



HOW WE GO

Niagara Region Transportation Master Plan Transit Strategy Technical Paper



IBI Group in association with
Parsons and Brook McIlroy

NIAGARA
2041

Fostering an environment for Economic Prosperity



1. Introduction

The Regional Municipality of Niagara is updating its Transportation Master Plan (TMP) to develop transportation strategies, policies, programs, and projects to be undertaken by 2041. One of the major themes of the plan, and other related work at the Region, is to foster an environment for economic prosperity. Public transportation plays an important part in realizing this vision, and recent technological advances present an opportunity to improve transit accessibility in a more efficient and cost effective manner than is currently possible. However, challenges remain, and concerted effort and investment will be necessary to create a transit system that supports the public's mobility needs and is an attractive alternative to the car.

The purpose of this memorandum is to outline a long-term strategy for the provision of public transit services in Niagara Region. In support of the Region's role as an operator of inter-municipal transit, the strategy defines an aspirational network of services to be put in place by 2041, along with supporting policies aimed at increasing transit mode share. In support of defining broader transportation policy, the strategy also provides guidance on creating a more efficient, effective, and seamless transit system in a multi-operator environment. This reflects the Region's role in providing leadership in discussions with local area municipalities. As a whole, these policies will lead to the development of a transit system that offers improved mobility for the Niagara's residents.

The strategy categorizes public transportation operated in Niagara into three broad classes of service corresponding to the type of travel market that they serve:

- **Local transit** provides service within a single municipality and typically serves short, local trips. Examples of local transit service providers include St. Catharines Transit, Welland Transit, and Niagara-on-the-Lake Transit.
- **Inter-municipal transit** provides service between Niagara Region municipalities, serving medium-length trips. Examples of inter-municipal transit service providers include Niagara Region Transit and WEGO (Niagara Parks' transit service).
- **Inter-regional transit** provides service between Niagara Region and the Greater Toronto and Hamilton Area, serving long-distance trips. Inter-regional transit service providers include GO Transit and private coach operators.

2. Needs

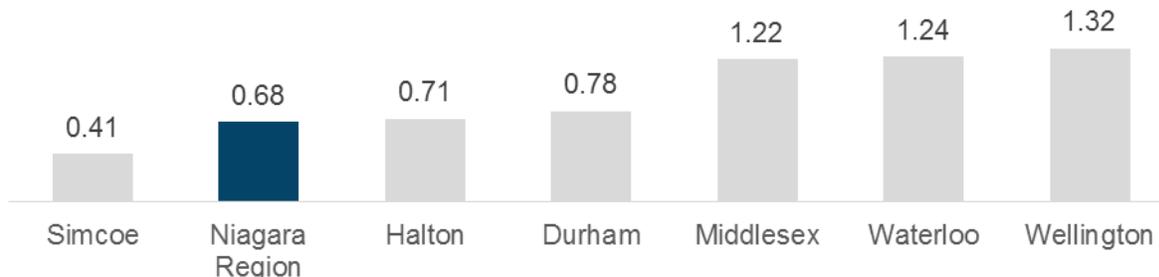
2.1 Mobility

Mobility is an important marker for quality of life, and public transportation provides a critical means of mobility for residents who do not own a car or are unable to drive. For this group of people, transit provide access to the employment opportunities, education,

medical care and other basic needs. Higher transit mobility is also correlated to higher transit use among people who are able to drive. This promotes sustainable community development by influencing long-term decisions about whether to buy a second car or whether to buy a car at all.

The degree of mobility offered by the Region's transit services can be measured by calculating the amount of transit service that is offered for each resident of Niagara Region. Exhibit 1 shows that, in comparison to peer municipalities in Southern Ontario, Niagara Region offers a relatively low level of mobility by public transportation. At 0.68 revenue-vehicle hours per capita in 2015 (which accounts for all local public transit service providers within Niagara), Niagara offers just over half the amount of transit service per capita than Wellington County, and is some 25% below the peer average. This suggests there is a need to increase the amount of transit service being offered to the Niagara's residents to ensure that basic mobility needs are being met.

Exhibit 1: Transit Revenue Vehicle-Hours Per Capita (2015)



Source: Canadian Urban Transit Association

2.2 Social Equity

Residents without a car in Niagara Region are at an economic disadvantage. Without a car, residents are less mobile and less able to access opportunities that could improve their quality of life. To promote improved social equity, the public transportation system must provide a similar level of access to opportunities as those who have a car and are able to drive. In essence, this means some form of basic public transportation must be available to all of the Niagara's residents.

