre
- Variable alignment (using east, west or centre alignment to avoid most significant environmental effects)

Preliminary Cross Section Alternatives

- 2-lane rural undivided highway
- 3-lane undivided highway with continuous two-way left turn lane (CTWLTL)
- 4-lane undivided highway
- 5-lane undivided highway with continuous two-way left turn lane (CTWLTL)
- 5-lane undivided highway with directional left turn lanes at key intersections / access points

8.3 Coarse Screening of Preliminary Design Alternatives

As part of the technical investigations a qualitative coarse screening may be completed to eliminate alternatives, which are determined to be ineffective at addressing safety and future needs or may have significant impacts on key evaluation criteria, such as natural environment, heritage resources or existing development (social environment) in comparison to other alternatives carried forward. The results of the coarse screening analysis will be completed for and presented at PIC No. 1.

8.4 Proposed Preliminary Design Evaluation Process

Preliminary Design involves developing the Preferred Planning Solution in greater detail. A list of alternatives will be assessed, which may be subjected to an initial coarse screening to identify those alternatives that will undergo further detailed investigations.

For the evaluation of Preliminary Design 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 combining the scores using a system of weights to yield 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 (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 (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.).
- 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 (based on Average Weights).
- Selection of Technically Preferred Alternative – Highest Ranked Alternative.
- Sensitivity testing.
- Public review (PIC No. 2).
- Recommendations and presentation of a Recommended Plan.
- Refinements to Recommended Plan.
- Public Review (PIC No. 3).

This systematic approach is consistent with MOECC practices for the evaluation of numerous and complex alternatives. It avoids many of the problems other (qualitative) methods have 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) and may include: maximum peak queue length on Highway 61; temporary or permanent property impacts; loss of fish habitat; noise; built heritage resource impacts; emergency response; and capital cost.

9.0 Proposed Work Program

The major elements of the technical work program include the following:

Task 1: Project Start-Up

Upon initiation of the project, the Study will establish membership and meeting dates, and determine the role of the TAC and SAC.

Task 2: Information Gathering and Generation of Alternatives

The third task involves the collection and organization of the data necessary for the remaining analysis, evaluation and design activities. Activities will include:

- Assembly and preliminary review of study materials;
- Collection of background reports;
- Obtain digital mapping, photographs and associated drawings;
- Undertake the existing natural/social environmental inventories and technical investigations;
- Collection of traffic data (turning movements, Automatic Traffic Recorder (ATR) counts, signal timing and collision history) for the freeway, municipal and federal roads in the study area;
- A review of existing reports and new assessments completed as part of the study;
- Previous structural condition evaluations; and
- Previous foundation investigations.

Task 3: Inventory of Natural, Social and Cultural Environments

Overview of Environmental Studies: Inventories of existing conditions will utilize both secondary sources of information previously assembled along the corridor as well as new field reviews. These existing conditions summaries will form a baseline of existing conditions from which alternatives will be compared. The following sections describe technical work programs. Review agencies are expected to provide comments on these initial descriptions of technical investigations.

Existing conditions information will be collected as follows. For the most part, secondary source information will be used to generate, evaluate and select corridor alternatives. Secondary sources such as aerial photographs; large-scale mapping from government agencies and municipal official plans will be used to identify significant features within the study area. Detailed data collection will be used to generate, evaluate and select highway planning alternatives (including highway realignments, highway widenings, interchanges and service roads) and preliminary design alternatives. Detailed data will be acquired through means such as field investigations and information from interested stakeholders.

Environmental impacts will be identified and appropriate environmental protection/mitigation developed. To ensure effective environmental protection, the order of approach will be avoidance/prevention, control/mitigation, compensation, and then, if required, enhancement. Key to this program will be mitigation associated with environmental approvals that are required, balance between environmental protection and transportation, and mitigation in proportion to environmental significance and sensitivity.

