

Environmental Project Report Section 1 - Introduction





1 Introduction

Providing additional rapid transit capacity into and within the downtown Toronto area has long been an objective for the City of Toronto. Downtown Toronto is the economic, social, and cultural heart of the Greater Toronto and Hamilton Area (GTHA), and its continued health and vitality is contingent on the provision of efficient and accessible transportation for both people and goods between it and the region.

Currently, the movement of people is supported by an extensive transit network consisting of three main service types:

- 1. Commuter rail service provided by Metrolinx via GO Transit;
- 2. The Toronto Transit Commission (TTC) subway; and
- 3. A network of surface streetcar and bus routes provided by both GO Transit and the TTC.

These services are reaching or exceeding their practical capacity during peak periods. Significant inbound transit capacity deficiencies exist during the morning peak period, particularly on Line 1 (Yonge Subway) south of Bloor and at Bloor-Yonge interchange, and several GO Rail lines, but also on streetcar routes east and west of downtown. With continued growth projected for the City of Toronto and the GTHA, there is an urgent need for improvements. Potential infrastructure, operational, and policy improvements to provide additional transit capacity into and within downtown Toronto have been identified by Metrolinx (within the Regional Transportation Plan), the City of Toronto, and the TTC; however these measures will not on their own be sufficient to address capacity issues during peak periods into the future. As such, there exists a need to examine additional opportunities to enhance rapid transit, particularly into the downtown area.

In response to these issues, and the concern that the planned Yonge North Subway Extension (YNSE) into York Region would exacerbate crowding on the Yonge Subway line, in 2009 Toronto City Council approved a series of motions requesting that Metrolinx prioritize a Relief Line within its 15-year plan; that Metrolinx prioritize the Relief Line in advance of the YNSE; and that the TTC commence studies to evaluate the merits of the Relief Line.

The *Downtown Rapid Transit Expansion Study (DRTES) Phase 1 Strategic Plan* (**Appendix 1-1**), completed and adopted by the TTC Board in October 2012 found that while policy actions could aid in improving downtown transportation issues, it was clear that a Relief Line was required to address Downtown Toronto's transit needs in the future. Four Relief Line South (south of Bloor Street) options, all of which helped to alleviate transit capacity issues from the north and east, were evaluated, with one carried forward for further refinement.

Also in 2012, the Relief Line was included as part of the "Next Wave" of transit projects in the Metrolinx's *The Big Move* Regional Transportation Plan and was identified by Metrolinx as a priority for future transit investment. In 2013 the Relief Line was identified by the City as a priority rapid transit project, and the City of Toronto Planning & Growth Management Committee directed City staff to report on a process for establishing the criteria for selecting alignments and station

locations for the first phase of the Relief Line, under the Environmental Assessment Act.

Launched in 2014, DRTES Phase 2 – renamed the *Relief Line Project Assessment (RLPA)* – built on the work completed as part of Phase 1 and included the technical analysis of potential stations and alignments, evaluation of options, and conceptual design and functional planning studies for the recommended Relief Line South corridor. This process was complemented by an extensive public engagement program which sought feedback at multiple points throughout the RLPA. In 2015, the Metrolinx Board approved the Yonge Relief Network Study recommendations that affirmed that the RLPA should continue.

In July 2016, Toronto City Council approved the preferred alignment for the Relief Line South from Downtown to Pape via Queen/Richmond subject to further assessment of a segment of the alignment between Queen Street and the area north of the GO tracks on Pape Avenue. In May 2017, City Council approved the Carlaw alignment within the Local Segment and authorized commencing the Transit Project Assessment Process (TPAP) and advancing planning and design for the Relief Line South.

This Environmental Project Report (EPR) documents the TPAP followed and conclusions reached, per the Guide for Ontario's Transit Project Assessment Process, for the Relief Line South, comprising the stations and alignment approved by Toronto City Council. It was prepared to satisfy the requirements of the Ontario Regulation 231/08, Transit Projects and Metrolinx Undertakings (Transit Project Regulation).