2.3 Economic Development

Transportation infrastructure can be an important economic development tool. Improving transportation connections—including public transit service—can ameliorate economic competitiveness, which in turn can incentivize new development and improve the economy. In the context of Niagara Region, improved access to the Greater Toronto and Hamilton Area (GTHA) has the potential to impact Niagara Region's housing market. Introducing new, convenient, and reliable connections to Hamilton will encourage workers to live in Niagara Region. At the same time, such a service may also encourage employers to locate their firms in Niagara, knowing that they can draw from a wide pool of workers.

3. Challenges

3.1 Geography and Urban Structure

Niagara Region is made up of geographically-segregated communities that share strong economic and social ties. Over time, these ties have strengthened, and Niagara Region's residents now frequently travel between communities to go to work, attend school, or shop. This means that residents are increasingly likely to make frequent trips that are lengthy and cross municipal boundaries. Furthermore, a large portion of the Niagara's land area is rural, and residents of these areas often travel to urban centres to fulfill most of their basic daily activities.

These travel patterns make effective service by public transportation a substantial challenge. Transit is most effective at serving trips that start or end in areas where there are high concentration of uses, whether they be residences, jobs, retail, or a mix of all three. These higher densities make access to and from transit more attractive, and allows transit operators to run more frequent and convenient service. However, at present, only about 5% of the Region's land area is sufficiently dense to support this type of service.

3.2 Costs

Operating fixed-route public transportation service in low-density areas and small urban centres is often very costly, and fares paid by riders rarely cover these costs. In fact, fares recouped only 22% of Niagara Region Transit operating costs in 2015. And while it is important to provide a basic level of mobility to residents, service can only be provided to the degree that is supportable by the local tax base. As such, the need to improve mobility by public transit must be balanced by the need to keep costs at affordable levels.

At present, significant expansion of the *status quo* transit operating model in the Niagara's rural and suburban neighbourhoods is not sustainable. There is simply not enough demand in these areas to offset the additional costs of running frequent, regular transit service. As such, a new approach will be necessary to ensure strategic needs are met while still maintaining affordable levels of expenditure.

3.3 Multiple stakeholders

At the time of writing, Niagara Region is served by nine different public transit agencies operating behalf of local, regional, provincial, and federal governments. The primary mandate of these systems is to serve travel demand within their jurisdiction and, although efforts are in place to facilitate fare and service integration, it can still be a challenge for travellers to navigate this operating environment. As described above, travel patterns in Niagara do not align to administrative boundaries, and residents and workers need to be able to travel throughout Niagara Region easily and seamlessly.

4. Opportunities

4.1 Evolving models of transportation

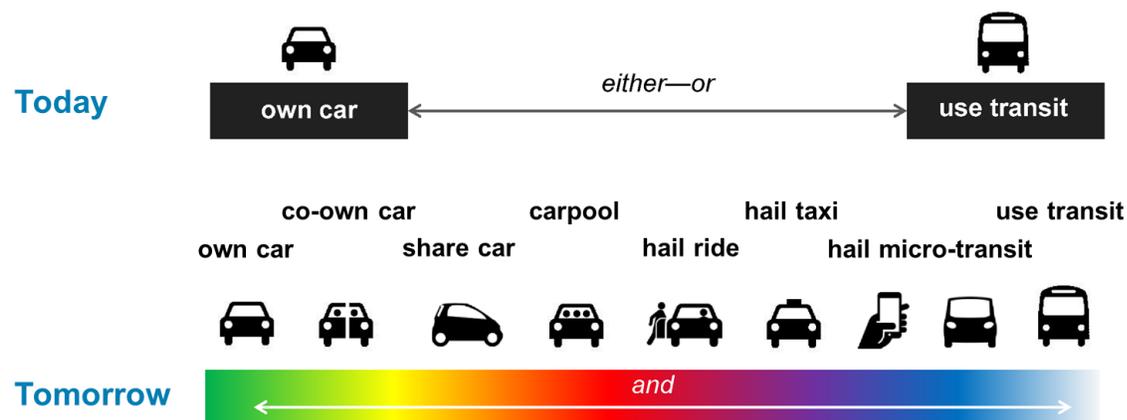
Traditionally, the majority of urban travellers have fallen into one of two categories:

- those that own a car and use it to make most of their trips; and
- those who do not and use transit to get around.