Planning and Land Use Factors: An inventory of existing land uses within the Study Area will be undertaken in order to establish the opportunities and constraints resulting from the current built and recreational environments. This will include secondary source documentation for commercial and residential development, industrial, recreational, institutional and utility corridor land uses. The inventory will also include consideration and identification of future land uses such as development, right-of-way requirements and future transportation facilities. Pedestrian, cycling, ATV, recreational four season (snowmobile and cross country skiing) paths and trails will be reviewed considering potential project impacts to existing and planned future paths and trails. Existing and future Thunder Bay transit routes will be identified and reviewed with regard for potential disruptions during construction and integration with the Technically Preferred Alternatives (TPA's).

Noise: The acoustical assessment for this project will determine existing daytime sound level contours and future sound levels associated with construction noise and improvements for areas with existing residential (noise sensitive) land uses. Noise impacts and opportunities for mitigation will be considered during the evaluation of alternatives. A noise assessment of the preferred plan will be completed and proposed mitigation measures will be presented as part of the TPA. The study will be conducted according to the MTO Environmental Guide for Noise 2006, as updated in 2013.

Fisheries and Aquatic Habitat: A field investigation of existing environmental conditions will supplement secondary sources of information received from various sources including the MNRF, DFO and Lakehead Region Conservation Authority (LRCA). The field work will include two seasons of sampling, in accordance with the most recent "Pilot MTO/ DFO/ OMNR Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings (version 3, 2016)" and outlined in the "Environmental Guide to Fish and Fish Habitat". Fisheries and aquatic habitat characteristics will be mapped in areas where preferred alternatives may impact water resource features. This information must be of sufficient detail to facilitate analysis of project impacts from subsequent watercourse crossing structures. Ongoing liaison with the project team will be necessary to become familiar with proposed watercourse crossing structure alternatives and to provide advice on selection of an acceptable preliminary design optimizing aquatic habitat protection opportunities.

Terrestrial Habitat: The terrestrial environment investigation will review the background documentation to ensure all known potentially significant features and functions are considered.

Field investigation of the TPA will be undertaken in two sessions, one in early spring and one in the summer, to catalogue and categorize the native biodiversity of natural habitats within the study area.

Archaeology: A Stage 1 Archaeological Assessment will be completed for this project. The archaeological portion of the environmental work plan will follow the 2009 Standards and Guidelines for Consultant Archaeologists (MTCS) which represent “best practices” for conducting archaeological consulting in Ontario. The Stage 1 Archaeological Assessment (MCL 2009: Section 1) focuses on conducting background research on these extra areas outside the right-of-way of the project study area. The archaeological site potential of these areas will be determined by reviewing background archaeological data documented in existing reports. A Stage 1 Archaeological Assessment report will be prepared which will describe the results of all background research and the property inspection fieldwork conducted, and will contain all necessary photographic and cartographic documentation (MCL 2009: Section 7). The report will provide recommendations for a Stage 2 Archaeological Assessment, if necessary.

Cultural Heritage: The assessment of the Cultural Heritage will incorporate secondary source information available for both the Built Heritage and Cultural Heritage Landscapes. These two components will be documented based on a review of background Cultural Heritage documentation in the City of Thunder Bay and adjacent EAs by both MTO and other agencies. The 2006 and 2016 MTO EAs have already identified the following Built Heritage Features: a wooden trestle rail bridge, a steel trestle rail bridge and a Broadway Avenue rug brick house. Similarly, the following Cultural Landscape Units have been identified: two cemeteries. These Cultural Heritage features are all located within Local Study Area A. This assessment will be expanded to include Study Area B. The results of the assessment will be documented in a Technical Memorandum.

Task 4: Impact Assessment Study: The impact study will include: collection of background data; site investigation and field testing; determination of significance and sensitivity; consideration of alternatives; identification of environmental impacts; assessment of environmental impacts; and development of environmental protection/ mitigation.

Task 5: Technical Investigations

Bridge Engineering: The general scope of work for Bridge Engineering includes:

- Review all available structural drawings and reports. Perform site investigations to support the design process and acquire sufficient data to select the preferred new structure construction and rehabilitation/replacement strategy;
- Structural alternatives will be developed and will consider both conventional construction as well as rapid replacement (or rehabilitation) techniques.