1.1 Background and Project Rationale

1.1.1 Chronology of Rapid Transit Planning for Downtown Toronto

Plans to serve Downtown Toronto with rapid transit have existed in various forms for over 100 years. As early as 1910, a concept for a rapid transit system for the City, illustrated in **Figure 1-1** was drawn up (Jacob and Davies, 1910). This plan proposed a roughly U-shaped subway that would connect to Line 2 at Dovercourt to the west and at Broadview to the east – an alignment very similar to the Relief Line options under consideration today.

locations for the first phase of the Relief Line, and subsequent measures to obtain approvals

Figure 1-1: Toronto Rapid Transit Scheme 1910



One year later, the Department of Railways and Bridges of the City of Toronto Engineers Office proposed an underground streetcar line on Queen Street through the downtown. However, this concept was not taken forward. The idea was revisited again in 1944 as part of the TTC's plan "Rapid Transit for Toronto", which called for a Yonge Subway and a Queen Street streetcar subway (TTC, 1944). These plans were approved, with Yonge Subway (now part of Line 1) completed in 1954. Although a roughed-in station under the Yonge Subway Queen Station was built, the underground Queen streetcar route was not carried forward due to the competing financial and operational demands associated with the Bloor-Danforth subway (now referred to as Line 2) that was constructed in the 1960s.

In the following years, the idea of a Queen Street Subway continued to be considered, now alongside the idea of eliminating east-west streetcar routes, and was included in the 1973 Subway Plan, shown in **Figure 1-2**. The subway was again not carried forward, this time largely because of strong citizen support for retaining the streetcar lines in place of a new subway.

Figure 1-2: Toronto Subway Plan 1973



In 1975 the *Metropolitan Toronto Transportation Plan Review* issued in its final report Choices for the Future a recommendation to cancel Queen Street subway plans in favour of subway expansion further north to serve the growing suburbs. This resulted in the extension of the Spadina branch of Line 1 from St. George to Wilson and extensions of Line 2 in the east and west.

In 1982, the Accelerated Rapid Transit Study considered and reviewed potential transit improvements including a rapid transit Relief line from Union Station to the Danforth (close to the Greenwood Yard). A feasibility study was conducted on the Relief line including a westerly extension through Exhibition Place with options to extend northwesterly to the Bloor-Danforth line.

In 1985, the *Downtown Rapid Transit Study* was initiated in response to significant growth in downtown employment levels. In the early 1980s peak point ridership on the Yonge branch of Line 1 reached about 30,000 passengers per hour, approaching the practical capacity of the subway at the time. There was significant concern that downtown employment demand would eventually exceed the capacity of the subway system. The Downtown Relief Line concept was revisited, this time with the southern alignment along Front Street. The proposed route is depicted in **Figure 1-3**.

Figure 1-3: Downtown Rapid Transit Study 1985



Following the Downtown Rapid Transit study, the Network 2011 study, conducted in the same year, concluded that the Downtown Rapid Transit line could be deferred to the second priority after the Sheppard Subway (Line 4) since "the expected economic short-term growth in ridership in the downtown core could be handled by interim measures in the mid-1990s". When the recession of the early 1990s followed, the peak point demand of 30,000 hourly riders dropped to a low of 20,000 per hour in 1996-97.

In the 2001 Rapid Transit Expansion Study, the issue was revisited. This study looked at a number of options to increase the capacity of the Yonge branch of Line 1 including:

- Signal system modifications to reduce headways;
- Replacing the signal system with modern technology to significantly reduce headways;
- Adding a third platform at Bloor-Yonge Station to reduce bottlenecks from excessive train dwell times;

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- Interim express bus services into the downtown core to defer major infrastructure costs; and
- Connecting the northern termini of the Yonge and Spadina branches of Line 1 to allow loop operations, eliminating the need to turn trains around at terminal stations – a constraint on achievable headway.

This report concluded that with the implementation of a new signalling system, Automatic Train Control/Operation (ATC/ATO), looping of the Yonge and Spadina branches of Line 1 at Steeles Avenue was not required. This could be pushed back as the next step in expansion of the subway system, perhaps further north at Highway 7. The conclusions of this study contributed to the Spadina and Yonge subway extension Environmental Studies.

Planning Policy Context 1.1.2

Provincial Policy Statement, 2014

The Provincial Policy Statement (PPS), 2014, provides directions on land use planning and development. Key directions which have guided planning for the Relief Line South include:

- Build strong, healthy communities by encouraging density and land uses which support active transportation, are transit-supportive, and freight-supportive;
- Plan for safe, energy efficient, transportation systems that move people and goods;
- Integrate transportation and land use considerations at all stages of the planning process;
- Use Travel Demand Management strategies to maximize efficiency; and
- trips, support current and future use of transit and active transportation.