In the past several years, however, the line between these two groups has blurred. It is now not uncommon in many North American cities to get around using a wide variety of transportation modes, many of which leverage mobile computing and GPS technology. As shown in Exhibit 2, these options run the range from facilitated carpooling, to car-sharing, ride-hailing, and micro-transit. The common theme in this new array of transportation options is the treatment of **mobility as a service**. This means that mobility is offered through some sort of platform and sold, rather than relying on personally-owned modes of private transportation.

This paradigm shift is important for public transportation because it provides a framework in which future transit services will likely operate. Rather than being thought of exclusively as a social service for those without a car, transit's role will shift to being one part of a multi-modal system. Within that system, its benefits (high capacity, reliability, low fare, etc.) can be used to its advantage to improve mobility for all users of the transportation system.

Exhibit 2: The New Mobility Paradigm



4.2 Using new technology to adapt an old idea

In areas with very low demand for public transportation, some transit agencies employ **demand-responsive** service as an alternative to fixed-route service. This typically consists of a small bus or contracted taxi company responding directly to a customer request for travel, with a ride being provided either from door-to-door or to the fixed-route network. These types of services are not new, and are currently operated in Welland, St. Catharines, and Niagara Falls. They are, however, expensive to operate, and require substantial advanced booking from customers.

Existing and emerging technology may be able to substantially decrease the cost of providing demand-responsive transit service and increase convenience to travellers. Transportation network companies (e.g. ride-hailing and micro-transit service providers) have developed algorithms that can dispatch vehicles in real-time with very little overhead costs, dramatically improving convenience and reducing cost. The future deployment of connected and autonomous vehicles (CAVs) are likely to reduce this cost even further, and facilitate the provision of service to areas in which it was not previously economically feasible.

The Region can position itself as a leader by being an early adopter of policies that are supportive of mobility as a service, demand-responsive transit, and CAVs. These policies can not only improve transportation options for Niagara residents, but can act as a catalyst for broader municipal innovation.

4.3 Adding Fixed-Route Service Where It Is Warranted

Building transit ridership will require more than deploying new technology. In order to gain meaningful increases in transit riders, new investment in fixed-route service is required. However, the best return on this investment can be realized by focussing new service in areas that are most able to sustain it. In other words, the number of riders per new hour of service will be higher if those hours are concentrated in areas that are already highly attractive to transit.

Establishing a frequent network of core services is a recent service planning model that has gained traction in recent years. Under this paradigm, service hours are concentrated on high-performing routes, resulting in “network within a network” of high-frequency services (typically 15 minutes or better) that offer reliable, convenient service on major arterial roads throughout the day. This technique builds the backbone of the transit system, and can significantly improve the convenience of service in areas that can generate new riders.

4.4 Renewed Governance

Deploying a new model of transit governance in Niagara Region has the potential to remove barriers to fractured planning and inconsistent service. This could be achieved by consolidating the number of transit operators, allowing for less duplication of service, increased service coordination (e.g. scheduling), improved fare coordination, and a consistent brand.

5. Recommended Strategic Actions

This section summarizes the near-, medium-, and long-term strategic actions to be taken by the Region with a view to expanding and improving its transit system. These actions are meant to complement recent work undertaken by the Inter-municipal Transit Working Group and guide high-level decision making about the Region’s transit policy. In view of its strategic nature, the list is not limited to services currently operated by the Region. The aim is to establish holistic transit policy without being limited by administrative or jurisdictional issues.

Near Term (Before 2021)

- Initiate and fund a pilot project with a transportation network company to **investigate the financial and operational viability of providing demand-responsive transit service** in low-density areas using ride-hailing technology.
- Act as an enabler and funder of **fare and service integration between local agencies** to reduce service duplication and enact more equitable fares.
- Conduct a study of potential **transit priority measures** along regional roads to give buses priority over private vehicles.
- Subject to the approval of the Inter-municipal Transit Strategy, **consolidate the operation of Niagara Region's largest transit agencies** to provide more coordinated and consistent service.

