





Table of Contents

1	1 Introduction			
2	Planning Documents2			
	2.1	Provincial Policy Statement (2014)	2	
	2.2	Growth Plan for Northern Ontario (2011)	2	
	2.3	Thunder Bay Official Plan (2005, 2014 Draft)	3	
	2.4	Becoming Our Best – 2015-2018 Corporate Strategic Plan	6	
	2.5	Waterfront Master Plan Phase 2 (2015)	7	
	2.6	Boulevard Lake Visioning Exercise (2016)	7	
	2.7	Asset Management Plan for the City of Thunder Bay (2016)	8	
3	Trans	sportation Studies	8	
	3.1	Transportation Master Plan and Update (1970, 1989)	8	
	3.2	Research Services for the Transportation Master Plan (2014)	9	
	3.3	Transit Master Plan (2012)	11	
	3.4	Active Transportation Plan (2008)	12	
	3.5	Draft Multi-use Trail Master Plan	14	
	3.6	Waterfront Trail Master Plan (2014)	14	
	3.7	Transportation Demand Management Plan (2011)	15	
	3.8	Thunder Bay Expressway Transportation Environmental Study Report (2016)	16	
4	Othe	r Transportation-related Strategies and Plans	17	
	4.1	Multi-Year Accessibility Plan 2013-2018 (2013)	17	
	4.2	Age Friendly City Services Action Plan (2015)	17	
5	Clima	ate Change and Sustainability Strategies	19	

Table of Contents (continued)

 5.2 Climate-Ready City: City of Thunder Bay Climate Adaptation Strategy (2015)		5.1	Ontario's Five Year Climate Change Action Plan 2016-2020 (2016)	19
 5.4 Other Climate Change Background Documents		5.2		19
 6 Design Documents		5.3	EarthCare Thunder Bay Sustainability Plan 2014-2020	19
 6.1 Urban Design and Landscape Guidelines (2012)		5.4	Other Climate Change Background Documents	20
6.2 Image Route Guidelines and Detailed Streetscape Designs (2012) and Phase 2 – The Waterfront Image Route Vision (2014)				
and Phase 2 – The Waterfront Image Route Vision (2014)	6	Desig	In Documents	21
6.3 Engineering and Development Standards (2016)22	6	-		
	6	6.1	Urban Design and Landscape Guidelines (2012) Image Route Guidelines and Detailed Streetscape Designs (2012	21)

1 Introduction

The City of Thunder Bay's Corporate Strategic Plan identifies the City's goals, strategies and actions to be an increasingly healthy, vibrant, connected and strong community. Amongst the actions identified is a new Transportation Master Plan (TMP) that will result in an integrated and seamless transportation system, that will plan for future needs, and that will be in keeping with 'complete streets' guidelines.

In order to develop a successful TMP for Thunder Bay, it is important to understand the guiding policies from higher levels of government and from the City itself, as well as to recognize the work that has already taken place towards the vision for the transportation system. This Background Information Review seeks to summarize the relevant policy documents, plans, and strategies, and distill from each the visions, principles, and objectives to guide and inform the Thunder Bay TMP.

The background documents included in this review were grouped into five categories.

- The first section reviews the planning documents in force from all levels of government, from the Provincial Policy Statement through specific area community plans.
- The second section examines previously completed transportation studies, including the current transportation master plan, transit master plan, active transportation plan, and recreational trail plan.
- The third section summarizes other transportation-related strategies and plans, items that are not precisely transportation studies, but are intended to inform the direction of the TMP. These items include the City's accessibility plan and aging population plan.
- The fourth section includes sustainability plans and climate adaptation plans relevant to transportation and transportation infrastructure.
- The fifth section provides an overview of the City's design documents including streetscaping plans and urban design guidelines.

Each of the studies and reports reviewed herein guide the development of the Thunder Bay TMP as a comprehensive planning document which seeks to reflect the goals and objectives of the City as it moves forward over the next 20 years.

2 Planning Documents

2.1 Provincial Policy Statement (2014)

The Provincial Policy Statement (PPS) is an extension of the Planning Act which provides policy direction on matters of provincial interest as they relate to land use planning, development, and infrastructure. The PPS includes two policies regarding transportation: Policy 1.6.7 Transportation Systems and Policy 1.6.8 Transportation and Infrastructure Corridors.

Policy 1.6.7 provides directions for how transportation systems should be provided to facilitate the movement of both people and goods, encouraging efficient use of infrastructure, improving connectivity and considering land uses.

Policy 1.6.8 relates to the long term protection of transportation corridors, major goods movement facilities, and other infrastructure corridors, limiting incompatible development within and adjacent to these corridors.

The Thunder Bay TMP is required to adhere to the policies summarized above, as set out in the Provincial Policy Statement.