Railway: Highway 61 crosses rail lines at two locations: over two CP tracks in one location (CP Kaministiquia Subdivision); and at the other under two CN tracks (CN Kashabowie Subdivision and CN Mission Spur) on separate structures. The challenge at these locations will be to twin Highway 61 without an adverse effect on the rail operations. Construction of Highway 61 over the CP tracks should be routine, with little impact on the CP operations. Vertical and horizontal clearances during construction will be the critical factor. The construction of Highway 61 under the CN tracks will be significantly more challenging with the potential requirement of both rail diversions and a road detour.

The study will review any potential rail diversions and road detours necessary for construction of a twinned Highway 61 along with any at-grade rail crossings required for road and pedestrian traffic.

Drainage and Hydrology Engineering: The drainage and hydrology scope of work for this project will include:

- Obtain existing available documentation from MNR, MOECC, Transport Canada, LRCA etc. to determine drainage requirements.
- Carry out a hydrologic and hydraulic analysis to address storm water management issues and impacts on the floodplain, structures and culverts.

Electrical Engineering: The electrical scope of work for this project will include:

- Obtain existing available documentation from MTO for signalized intersections and for all existing illumination within the study limits.
- Carry out a detailed inventory assessment of existing MTO, Municipal, Private and Utility illumination and electrical systems, power supplies, counting stations etc., and summarize findings in a report. Identify ownership and condition of the equipment.
- Carry out a photometric analysis of the existing lighting system and identify conformance with current Ministry standards and policies.
- Establish preferred electrical engineering alternatives for the civil improvements and highlight specifics for high mast vs. conventional lighting.
- Recommend appropriate alternatives and identify removals, potential conflicts and constraints.
- Review traffic detours, staging and geometric improvements and identify requirements for temporary illumination. Maintain existing illumination intensity at all stages.

Foundation and Pavement Engineering: The preliminary foundation investigations and desktop study will consist of the following:

- A field review and desktop study, including a review of: available geological and subsurface conditions, existing foundations based on design and/or as-built drawings, any existing Foundation Reports to assess the type and performance of the existing

foundations, and any MTO maintenance records or issues for the structures within the Study Area.

- Desktop studies will be completed for CPR at Thunder Bay Airport, Rosslyn Road and the CNR. Field investigations will be completed for the interchange structures at Princess Avenue, Broadway Avenue, Chippewa Road and the Kaministiquia River Bridge.

The preliminary pavement engineering investigation will include providing recommendations for horizontal and vertical alignment, preliminary granular and pavement depths, and grading.

Highway Engineering: The highway engineering activities will consist of the following activities:

- Identify any deficiencies in existing roadway geometry.
- Define operational and safety issues and quantify collision costs.
- Evaluate existing conditions and constraints throughout the project limits for both Part A and Part B to support the assessment of the interchange configurations for Part A and alignment, cross-section and median widths for Part A and Part B.
- Incorporate the traffic growth projections for the 25 year planning horizon for Part A and B along Highway 61 with an understanding that the current traffic use/patterns reflect the closure of the James Street South swing bridge to vehicular traffic.
- Review the growth plans for the City of Thunder Bay to determine both short-term and long-term needs for intersecting municipal roadways. Develop an ultimate freeway plan for Part A at locations constrained due to adjacent land use (i.e. Mountain View /Old Mountain View cemeteries, Resolute Forest Products or industrial areas) for the 4-lane configuration at Broadway Avenue.
- Develop all reasonable interchange alternatives considering the range of environmental constraints defined by the environmental team.
- Identify any associated alignments of the local/service roads considering physical and environmental constraints identified during the EA study; this will include assessment of the temporary highway detours and re-routing of local roads to provide access.
- Develop construction and traffic staging strategies to provide for the recommended improvements.
- Evaluate and recommend immediate, short-term and the preferred ultimate solution for Parts A and B.

The Highway team will develop alternatives that will include: horizontal and vertical alignment alternatives; roadway cross-section and median alternatives; all detour alternatives; highway detour and construction staging alternatives; interchange alternatives; and intersection alternatives (conventional and roundabouts).