Medium Term (Between 2021 and 2031)

- Establish **frequent transit networks** in St. Catharines, Niagara Falls, and Welland, in which 15-minute service (or better) is provided in key corridors all day.
- Introduce **subsidized co-fares** between Niagara Region Transit and GO Transit. Encourage municipal partner agencies to provide similar arrangements.
- Introduce regular, reliable and coordinated **local transit connections** to the GO hub and stations. Construct appropriate **cycling and pedestrian infrastructure** to stations.
- Develop a **comprehensive service plan for the operation of demand-responsive transit** service by transportation network companies, including service coverage, fares, and subsidies.
- Develop a detailed **policy on the usage of connected and autonomous vehicles for the purposes of public transportation**, including demand-responsive and fixed-route service.
- Provide inter-municipal transit to **all of Niagara's municipalities before 2041** through a combination of fixed-route and demand-responsive transit.

Long Term (Between 2031 and 2041)

- **Complete deployment of demand-responsive service** in areas where fixed-route service performs poorly.
- **Incremental improvements to fixed-route service** to further encourage transit travel between and within Niagara Region municipalities.

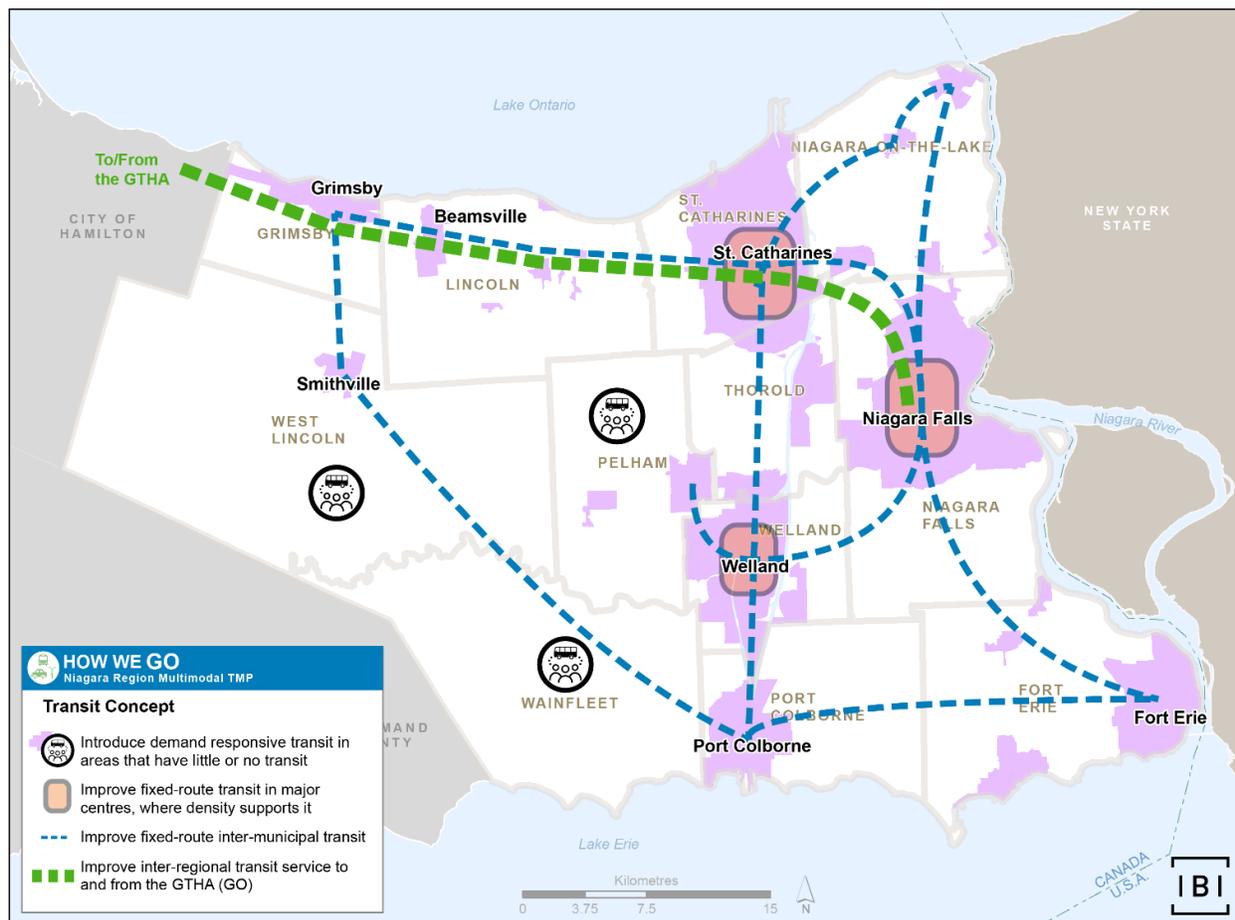
6. Transit Network Concept

This section presents an example of how the preceding strategies could be deployed as actual transit services. Exhibit 3 presents a chronology of the conceptual improvements, while Exhibit 4 illustrates the 2041 service concept. The intent of this is to show how services could be deployed in response to the preceding strategic actions, not to act as a definitive blueprint for when and where new services should be deployed. These tactical and operational decisions should be made by Niagara Region Transit staff as part of regular service planning studies.