2.2 Growth Plan for Northern Ontario (2011)

The Growth Plan for Northern Ontario is a strategic guiding policy document for all of Northern Ontario for a horizon of 25 years, to 2036. It is in part a land use plan, an economic development plan, an infrastructure investment plan, and a labour market plan.

Thunder Bay is identified in the Plan as a municipality that contains designated strategic core areas. Municipalities are encouraged to plan these strategic core areas in a manner that will promote vibrant, walkable, mixed use districts, while strategically intensifying, in order to attract employment uses, clustering of offices and retail at higher densities, and other major capital investment such as public transit systems.

Like the PPS, the Growth Plan sets policy to integrate land use planning and infrastructure planning, and emphasizes conservation and efficient use of infrastructure, to be achieved through intensification and brownfield site redevelopment.

Moreover, the Growth Plan states the transportation system shall be planned with an eye on opportunities to optimize the capacity, efficiency, and safety of the transportation system that is already in place.

2.3 Thunder Bay Official Plan (2005, 2014 Draft)

[After the finalization of this report, a new Official Plan was approved by Council.]

The Official Plan (OP) sets out the vision, objectives, and goals the city hopes to achieve through policies covering a multitude of topics including land use, cultural heritage, natural environment, housing, economic development, infrastructure, and transportation. Thunder Bay currently has two Official Plan documents. An in-force OP dates to 2005, and a 2014 draft OP was released for public review but not finalized.

Section 8.3 of the 2014 Draft OP includes general transportation objectives, transportation policies, considerations for the transportation planning process, roads objectives, road classifications and right of way widths, access control policies, laneway policies, on-street parking policies, public transportation objectives, and active transportation policies.

The 2005 OP included all of the above, plus policies relating to truck traffic, air facilities, harbour facilities, railways, pedestrians and sidewalks, bicycle and recreational paths, and parking.

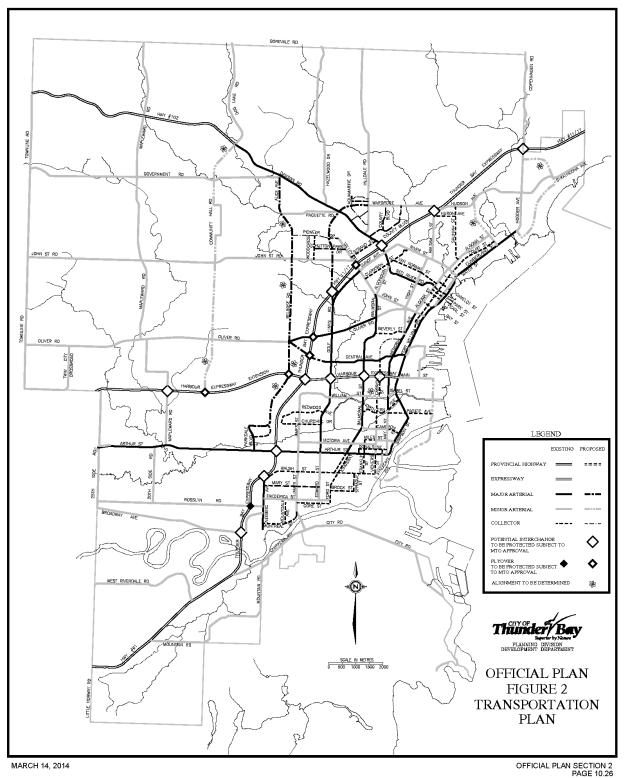
Exhibit 2.1 shows the Transportation Plan from the 2014 Draft OP. The map identifies several proposed road projects, including:

- Belrose Road/Alice Avenue extension and upgrade between Parkdale and Dawson Road (Hwy 102);
- Community Hall Road extension and upgrade between Harbour Expressway and Dawson Road (Hwy 102);
- Northwest (Major) Arterial and related upgrades around County Park;
- Pioneer Drive extension;
- Hodder Avenue bypass (Minor Arterial) (Differing alignment from previous TMP);
- New Minor Arterial between Hudson Avenue and Algoma Street, west of Boulevard Lake;
- CN Ore Line/Carrick Street extension (previously Vickers Street);
- William Street extension to Carrick Street;
- Central Avenue connection across Thunder Bay Expressway;
- Potential interchanges to be protected subject to MTO approval at:
 - Thunder Bay Expressway at Broadway Avenue, Neebing Avenue, Arthur Street, Harbour Expressway, future Northwest Arterial, Dawson Road/Red River Road, and Balsam Street;
 - Harbour Expressway at Mapleward Road, Golf Links Road, Balmoral Street, and Carrick Street; and

- Proposed flyovers to be protected subject to MTO approval at:
 - Thunder Bay Expressway at Central Avenue extension, Oliver Road, and John Street;
 - Harbour Expressway at future Community Hall Road extension and Belrose Road extension.

The TMP reassesses the future network needs for the City of Thunder Bay and evaluates the need for the above road network improvements.