Growth Plan for the Greater Golden Horseshoe (2017)

The Growth Plan for the Greater Golden Horseshoe (2017) (the "Growth Plan") came into effect on July 1, 2017, replacing the previous Growth Plan. It provides a strategic framework for managing growth and environmental protection in the Greater Golden Horseshoe region. The Growth Plan builds upon the policy foundation provided by the PPS and provides more specific land use planning policies to address issues facing the Region. The new Growth Plan:

- investment optimization as part of the land use planning process;
- Toronto, as focal points for population and employment growth and that public transit continues to be the priority for transportation and major transportation investments;

Constructing a new subway line into the downtown core, specifically to allow Line 2 subway riders from the east to transfer to another line into the downtown prior to Bloor-Yonge Station;

Plan for a land use pattern, density, and mix of uses to minimize length and number of vehicle

Directs municipalities to engage in an integrated approach to infrastructure planning and

Continues to recognize the previously identified urban growth centres, including Downtown

- Identifies Major Transit Station Areas (MTSAs) as strategic growth areas towards which intensification is to be directed. Relief Line Stations are considered to be MTSAs under the Growth Plan;
- States that all MTSAs are to be planned and designed to achieve multimodal access to stations and connections to nearby major trip generators. Their boundaries are to be delineated by municipalities in a transit-supportive manner to maximize the number of potential transit users within walking distance of the station; and
- Includes a minimum density target of 200 people and jobs per hectare for MTSAs on subway lines, and outlines alternate density target provisions.

2041 Regional Transportation Plan (2018)

Metrolinx oversees a coordinated transportation planning effort within the GTHA, and prepares a *Regional Transportation Plan (RTP)* to articulate the vision, goals, objectives and priorities to guide investment in the development of the transportation system in the region. The RTP supports and is aligned with provincial policies and plans such as the PPS and Growth Plan. The 2041 Regional Transportation Plan, which is currently in effect, was approved by Metrolinx's Board of Directors in March 2018. The plan builds on the recommendations of the previous RTP, entitled *The Big Move*, which was adopted in 2008.

The 2041 RTP contains a vision, goals, strategies and priority actions to build an integrated transportation system for the GTHA that is comprehensive, connected, accessible, sustainable, and focused on people. There are many ongoing initiatives related to mobility in the GTHA that are intended to create a more integrated and seamless transportation system.

The Relief Line South is identified as an "In Development" project in the RTP's Frequent Rapid Transit Network, recognizing it as one of the transit projects in "advanced stages of planning and design required to meet the needs of the region in the near term." Metrolinx's Regional Express Rail (RER) program also represents a significant investment in regional transit service. The 10-year RER program aims to provide improved service by running trains more frequently, providing all-day service, and using faster electric trains on most lines. Service will be greatly improved on the three lines which cross the study area. RER will reinforce Union Station as a key transportation node. RER also offers the opportunity to align future Relief Line South extensions to GO Transit stations and mobility hubs outside the Study Area, such as the Bloor GO Station. In determining the Relief Line South alignment, consideration was given to the ability of the Relief Line South to form a more integrated rapid transit network. Initiatives planned for Toronto are shown in **Figure 1-4**.

Figure 1-4: 2041 Regional Transportation Plan (Metrolinx, 2018)



The previous RTP, *The Big Move*, contained a vision, goals and objectives for a future in which regional transit in the GTHA is seamless, coordinated, efficient, equitable and user-centred. Goals of the RTP included improving transportation choices, providing comfort and convenience, promoting an active and healthy lifestyle, providing safe and secure mobility, and reducing dependence on non-renewable resources by way of increasing the number of trips taken by transit, walking and cycling.

The 25-year plan in *The Big Move* originally included a new subway service along King or Queen Streets to provide relief to the Bloor-Danforth subway and improve transit efficiency in the downtown core. Due to the findings of DRTES Phase 1, however, Metrolinx re-prioritized the Relief Line South such that it is part of Metrolinx's "Top 15 Projects" to be complete within the next 15 years as part of a Technical Update approved by the Metrolinx Board of Directors in in February 2013. In September 2014, Metrolinx published a Five-Year Strategy documenting the five year outlook on Metrolinx's plans and activities as part of its RTP (*The Big Move*). The Relief Line South was identified as one of the 'Next Wave' projects eligible for funding in the Metrolinx investment strategy. The objective is to provide a sustainable financial framework to build and operate critical transit projects as part of the RTP.