Traffic Engineering: The traffic engineering tasks will include:

- Review previous studies, documentation, correspondence, analysis, discussions with stakeholders, local issues, etc.;
- Examine historical traffic volume and collision trends within the study areas on Highway 61 using the available data to identify locations that exhibit elevated collision rates, identify safety concerns, and recommend potential countermeasures to address these concerns;
- Examine the 5, 10 and 25 year sectional traffic volume projections;
- Analysis including: roadway capacity, queuing, freeway operations, level of service and the transitions from freeway to 4 or 5-lane undivided highway to existing 2-lane highway;
- Identify recommended lane requirements and horizon years for corridor improvements;
- Examine current traffic demands and operations within the study area. This will include average weekday and peak summer weekend conditions;
- Examine both provisions for active transportation for the City of Thunder Bay while restricting pedestrians and cyclists from the future freeway;
- A review of existing accesses, in accordance with the Commercial Site Access Policy and Standards Manual;
- An examination of traffic signage and pavement marking requirements; and
- Development of a preliminary Construction Traffic Management Plan including construction staging and detour requirements.

Task 6: Development, Analysis and Evaluation of Preliminary Design Alternatives

The alternatives for corridor expansion and new interchanges will be generated through discussions with MTO, the SAC, agencies and the general public during the finalizing of the Study Design Report. The list will be confirmed with the public as required as part of the EA process, including the “Do Nothing” option.

Task 7: Study Documentation – Transportation Environmental Study Report

The study will conclude with the preparation and public review of a TESR.

The TESR will follow the format and content in accordance with the MTO Class EA Document. The TESR will document the study methodology, findings, public involvement and recommendations.

Task 8: 30-day Review of the TESR

A Notice of Study Completion will be prepared to announce the Study’s completion and the commencement of the TESR’s minimum 30-day public review period.

The public will be notified of the availability of the TESR for public review. Update letters/emails will be forwarded to individuals requesting direct contact through the study.

The TESR will be filed on the public record for government agency and public review and comment for 30 days. Copies will be made available at the MTO Northwestern Region Office, the Clerk's office of the City of Thunder Bay, at locally accessible public libraries and to FWFN.

Affected government agencies, municipalities, property owners and individuals on the project's mailing list will be notified of the filing of the TESR. A newspaper notice will also be published to advise interested persons where the report may be reviewed.

Members of the public will be provided information on submitting Part II requests, should there be issues unresolved at the conclusion of the study.

Task 9: Project Environmental Clearance

At the end of the 30 day public and agency review period, and if no concerns have been raised during this review period, Environmental Clearance under the MTO Class Environmental Assessment Document will have been achieved for right-of-way designation and property expropriation (if required) allowing MTO to secure the corridor. The timing of the future Detail Design and Construction stages will be at the discretion of MTO based on Provincial priorities and availability of funding.

10.0 Proposed Project Schedule

A preliminary Project Schedule has been prepared and a summary is available for review as shown in **Table 3**. This schedule reflects the limitations of seasonal inventories beginning in spring 2018. The PIC meetings will be scheduled to avoid the Christmas and summer vacation periods.

Table 3: Proposed Preliminary Study Schedule Summary

Task	Date
Project Start-Up Meeting	October 2017
Study Design Report	November 2017
Information Gathering	November 2017
Study Commencement Notice	November 2017
Community Café Event	January 2018
Environmental Inventories: Natural Environment, Archaeology, Fisheries, Land Use, Business Impacts	Spring 2018
Preliminary Traffic Assessment	Winter/Spring 2018
Public Information Centre (PIC) No. 1	Summer/Fall 2018
Technical Investigations: Traffic, Geotechnical	Summer/Fall 2018
Assessment of Alternatives to the Undertaking	Winter 2018
Development, Analysis and Evaluation of Design Alternatives	Summer/Fall 2018
Selection of Technically Preferred Alternative (TPA)	Fall/Winter 2018
Public Information Centre (PIC) No. 2	Spring 2019
Refinements to TPA(if required)	Summer/Fall 2019
Public Information Centre (PIC) No. 3	Fall 2019
Draft Transportation Environmental Study Report (TESR)	Fall 2019
Final TESR submission	Winter 2020
Public Review Period	Winter 2020
Preliminary Design Report	Winter 2020