Source: Figure 2 of Draft 2014 Thunder Bay Official Plan

2.4 Becoming Our Best – 2015-2018 Corporate Strategic Plan

The City's Corporate Strategic Plan sets out the vision, mission, and principles that guide the actions of Council towards the strategic goals for Thunder Bay.

The Plan set out 21 goals organized around four pillars: a Healthy Lifestyle, a Vibrant Environment, a Connected Economy, and Strong Governance. Each goal is accompanied by supporting strategies and associated actions designed to facilitate each goal.

Goals, strategies, and actions relevant to the Transportation Master Plan were as follows:

Goal	Strategy	Actions
7. Clean and beautiful streets and spaces	7.1 Give priority to integration of 'complete streets' guidelines on key corridors	Implement Image Route Guidelines with initial priority focus on Red River Road, Memorial Avenue, and other opportunities related to annual City of Thunder Bay capital works program Develop Transportation Master Plan to plan for future needs and align in keeping with 'complete streets' guidelines
10. Better connected by integrated mobility choices	10.1 Continue to develop a better transit system to improve the customer experience and increase ridership	Implement the objectives of the Transit Master Plan for conventional and specialized transit services
	10.2 Provide and maintain a transportation system that offers competitive choices for moving people to reduce single occupancy vehicle trips	Continue to implement the Active Transportation Plan Update the Transportation Plan to result in an integrated and seamless transportation system, which recognizes all mobility choices
	10.3 Expand the quality of the pedestrian environment in order to improve the city's walkability and connectivity	In conjunction with the Transportation Master Plan, develop a City of Thunder Bay Pedestrian Mobility Plan Systematically implement the Recreational Trails Plan and integrate trails in new developments

Exhibit 2.2: Transportation-related items in the Corporate Strategic Plan

Develop funding and implementation plan for a waterfront trail
--

Additionally, the Plan also included goals regarding economic development, downtown revitalization, tourism, sustainable infrastructure, and fiscal responsibility, all of which can be influenced by choices made in developing the transportation network.

The vision for the TMP builds upon the goals and strategies identified by the Corporate Strategic Plan.

2.5 Waterfront Master Plan Phase 2 (2015)

Phase 1 of the Waterfront Master Plan included the construction of two midrise condominium towers, a hotel, and other facilities including a new restaurant.

Phase 2 of the Waterfront Master Plan consists of two areas of the waterfront: the Festival Area and the site of the since demolished Pool 6 elevator. The former will not see any change of land use, however the latter is a former industrial area that is being reimagined as a large public park.

The most significant transportation impact will be the attraction of the large park and addition of over 450 parking spaces, which may increase traffic volumes in and around the waterfront area. Currently, vehicles access to the park is limited to Pearl Street, which has an at-grade crossing of three railway lines, and Marina Park Drive. Pedestrian access to the park includes Pearl Street, pedestrian bridge north of Red River Road, pedestrian walkway opposite Camelot Street, and Marina Park Drive. Active transportation will be well accommodated as plans for the park will include several new multi-use trails and connections to the rest of the Waterfront precinct.

Also included in Phase 2 is the Cultural Campus, which is expected to become a major attraction. The Plan envisions a future with an Aboriginal cultural centre, a relocated and expanded Art Gallery, other public uses in the areas of education and the environment, and recreational opportunities. Within the park area, the Plan proposes a Nordic-style spa (privately-operated), a cruise ship dock, and a community centre. An ambitious implementation of Phase 2 is scheduled to take place in phases between 2015 and 2023.

2.6 Boulevard Lake Visioning Exercise (2016)

The City has undertaken a study to develop an overall vision for the future use of Boulevard Lake Park in the City's north end. The plan addressed five primary categories, including: improving water quality; enhancing ecological diversity; environmental stewardship and partnerships; vehicular and multi-modal transportation; and amenities, programing and events. The preliminary concept plan includes the removal of vehicular traffic on Lyon Boulevard West and Lyon Boulevard East, along with a new road segment east of the existing Lyons Boulevard East. This would provide for separate rights-ofway for pedestrians and vehicles to access the park.

The proposed concept will change the flow of traffic in the immediate vicinity of the park, but have limited impacts to the broader city road network.

2.7 Asset Management Plan for the City of Thunder Bay (2016)

The Asset Management Plan for the City of Thunder Bay discusses the financial sustainability of the road network by examining the replacement costs of the City's full inventory of paved roads. The estimated annual pavement funding requirement of \$13 million¹ to maintain the road network in its current state whereas the current average funding is \$8.4 million (2015 to 2019).

The Asset Management Plan analyzes existing sidewalks in the same manner, identifying an annual funding requirement of \$4.6 million, while average funding has been \$1.6 million per year in the previous five years (2011-2015).

3 Transportation Studies

3.1 Transportation Master Plan and Update (1970, 1989)

There have been two previous Transportation Master Plans (TMPs) published since Thunder Bay was amalgamated in 1970. The first was issued the same year with a planning horizon of 20 years. The second was issued in 1989.