City of Toronto Official Plan

The *City of Toronto Official Plan (2015 Office Consolidation)* guides development and infrastructure decisions on policy matters such as land use, built form, transportation, and the environment. It articulates visions and principles related to city-building, environmental, social, cultural, and economic considerations.

Urban Structure

At the broadest level, the Official Plan sets out a high-level Urban Structure for the city, with the intention of establishing a framework for the integration of land use and transportation planning. The OP directs growth to areas that are best served by transit, and specifically to districts defined as the *Downtown and Central Waterfront, Centres, Avenues* and *Employment Districts*, which are located throughout the study area. New development in these areas will be compact, dense, and integrated with the transportation network.

The OP recognizes that fully three quarters of Toronto's land area is devoted to neighbourhoods, parks, ravines, water courses and valleys. These are areas that are to remain relatively stable and that will see little physical change. Within the Relief Line South study area, this planned stability applies to a considerable amount of the land beyond the *Downtown and Central Waterfront* and outside of the main corridors that are defined as *Avenues*. The station area and alignment planning for the Relief Line South should consider potential implications for these stable areas and attempt to limit the impacts of the Relief Line South construction and operations on these areas, and to site stations within areas that are suited to higher levels of activity and associated development. The OP Urban Structure is illustrated in **Figure 1-5**.

Land Use Plan

The Official Plan's land use designations are tools to implement the objectives of directing growth to some areas while maintaining the stability of others. Each land use designation provides general policies for the permitted uses within it. Some OP land use designations define areas that are intended to reinforce existing physical character. These include *Neighbourhoods*, *Apartment Neighbourhoods*, and *Parks and Open Space Areas*. Other Official Plan land use designations define areas for growth. These include *Mixed-Use Areas*, *Regeneration Areas*, and *Employment Areas*.

Growth-oriented land use designations are generally more prevalent within the southern portions of the study area. The majority of *Mixed Use Areas, Regeneration Areas,* and *Employment Areas* are south of Queen Street. Downtown currently has the highest densities of the study area, but offers limited opportunities for growth due to the existing built-up context, as does the northern portion of the study area, where most areas are designated as stable residential *Neighbourhoods.* Based on the OP's land use and urban structure policies there is greater potential for enhanced transit service to guide growth, support increased densities, and generate transit ridership to the southern and eastern portions of the study area. The OP Land Use Plan is illustrated in **Figure 1-6.**

Figure 1-5: City of Toronto Official Plan: Urban Structure







Figure 1-6: City of Toronto Official Plan Land Use Designations within the study area (City of Toronto, 2015)

Transportation Policies

One of the main city-building objectives in the Official Plan (OP) is to increase transit mode share relative to the use of automobile. It encourages improvements to the public transit system (e.g. subway extension, rapid transit services) to achieve a high level of transit accessibility within the City. The general transportation policy direction for transportation planning is to protect and maintain the integrity of the existing transit system and identify opportunities for improvement and future expansion.

The OP strives to link intensification within these areas to investments in transit infrastructure. Many parts of the study area are already undergoing change; however there are a number of areas with the potential to accommodate significant growth over time. Relief Line South station areas will support areas of the urban structure that have been identified to accommodate significant residential and employment growth, such as the Downtown and Central Waterfront, Employment Areas, and Avenues.

Secondary Plans

The study area includes a number of Secondary Plans – 15 (King-Parliament), 16 (King-Spadina), 17-19 (Railway Lands East, Central and West), 28 (Regent Park), 31 (Central Waterfront), 34 (Queen-River), and 42 (Unilever Precinct).

In the Downtown, the King-Spadina Secondary Plan first enacted in 1996 provides a more flexible planning and zoning framework that has spurred redevelopment of this older industrial district at the west end of the study area. At the southern edge of the Downtown area, three Secondary Plans have been prepared to guide development along the Railway Lands. The Railway Lands East, Central and West Secondary Plans have supported the regeneration of the former industrial areas south of Front Street.

The King-Parliament Secondary Plan consists of mixed use areas and neighbourhood apartment areas with significant transit demands. The revitalization of Regent Park encourages other alternatives to automobiles for connecting with other areas of the City. Such policies will bring about the benefits of environmental sustainability, improve pedestrian safety and align with the overall city-wide visions for transportation and the environment. Policies applicable to both the King-Parliament and Regent Park Secondary Plans support transit improvement and minimize the use of the automobile. The Central Waterfront Secondary Plan (still to be approved by the OMB) mainly guides development south of the rail corridor but includes the West Don Lands precinct in the King-Parliament area.