Exhibit 3: Transit Network Concept

Service Description	Timeframe
Local Transit	
Development of frequent transit networks in St. Catharines, Welland, and Niagara Falls—15-minute service on key routes throughout the day	2021–2031
Route restructuring to serve GO Rail in St. Catharines and Niagara Falls	2021–2031
Replacement of fixed-route service in suburban and low-density with demand-responsive transit service	2031–2041
Inter-Municipal Transit	
Smithville–Grimsby: New fixed-route service connecting central Smithville to Grimsby GO Station	Before 2021
St. Catharines–Niagara Falls–Fort Erie: Route optimization and frequency improvements to existing services	Before 2021
St. Catharines–Welland–Port Colborne: Route optimization and frequency improvements to existing services	Before 2021
Niagara Falls–Welland: Route optimization and frequency improvements to existing services	2021–2031
Grimsby–St. Catharines: New fixed-route service operating on Regional Road 81 (King St.) connecting St. Catharines, Jordan, Vineland, Beamsville, and Grimsby.	2021–2031
Fort Erie–Crystal Beach: New fixed-route service connecting Fort Erie to Crystal Beach	2021–2031
NOTL–St. Catharines: Frequency improvements to existing NOTL transit service	2031–2041
NOTL–Niagara Falls: Frequency improvements and fare integration with existing WEGO transit service	2031–2041
Demand-responsive transit available in all municipalities	2031–2041
Inter-Regional Transit	
GO Rail service to Grimsby	2021
GO Rail service to Niagara Falls	2023