The 1970 TMP called for a westerly extension of Windsor Street (later re-named to Churchill Street) across the Expressway to service new development areas. These areas were not developed until the 1990s, and by then, the city had sold off the land at the west end of Churchill Street, precluding its westerly extension crossing the Expressway, which was intended to provide secondary access to the newer developments and developable lands in the Parkdale area (northwest of Arthur Street and the Thunder Bay Expressway). Further, planned extension of Churchill Street easterly has not been constructed and may no longer be necessary, given the lack of availability of an Expressway connection.

Preceding the publication of the 1989 TMP, a Strategic Overview and Study Design was released in 1987. The Strategic Overview reviewed the 1970 TMP, particularly the transportation projects that had not been carried out, despite being recommended in the previous TMP.

In both the 1970 and 1989 Plans, the conversion of the Thunder Bay Expressway to a limited access freeway, or at least replacing at-grade

¹ Corporate Report No. R 5/2018.

intersections with interchanges, was part of the proposed transportation system. To date, only one interchange has been constructed on the Thunder Bay Expressway – at Hodder Avenue-Copenhagen Road in the north end of the city. The 1970 Plan called for interchanges at almost every crossing, however, in the 1989 Plan, the need for grade-separated interchanges were identified at only the Harbour Expressway, Highway 102 (Dawson Road/Red River Road), plus one additional location, either at John Street, Oliver Road or the proposed Northwest Arterial.

The Northwest Arterial is a major future facility that was identified in both previous TMPs. The Northwest Arterial is proposed to connect Golf Links Road with Hwy 102 and Wardrope Avenue.

Projects that were recommended in the 1989 TMP that have not been constructed include:

- Interchanges on Thunder Bay Expressway
- Northwest Area (Northwest Arterial, Wardrope Avenue extension, Valley Street extension, and other related improvements)
- Hodder Avenue bypass (alternative connection to Spruce River Road) and Cumberland Street extension
- CN Ore Line/Vickers Street Extension
- Churchill Drive extension
 - Recommendation to continue Churchill Drive west of the Expressway, disconnected from the existing section east of the Expressway, forming a T-intersection with the Expressway, as an alternate entrance to the then proposed Parkdale Community
- William Street link to May Street
- Westfort Arterial

The 1989 TMP also focused on the North and South Cores, engaging in a review of traffic operations and an in-depth analysis of parking in both downtowns.

The new TMP reviews and re-assesses the need for previously identified road infrastructure from a multi-modal perspective in consideration of a new vision for transportation in Thunder Bay.

3.2 Research Services for the Transportation Master Plan (2014)

As a precursor to the TMP, the City undertook a research study to identify advantages of developing a comprehensive Transportation Master Plan, rather than a plan that provides a long list of road construction projects. The Research Services for the Transportation Master Plan report documented those

advantages and highlighted three key strategic outcomes that the TMP can aim to accomplish:

- Inclusive mobility;
- Healthy neighbourhoods; and
- Community accessibility.

Additionally, based on stakeholder consultation, six principles were identified to help guide the development of the TMP:

- Create a comprehensive policy framework;
- Integrate the City's approaches to sectors and modes;
- Treat streets as community assets;
- Be action-oriented, practical, and pragmatic;
- Allow predictable, methodical implementation; and
- Involve community partners.

With consideration of the above, the report examined the principles and strategies put forward in Transportation Association of Canada's Strategies for Transportation Planning and identified 13 strategies that are of strategic priority for the Thunder Bay TMP. They are:

- Highlight the importance of supportive land use policies to achieve transportation objectives (e.g. modal shifts, trip length reductions);
- Identify strategies to mitigate water, land, and ecosystem impacts of transportation activities (e.g. right-of-way minimization, stormwater runoff management, watershed impact assessment);
- Identify strategies to maximize access to opportunity for disabled and low-income persons, recent immigrants, youth and the elderly, such as by reducing the need to travel and improving transit;
- Identify strategies to improve public health and safety, such as by encouraging active transportation, improving air quality, and reducing road collisions;
- Identify strategies to support development or redevelopment of priority areas such as downtowns, suburban town centres, brownfield sites, and tourism nodes;
- Establish a comprehensive strategic framework with a vision, goals, and other elements, and clearly show linkages to other community goals;
- Identify strategies to increase walking, cycling, transit, ridesharing, and teleworking;

- Identify strategies for a range of TDM approaches in areas that include development approvals, pricing, incentives, and outreach;
- Identify strategies to maximize the multimodal capacity of current infrastructure (e.g. transit priority, access management);
- Identify a short-term implementation strategy that prescribes early actions to build momentum and lay the foundation for long-term change;
- Identify expected future transportation revenues and capital and operating costs (including the cost of programs, services, fleets, facility construction and maintenance);
- Identify a performance measurement framework that is tied to the plan's strategic framework and monitors outputs, outcomes, and external influences; and
- Involve the public in the transportation planning process and identify ways for public involvement to enhance future program and project implementation.