The Queen-River Secondary Plan area formerly had manufacturing companies and lowdensity residential homes. It has slowly transitioned to an area with mixed commercial, institutional and residential land uses. The eastern edge of the Secondary Plan area is partially located within the provincially regulated floodplain of the Don Valley. The main objectives of the Secondary Plan policies include minimizing conflicts between different

land uses, ensuring new development is compatible with existing land uses (appropriate transitions) and providing a quality public realm.

The Unilever Precinct Secondary Plan was adopted by City Council in June 2018. It provides a comprehensive range of policies to guide the development of the Unilever Precinct into a transit-oriented office and retail employment node with over 50,000 jobs. The Secondary Plan requires development to be coordinated with the delivery of transit infrastructure, providing public space and amenities to support transit, and establishing an appropriate relationship between the scale and form of development with access to transit facilities. The Secondary Plan permits the use of holding provisions in the zoning by-law to ensure transit is in place before development proceeds.

Municipal Comprehensive Employment Lands Review, 2013

The City of Toronto undertook a year-long process of public consultation and reports to Committee and Council related to the future of Toronto's designated Employment Lands. The resulting OP Amendment 231 was adopted by Council in December, 2013, and contains new policies to:

- Promote employment densification along rapid transit lines;
- Preserve the City's Employment Areas for business and economic activities; and
- Accommodate the growth of the retail and institutional sectors to serve the growing population of the City and the Region.

The new employment area policies direct office development to these areas and provide clear direction to encourage the integration of rapid transit with employment uses. This, combined with the policy to consider established and new office concentrations as part of subway planning processes highlights the importance of assessing the various Relief Line South options against their ability to serve existing and planned commercial development so that there are mutually-supportive combinations of commercial activity and transit service.

Rapid Transit Evaluation Framework, 2014

In August, 2014 Toronto City Council approved Official Plan Amendment No. 274 (OPA 274). OPA 274 was completed as part of the City's Review of OP Transportation Policies called "Feeling Congested?", and provides official policy directions that:

- Support the integration of land use and transportation planning;
- existing streets;
- car dependency;

Require the incorporation of a complete streets approach in the design of new and

Increase opportunities for active and public transportation with the goal of reducing

- Implement travel demand management measures to reduce car dependency and rush-hour congestion;
- Rationalize parking requirements; and
- Facilitate safe, efficient, and environmentally friendly goods movement within the GTHA.

Generally, this amendment supports promoting an efficient transportation network that would increase accessibility and connectivity within the city, promote efficient transit services and infrastructures, build a sustainable transportation system, and reduce car dependency.

The Rapid Transit Evaluation Framework (RTEF) is an outcome of *"Feeling Congested?"*. It supports the work of City Planning to develop a long-term, comprehensive rapid transit network plan for inclusion in the OP. The RTEF uses eight broad criteria to evaluate transit expansion projects, consistent with three policy principles: serving people, strengthening places, and supporting prosperity.

The RLPA Study's objectives were in-line with the *"Feeling Congested?"* policy recommendations, promoting efficient transit service to improve connectivity within the City.

TOcore Downtown Plan, 2018

The City initiated the *TOcore* planning study in mid-2014. It aimed to develop an integrated planning framework and infrastructure strategy for the Downtown. The goal was to coordinate residential and employment growth with infrastructure investment to ensure a livable and prosperous Downtown. The study involved a review of the Downtown planning framework and was informed by work being undertaken on longer-term and city-wide transit infrastructure initiatives such as the City's Official Plan 5-Year Review.

A Final Proposals Report was published in 2016 and the Downtown Plan implemented by OPA 406 was adopted by City Council in May 2018. The Downtown Plan is a 25-year vision that identifies connectivity as an important goal of its policies, and mobility is identified as one of five supporting strategies of the plan. It emphasizes that the transportation system for Downtown should form a connected and integrated network that provides a range of safe and sustainable travel choices to improve mobility accessibility, and that future transit investments such as the Relief Line and Regional Express Rail are being advanced to support existing development and planned growth and support growing commuter needs.

GO Electrification Study, 2010

In 2010, Metrolinx undertook the *GO Electrification Study* to determine the needs and requirements to convert GO Train service from existing diesel-locomotion operation to powering its trains with electricity. This fundamental shift in how GO trains will operate is

required to facilitate a major aspect of *The Big Move*, which is the provision of more frequent, two-way "express" rail service on existing GO corridors.