Exhibit 4: 2041 Transit Network Concept Map



7. Moving Towards Rapid Transit

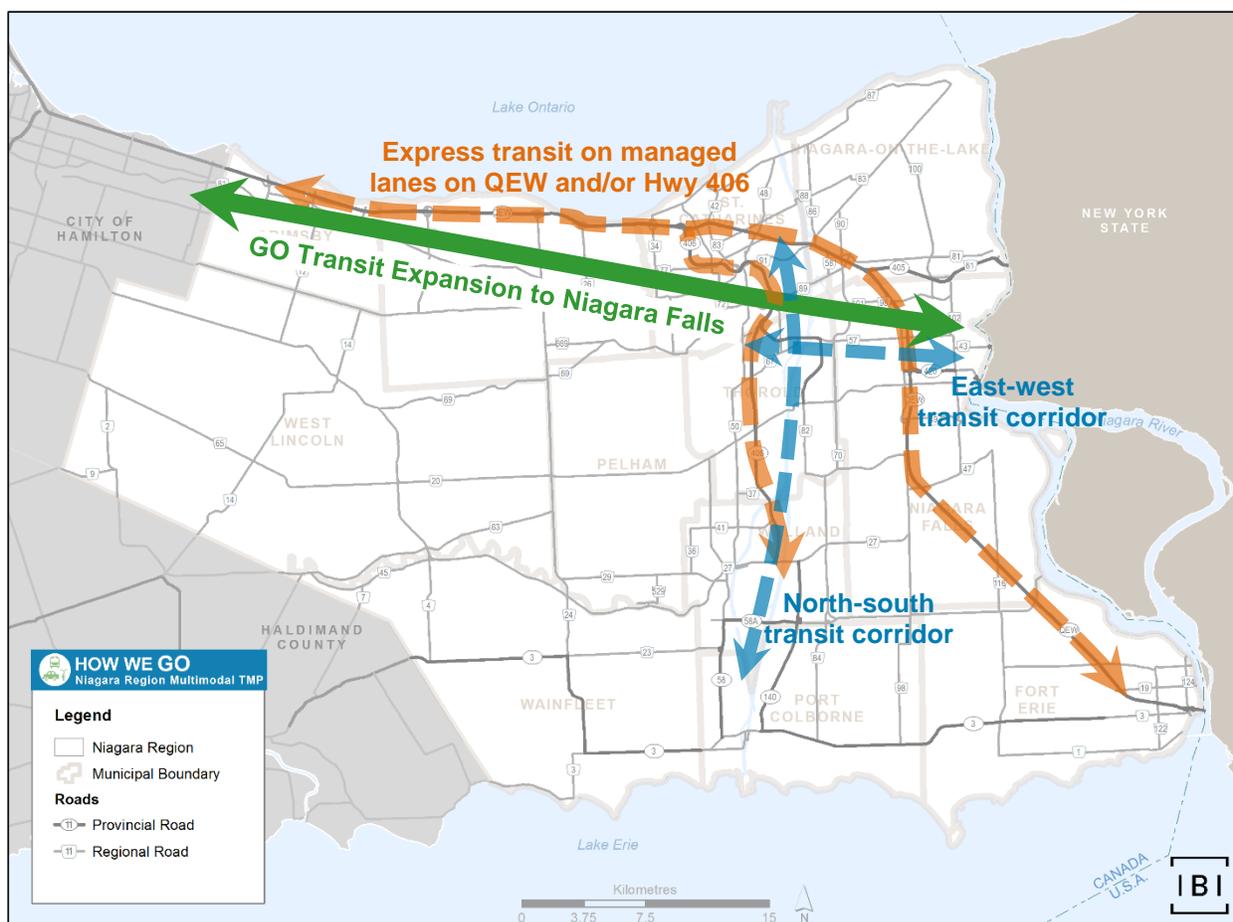
Looking forward, as the Region continues to grow and as emerging transit technologies are adapted, future transit demand may warrant consideration for higher-order transit services such as rapid transit, high-frequency buses in dedicated lanes or managed lanes (i.e. high-occupancy vehicle lanes) or additional rail services.

The planned growth in Niagara Region is moving towards an urban structure that will include areas that are supportive of transit. However, additional intensification of the urban structure is needed to achieve the typical population densities that support rapid transit or higher-order fixed-route services. As the Region continues to develop and grow, the Region may choose to pursue rapid inter-municipal transit connections in the future. Opportunities for future higher-order transit services and/or routes could include:

- Buses in dedicated transit lanes to serve the downtown St. Catharines Urban Growth Centre;
- Inter-city express routes;

- Express bus routes on managed lanes on the QEW or Highway 406 (see Exhibit 5);
- East-west higher-order transit connection along Highway 58-Thorold Stone Road (see Exhibit 5); and
- North-south higher-order transit connection of the Canal cities (St. Catharines, Thorold, Welland, Port Colborne) potentially utilizing an existing rail corridor (see Exhibit 5).

Exhibit 5: Opportunities for Higher-Order Transit Corridors (to be reviewed in 2022 TMP)



In addition to the recommended strategy presented in this paper, there are several measures Niagara Region and its transportation partners could take to improve transit service within and between local area municipalities to support future rapid transit. These measures include:

- Implementing transit priority at congestion 'hot spots' including transit-only lanes, queue jump lanes, transit signal priority, etc.
- Concentrating denser land uses around key transit corridors to continue to build transit ridership.

As the Region moves towards a consolidated transit model for one transit entity in Niagara Region, an early priority is to identify a program for the Region to become

“rapid transit ready,” implement inter-municipal quick-start/pilot projects and adopt transit system technologies. A number of steps that the Region could undertake include:

- Identifying candidate rapid transit corridors;
- Aligning urban infrastructure with rapid transit corridors.
- Building ridership on trunk routes in the corridor;
- Implementing quick start projects; and
- Undertaking environmental assessment studies.

Planning for rapid transit is a significant multi-year endeavor. Even after a candidate corridor is identified, the estimated timelines for planning and delivering the rapid or higher-order transit service could be:

- Planning and feasibility – three to five years;
- Environmental Assessment – two to three years;
- Preliminary and Detailed Design – three years; and
- Construction and delivery – three plus years.