In addition to the 13 strategic priorities above, 12 additional strategies were identified as high importance. Examples of how similar strategies were implemented in existing or in development Transportation Master Plans from across Canada and the United States were documented in the report.

3.3 Transit Master Plan (2012)

The 2012 Thunder Bay Transit Master Plan is a policy document that guides future transit service to meet the growing travel needs of the community in an effective and efficient manner.

The Transit Master Plan was guided by the following documents:

- Growth Plan for Northern Ontario (2011)
- Transportation Demand Management Plan
- Age-Friendly Thunder Bay
- Transit Vision 2040
- Transit Strategies and Service Plan (2000)
- Transportation Study Update (1987)
- Thunder Bay Strategic Plan
- Thunder Bay Official Plan

The Transit Master Plan made recommendations for immediate improvements to transit reliability and service, as well as a longer-term conceptual route network and terminal concept, proposed service standards, financial

performance indicators, fare strategies, staffing review, technology standards, marketing strategies, and financial and implementation strategies.

3.4 Active Transportation Plan (2008)

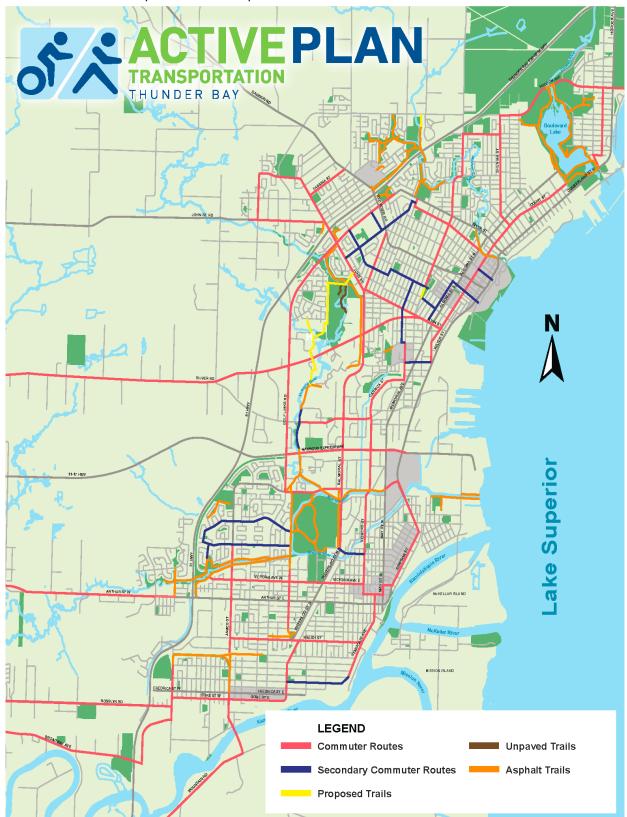
Thunder Bay's Active Transportation Plan was adopted on November 3, 2008. It provided an on-road bicycle commuter route plan and a recreational trail plan for the city, as well as design standards for these facilities.

A map of the plan (see Exhibit 3.1) was created showing the desired 2025 network of Commuter Routes, Secondary Commuter Routes, Proposed Trails, Unpaved Trails, and Asphalt Trails. The city website also includes a current (2016) Active Transportation map showing existing Bike Lanes & Shared Lanes, Multi-use Trails, and Unpaved Trails.

Implementation strategies were presented for Phase I priorities, which included a continuous north-south route with off-road facilities. Through the initial AT Plan, Transportation and Works Department will integrate the proposed commuter routes in the plan into the Transportation and Works Asset Management Plan, and fund the projects as a component of capital budget and road reconstruction.

The TMP includes a new Active Transportation Plan, including ultimate cycling and pedestrian networks, policies, and programs as well as an implementation strategy.

Exhibit 3.1: Active Transportation Plan Map



3.5 Draft Multi-use Trail Master Plan

The Draft Multi-use Trail Master Plan is an ongoing update to the previous version, the Thunder Bay Trail System Master Plan, which dates back to 1980.

The Plan divided trails into four classes based on level of separation and other factors:

- Class 1: Paved, off-road trails for multiple uses which are converted into cross country ski trails in the winter;
- Class 2: Sidewalks converted to multi-use trails paralleling public roads;
- Class 3: Bicycle lanes on shared public roadways; and
- Class 4: Signed preferred bicycle routes which are shared with general traffic.

The plan also delved into prioritization criteria for the creation of new facilities and general design standards.

The existing system is broken down into seven distinct areas named for the body of water they are located near. They are:

- Current River System;
- Kam River System;
- McIntyre River System;
- McVicar Creek System;
- Mosquito Creek System;
- Neebing River System; and
- Waterfront Trail System

3.6 Waterfront Trail Master Plan (2014)

The Waterfront Trail Master Plan is a detailed planning study examining the feasibility of a continuous active transportation route the entire length of the waterfront, from Mission Island to Current River.