While the study focused on technical and specific aspects such as rolling stock and infrastructure needs, the *GO Electrification Study* defined an operating concept for the future known as the "Reference Case," which is a reasonable scenario in which a consistent basis can be established for comparing network options. The "Reference Case" consisted of the GO Train service improvements assumed in the work undertaken during Phase 1 of DRTES.

In the end, Metrolinx has recommended that the Lakeshore Corridor and the Georgetown Corridor be electrified based on detailed cost-benefit analyses. It is possible that some benefits associated with electrification may open the door for some possibilities such as additional stops on these corridors that can be integrated with a potential Relief Line South.

GO Rail Station Access Plan, 2016

The *GO Rail Station Access Plan* is intended to be used by Metrolinx to inform decision making on investments at GO rail stations, coordinate between stakeholders who plan station areas and deliver local and regional transit services, support strategies that provide customers with multi-modal station access options, and provide a tool for monitoring the progress and success of investments over time. The plan provides recommendations to 2031.

The 2016 plan updates the 2013 GO Transit Rail Parking and Station Access plan in response to the development of RER which is expected to significantly increase demand and change travel patterns across the region.

The Station Access Plan envisions a shift in the approach to rail station access that grows ridership, enhances customer experience and safety, and reduces dependence on single-occupancy vehicles.

Transit Supportive Guidelines, 2012

The Ministry of Transportation established guidelines for land use planning, urban design, and operational practices to create an environment that is supportive of transit and able to develop services and programs to increase transit ridership. The guidelines promote transit supportive planning to make transit easily accessible, serve major land uses and ridership generators, and provide direct and efficient routes between destinations.

1.1.3 Downtown Rapid Transit Expansion Study (DRTES), October 2012

The *Downtown Rapid Transit Expansion Study (DRTES) – Phase 1 Strategic Plan* (**Appendix 1-1**), completed and adopted by the TTC Board in October 2012, was initiated by the TTC in response to Toronto City Council's January 2009 request that Metrolinx

prioritize the Relief Line in advance of the Yonge North Subway Extension (YNSE) in order to accommodate anticipated capacity issues. Council requested that the TTC commence studies to evaluate the merits of the Relief Line for the purpose of raising its priority for Metrolinx, and also to proceed with the studies necessary to advance construction of the Relief Line.

DRTES Phase 1 assessed future rapid transit needs based on anticipated growth in Toronto in accordance with the City's OP, and identified and assessed potential rapid transit improvements into and within the downtown area of Toronto. Phase 1 reviewed a number of alternatives and options to relieve stress on the rapid transit network including policy alternatives, such as transit-oriented development (TOD) strategies and travel demand management measures. Phase 1 found that, while policy actions could aid in improving downtown transportation issues, it was clear that a rapid transit infrastructure alternative serving transit users from the north and east, such as a Relief Line, was required to adequately serve Downtown Toronto's transit needs in the future.

As such, it was recommended in the Phase 1 Report that the City of Toronto, TTC and Metrolinx continue to work jointly to plan for new and/or improved grade-separated rapid transit services into the downtown from the east and the north that will help achieve the City's, and Metrolinx's, planning objectives of intensification and a more compact urban form. Four Relief Line options, all of which helped alleviate transit capacity issues from the north and east, were evaluated. Option 1, conceptually illustrated in Figure 1-7, is the option that was carried forward for further refinement.

Figure 1-7: DRTES Relief Line Option



1.2 **Purpose of Project**

The purpose of the Relief Line South is to address the issues set forward by the RLPA Problem Statement, developed based on analysis undertaken to identify and assess the need for rapid transit improvements into, and within, the downtown area of Toronto.

1.2.1 **RLPA Problem Statement**

The health and vitality of downtown Toronto is supported by, and depends on, an extensive transit network composed of:

- Longer-distance commuter rail services provided by GO Transit;
- within, the downtown area.

• The TTC subway system serving many short and medium length passenger trips; and

• A network of surface streetcar and bus services providing more local travel to, and

Each of these transit modes is currently operating close to its maximum capacity at peak times, and congestion on the rapid transit network serving downtown Toronto is increasing. An increase in transit demand has been driven by the significant growth in office space and employment in Downtown Toronto during the past decade, a trend that is anticipated to continue into the future:

- Between 2011 and 2017, over 700,000m² of office space was built in downtown Toronto, the vast majority located within or adjacent to the Financial District (City of Toronto, 2018f);
- Between 2011 and 2017, employment in downtown Toronto grew from 442,000 jobs to 545,000 jobs, an increase of 103,000 jobs (23%) (City of Toronto, 2018g); and
- At the end of 2017, 4.1 million m² of non-residential gross floor area (GFA) was in the development pipeline in the Downtown and Central Waterfront (representing 40% of the total across the city) (City of Toronto, 2018h).