The study considered existing case studies, detailed planning and design criteria, and existing trail sections in proposing a Waterfront Trail route as shown in Exhibit 3.2.

Points of interest, natural and physical constraints, and opportunities were identified along the proposed route, as well as several localized alternative alignments.

The report also detailed proposed phasing and budget forecasting.

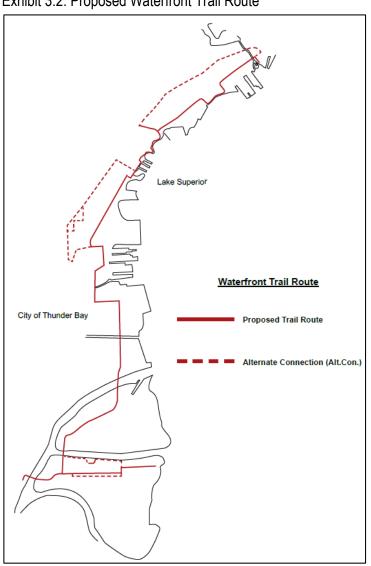


Exhibit 3.2: Proposed Waterfront Trail Route

3.7 Transportation Demand Management Plan (2011)

A Transportation Demand Management (TDM) Plan was presented to City Council on November 7, 2011. The plan was informed by a survey of local residents, as well as case studies from similar sized cities across Canada.

The vision for the TDM Plan vision was to have a stronger and more diversified economy, be cleaner, greener, more beautiful, and proud, have a high quality of life, and be one of the best-run cities in Canada.

The Plan was structured into four segments: Leadership, Outreach, Marketing, and Performance Measurement. The Plan focused on concepts like ridematching services, employer transit pass programs, integrating TDM principles into conventional planning activities, school travel plans, stakeholder outreach, branding and social media, and special events.

3.8 Thunder Bay Expressway Transportation Environmental Study Report (2016)

The Ministry of Transportation (MTO) completed a Transportation Environmental Study Report (TESR) that included a preliminary design for proposed improvements to the Thunder Bay Expressway (TBE).

The TBE consists of Hwy 11/17 north of the Harbour Expressway, and Hwy 61 to the south. The study area for the EA study was from 1 km south of Arthur Street to 1 km north of Balsam Street.

The study examined the following design alternatives:

- Do nothing;
- Encourage more local road use;
- Encourage alternate modes of transportation; and
- Make improvements to the TBE.

The study took into account issues with the existing configuration as well as future capacity and operational issues, enhanced safety considerations, and reducing or minimizing impacts to the natural, social, economic, and cultural environment. The study concluded that the preferred course of action was to implement improvements to the TBE.

The study examined median alternatives, interchange alternatives, grade separation alternatives, service road requirements and municipal roadway connectivity, and interim highway improvements in order to produce the recommended design.

The recommended design proposed to create a divided highway by shifting the southbound lanes to the west to introduce a 22.5 m wide median and introducing interchanges at Arthur Street, Harbour Expressway, Red River Road, and Balsam Street, as well as flyovers at Oliver Road and John Street. Additionally, the proposal developed a design for a future Northwest Arterial interchange with two roundabouts on either side of the TBE.

The recommendations of the TESR, anticipated in the longer-term, will be included in the assessment of future transportation system in the TMP.

A second study for the segment from Arthur Street to Loch Lomond Road is planned by MTO.

4 Other Transportation-related Strategies and Plans

4.1 Multi-Year Accessibility Plan 2013-2018 (2013)

The City's Multi-Year Accessibility Plan was developed to identify, implement, and enforce strategies, policies, and standards to achieve accessibility for Ontarians with disabilities with respect to most aspects of daily urban life, including transportation and access to public spaces.

The City must adhere to the Accessibility for Ontarians with Disabilities Act (AODA), 2005, including Part IV.1 Design of Public Spaces Standards (Accessibility Standards for the Built Environment). The statute provides general and technical requirements for recreational trails, outdoor public use eating areas, outdoor play spaces, exterior paths of travel (sidewalks, paths, ramps, stairs), and accessible parking.

The Accessibility Plan reported on measures to identify, remove and prevent barriers. This includes local transportation barriers such as trip hazards caused by heaved or sunken sidewalks, missing sidewalk ramps or lack of texture on sidewalk ramps, non-accessible crossing signals, etc.

Transportation-specific compliance requirements relating to the delivery of conventional and specialized public transit were also identified by year, along with specific actions to achieve compliance.

4.2 Age Friendly City Services Action Plan (2015)

The population of older adults in Thunder Bay is expected to double by the year 2036 as adults over the age of 60 are projected to comprise 33% of the population. To be prepared for the needs and desires of an aging population, the City of Thunder Bay examined its existing infrastructure, identified strengths, barriers, and action items required to meet the needs identified, and developed a 5-year implementation plan.

The report is divided into two sections. The first section comprised of an internal audit of the essential features of age-friendly cities. The result was an inventory of community strengths, community barriers, and action items to address these barriers.

In the second section, the action items identified above were compiled into an action plan complete with timing, responsibility assignments, references to existing plans, and implementation indicators.

Transportation was the focus of two components of the action plan. Action items 1.1 through 1.6 identified key initiatives required under the heading of "Safe Pedestrians." They were:

• Continue to install audible crossing signals at pedestrian crossings at signalized intersections;

- Develop a communications campaign on pedestrian safety;
- Develop and implement policy for extending crossing times at intersections in areas where there is a high concentration of older adult residents or facilities;
- Maintain sidewalks and roads for key improvement areas;
- Investigate the most efficient and effective manner to keep older adults safe on the trail system; and
- Implement the results of the Trail and Park Lighting Study.

Additionally, a second section dealt with motorized transportation and listed ten action items. Action items 2.1 through 2.8 address Public Transportation:

- Implement discounted fares on older adults on a specific night during non-peak hours;
- Develop enhanced travel opportunities which run from highly populated older adult areas to community destinations during a specific time of the week;
- Review current procedures and coordination between departments responsible for snow removal around bus stops and shelters;
- Implement the changes to improve the efficiency of snow removal;
- Review industry best practices to determine and implement procedures for advanced booking, flexibility, availability, and eligibility for transportation for people with disabilities;
- Promote the Transit Travel Training Program for older adults;
- Continue to address accessibility and mobility issues at bus stops in priority areas; and
- Continue community engagement of older adults to increase awareness of transit services and options available.

Finally, Action items 2.9 and 2.10 focused on Roadways and Parking:

- Install well-placed visible crosswalks between intersections on roadways in highly populated seniors areas
- Launch an awareness campaign focusing on increasing the knowledge of senior drivers and their safety, including the effects of medication on driving, driving while fatigued, and common collision types. Incorporate the Centre for Research on Safe Driving, A Comprehensive Training Process to Enhance Safe Driving in Older Adults into campaign.

5 Climate Change and Sustainability Strategies

5.1 Ontario's Five Year Climate Change Action Plan 2016-2020 (2016)

The Province of Ontario developed the Climate Change Action Plan to introduce key actions to move towards emissions reduction targets and mitigate the effects of long-term climate change. The goal is to reduce 1990 levels of greenhouse gas emissions by 80% before 2050.

The transportation sector is cited as being the number one contributor of emissions in the province, totalling 35% of all greenhouse gas emissions. As such, the Action Plan sets forth a number of transportation-related actions that should inform the direction of the Thunder Bay TMP.

Key transportation actions areas include:

- Increasing the use of electric vehicles;
- Supporting cycling and walking; and
- Increasing the use of low-carbon trucks and buses.

Additionally, under the heading of Land-Use Planning, eliminating minimum parking requirements was discussed as an outcome to the action item of strengthening climate change policies in the municipal land-use planning process. Such a change could have a large impact on how cities are shaped and how transportation is designed to accommodate development.

5.2 Climate-Ready City: City of Thunder Bay Climate Adaptation Strategy (2015)

The City's Climate Adaptation Strategy set forth a vision to build resilience against the changing climate and to reduce the risks inherent with global warming and local climate change.

The Plan set out 5 goals, 13 objectives, 4 key principles, 45 potential climate adaptation actions, and 7 strategic directions to provide a path forward for the City to implement this plan.

The first strategic direction is significant to the development of the Transportation Master Plan, as it directs the City to "integrate climate adaptation into plans, policies, procedures, projects, and investment decisions," and as such, the Climate Adaptation Plan is inextricably linked to the development of the Thunder Bay TMP.

5.3 EarthCare Thunder Bay Sustainability Plan 2014-2020

The EarthCare Plan provided a framework for the general direction that the City of Thunder Bay, its residents, and its businesses must take to lessen its impact on climate change, specifically by reducing greenhouse gas emissions and

continuing to transition to a more sustainable and resilient community. Additionally, the Plan included specific actions for the City and residents to undertake to realize the goals and vision of the Plan through 2020.

The Plan was developed by Working Groups comprising of Thunder Bay's citizens into 10 topics. Under the heading of Community Lifestyle, a working group focused on Mobility, including active transportation, transit, and walkability. The stated goal of Mobility was to "inspire and influence the evolution of integrated urban mobility that is efficient, affordable, and accessible."

The Plan provided a series of objectives and recommended actions for both the City and for the community. A total of 36 actions were presented in support of the four goals.