The pattern of growth in travel into and within the downtown area for the past 25 years has been accommodated by two fundamental factors:

- A large increase in GO Rail passengers travelling from outside the City of Toronto to the major employment destinations in the downtown area; and
- A very large increase in multiple-unit residential buildings both within the downtown area, and immediately adjacent to the downtown, resulting in increased short tripmaking both by active transportation modes (walking, cycling) and shorter-distance transit trips. The large increase in downtown residential development has also led to a substantial increase in off-peak direction travel at peak times from home locations in the downtown to employment destinations outside the downtown area.

In the past decade, the TTC and GO have implemented a range of programs that have significantly increased overall transit use in the City and further capacity improvements to the existing rapid transit network are planned over the next several years. However, even with the planned improvements, by 2031:

- Line 1 will be at or over capacity;
- Bloor-Yonge Station will continue to experience congestion;
- Many GO Transit routes will be nearing or at capacity; and
- Surface routes will increasingly be impacted by congestion.

This assessment reviewed the need and justification for the Relief Line South, documented the existing conditions and identified constraints in the study area, provided a detailed description of the preliminary design put forward for this Transit Project, outlined the predictable environmental effects of the Transit Project, and provided recommendations for addressing the effects through further study or mitigation.

1.3 **Project Description**

The proposed Relief Line South, shown in **Figure 1-8**, is a 7.4 kilometre subway line (including tail tracks), connecting the existing Line 1 subway to Line 2. The entire alignment will be underground, including the proposed Don River crossing. The Relief Line South will be constructed following TTC standard practice of construction, involving twin bore tunnels with box structures (open cut) at tail tracks, special track works, and stations. The tunnels will be constructed using a twin boring construction method that is effective for difficult ground conditions (sands and clays under high groundwater pressure).

Figure 1-8: Relief Line South Alignment and Stations



1.3.1 Alignment

The Relief Line South subway running structure and station platforms are primarily located within existing road right-of-ways. There is a proposed station at Osgoode Station along Queen Street West. Crossovers which allow trains to switch between the westbound and eastbound tracks are provided west of University Avenue, where the underground tail tracks extend to John Street. The alignment continues east underground along Queen Street to the proposed Queen Station interchange at Yonge Street. Another station is proposed at Queen Street East and Sherbourne Street.

As it approaches Berkeley Street, the alignment turns southeast towards Adelaide Street East, where there is a station at Sumach Street. The alignment continues with a crossing under the Don River south of Eastern Avenue. A station is proposed at Broadview and Eastern Avenues. The alignment continues underground following Eastern Avenue and then begins to curve north-east at Booth Avenue. The curve continues until Queen Street East and Carlaw Avenue where there is a proposed station. The alignment continues to follow under Carlaw Avenue until it curves northeast between Gerrard Street East and Riverdale Avenue towards Pape Avenue, A station is proposed at this location.

The alignment then continues north following under Pape Avenue to Danforth Avenue, where there is a proposed interchange with Line 2 at Pape Station.

Crossovers which allows trains to switch between the northbound and southbound tracks are provided north of Pape Station, where the tail tracks extend to Westwood Avenue. There are proposed Wye tracks connecting the Relief Line South and tail tracks to Line 2 northwest and northeast of the interchange station, which are necessary for trains to access Greenwood Yard.

The subway is proposed as a twin bore tunnel that is generally within the bedrock in the downtown core, with the exception of the Don River crossing. At Dingwall Avenue along the Pape Avenue segment, the alignment rises above the bedrock to transition up to the proposed interchange at Pape Station.

1.3.2 Stations

The Relief Line South will have eight stations, including two interchange stations connecting to Line 1 at Osgoode (University Avenue) and Queen Stations (Yonge Street), and one interchange station connecting to Line 2 at Pape Station (Danforth Avenue). There will be two intermodal stations providing connections to the proposed Gerrard-Carlaw and East Harbour SmartTrack stations. Stations will also have connections to surface routes including buses and streetcars.