Additionally, the Sustainability Plan offers goals and actions relating to Air Quality, Energy, and Land Use Planning, all of which can influence or be influenced by the Thunder Bay TMP. Action items under these headings that relate to the TMP include strategies to reduce vehicle-kilometres travelled, promotion of energy efficient vehicles, promotion of mixed use, pedestrianscaled, and transit-oriented development, increasing density and intensification targets, and maximizing the efficiency of existing infrastructure.

5.4 Other Climate Change Background Documents

Various other reports/papers on climate change and its impacts on transportation infrastructure have been reviewed and their findings will inform the development of the TMP. These reports include:

• Climate Change Impacts & Adaptation in Ontario: Water and Transportation Infrastructure (2015)

This information sheet was developed by the Ontario Centre for Climate Impacts and Adaptation Resources (OCCIAR) to document impacts to water and transportation infrastructure related to climate change and presented practices, guidelines, and tools to help determine and mitigate the engineering vulnerability of public infrastructure.

• Integrating Climate Change Risks in Asset Management and Infrastructure Decision-Making (2016)

This paper presented a resiliency framework centred on life-cycle management risk assessment when considering the engineering vulnerability of infrastructure assets.

• Paying for Urban Infrastructure Adaptation in Canada (2015)

This report by the Adaptation to Climate Change Team (ACT) at Simon Fraser University provides an in depth analysis of potential financing instruments for municipalities in addressing climate change.

6 Design Documents

6.1 Urban Design and Landscape Guidelines (2012)

The City's Urban Design and Landscape Guidelines document set out a series of detailed recommendations to provide design direction for both the public realm and private development as a complement to existing zoning regulation with the goal of ensuring high-quality development as Thunder Bay's regeneration moves forward.

The document set out an overarching urban design vision and 10 guiding principles. Additionally, 57 detailed performance standards were prescribed in the areas of public realm, building and site design, and land use.

The TMP is informed by the performance standards that relate to all aspects of transportation, including, but not limited to:

•	Multi-use trails	•	On-street parking
•	Boulevard design	•	Bicycle parking
•	Accessibility: public realm	•	Street network and block
•	All season design: public		layout
	realm	•	Arterial roads
•	Dedicated cycling lanes	•	Collector roads
•	Green streets	•	Local roads
•	Green medians	•	Rear lanes
•	Crosswalks		

6.2 Image Route Guidelines and Detailed Streetscape Designs (2012) and Phase 2 – The Waterfront Image Route Vision (2014)

Image Routes are identified as the City's most significant corridors, connecting the two cores and the rest of the city through a continuous functional and cultural link. These corridors are to have a cohesive, consistent, and themed streetscape.

The Image Route Guidelines focused on the first three primary Image Routes:

- Arthur Street, from the Thunder Bay Expressway to May Street;
- May Street/Memorial Avenue/Algoma Street, from Arthur Street to Red River Road; and
- Red River Road, from Water Street to the Thunder Bay Expressway.

The Guidelines provided details on how the Image Routes can be transformed. Key elements of the Image Routes include the distinct character downtown cores, gateways – where the Image Routes begin and where a distinct neighbourhoods begin, and parks and civic spaces along the routes.

The Guidelines focused on the concept of Complete Streets and integrating active transportation into the existing network. An emphasis on street trees was integrated heavily into the beautification objective, as well as the goal to expand the urban forest. Public art was also expected to be a key contribution to the success of the Image Routes.

The Report featured a section containing demonstration plans providing concepts of how the Image Routes may look with improved streetscaping at specific important locations, as well as Image Route-wide items such as bus stops and street furniture treatments. The plans also showed a sketch of a redesigned intersection at Memorial Avenue / High Street / Beverly Street, with the potential for new public green space through the elimination of high-speed elements of the intersection and returning it to a safer, 90-degree layout.

Finally, a section included detailed streetscape designs for all three of the original Image Routes, which provides the theme, character, and design approach that should be used. Also included is an inventory of design elements to use in the streetscaping: pavers, benches, garbage and recycling units, tree grates and guards, signage and banners, wayfinding, and pedestrian lighting, as well as detailed recommended improvements for each segment of each Route, including cross-sections.

As a follow up to the 2012 Image Route Guidelines described above, an additional Image Route was envisioned, this time Simpson Street, Fort William Road, Water Street, and Cumberland Street for the Waterfront Image Route.

The Waterfront Image Route receives similar treatment to the three mentioned above. The report contains the Image Route Vision and Analysis, new design tools, demonstration plans, and detailed streetscape designs.

6.3 Engineering and Development Standards (2016)

The Engineering and Development Standards document outlines the requirements for the processing of applications for the development of land and especially the requirements for the design and construction of roads and services which are parts of the development.

The document outlines design standards for all forms of infrastructure, including transportation-related items. These include design standards for road grades, turn radii, sidewalks, boulevards, walkways, parking lots, bike lanes, and transit facilities.

Traffic Impact Study Guidelines are also included in the document, which outlines how a traffic impact study should be carried out.