Stations will have a street entrance, a concourse level and a platform level, and a "centre platform" configuration where passengers can board and exit trains via a single platform between the two tracks. Stations will be designed in accordance with the TTC Design Manual and the Accessibility for Ontarians with Disabilities Act (AODA) (Ontario, 2005) and will be fully accessible to persons of all abilities.

Station-to-station distances for the Relief Line South are summarized in **Table 1-1**.

Table 1-1: Station to Station Distances (Measured from Centre of Platform)

From	То	Approximate Distance
Osgoode Station	Queen Station	420 m
Queen Station	Sherbourne Station	1010 m
Sherbourne Station	Sumach Station	750 m
Sumach Station	Broadview Station	1000 m
Broadview Station	Carlaw Station	1040 m
Carlaw Station	Gerrard Station	770 m
Gerrard Station	Pape Station	1290 m

1.3.3 System Operations

Overnight storage of trains will occur on the tail tracks west of the proposed Osgoode Station and on the pocket track that is north of the proposed Pape Station, in addition to at the existing Greenwood Yard on Line 2.

The technological basis of design for the Relief Line South is the 6-car trains currently being used on Line 2. The stations are designed with a 152.4m (500ft) long platforms consistent with all stations on Line 1, 2 and 4, allowing for a consistent approach in any future upgrades to stations or trains, including the potential for a seventh car to increase the train capacity, the addition of Automatic Train Control (ATC), and with ATC, the addition of Platform Edge Doors (PEDs) in stations.

On opening day the Relief Line South will operate service frequency ranging between 2 minutes 45 seconds and 4 minutes in the AM peak, depending on the number of cars per train which will be determined through future work. By 2041, demand is forecasted to increase and the service will operate a frequency ranging between 2 minutes and 3 minutes in the AM peak depending on the number of cars per train. This will require approximately 48 to 54 cars in-service or between 56 and 63 total cars with a 15% operating spare ratio. The Relief Line South project will be designed to accommodate an ultimate service of a 1 minutes 30 seconds frequency with 6 car trains. This service frequency is estimated to be required when the Relief Line is extended north towards Sheppard Avenue.

Study Areas 1.4

Relief Line South (TPAP) Study Area 1.4.1

The study area for the purposes of this EPR encompasses the recommended Transit Project and is illustrated in Figure 1-9. The study area extends for 120 metres on either side of the centreline of the Relief Line South alignment and includes the entirety of the Transit Project and all property that may need to be temporarily or permanently acquired for the Transit Project.

For some environmental and technical disciplines a different study area was considered, as how and where specific effects may be experienced varies.

Figure 1-9: Relief Line South Study Area



Table 1-2: Study Areas by Discipline

Discipline	Study Area
Transportation	Relief Line South Study Area & RLPA Study Area
Socio-Economic	Relief Line South Study Area & RLPA Study Area
Environment	
Natural	Relief Line South Study Area
Environment	
Cultural	The Cultural Heritage Assessment Report (CHAR) defined study
Heritage	specific areas along the Relief Line South corridor. Each study area
	included all parcels proposed for project components (e.g. stations,
	project component parcels. The Sumach Station Study Area also
	included a section of the below grade corridor where tunneling is
	predicted to exceed acceptable vibration limits during construction.
Archaeology	Relief Line South Study Area
Utilities	Along Relief Line South Alignment
Geotechnical	Relief Line South Study Area
Property	Relief Line South Study Area
Impacts	

1.4.2 Relief Line Project Assessment Study Area (Pre-Planning)

The RLPA study area (**Figure 1-10**) was used as the basis for all pre-planning activities and the assessment of existing and future Transportation and Socio-Economic conditions for the Relief Line South.

Figure 1-10: RLPA Study Area



1.5 Proponents

The proponents of the Environmental Project Report are the City of Toronto (including TTC) and Metrolinx, an agency of the Province of Ontario. The proponents agree to abide by the obligations and commitments outlined in this report.

1.6 Overview of EPR

This EPR documents the planning, consultation, and decision making process followed before and during the course of the TPAP. It provides a detailed description of the Transit Project, existing and future conditions in the Transit Project study area, and summarizes potential environmental effects that could occur with the implementation of the Relief Line South project. The EPR also proposes mitigation measures and monitoring activities to address the documented environmental effects.

To facilitate the review of this EPR in the context of TPAP requirements, a concordance table has been prepared to direct the reader to the applicable section of the EPR. The concordance table is shown in **Table 1-3** and **Table 1-4**.

Table 1-3: Concordance Table (1/2)

TPAP Requirement	Section of EPR Where
	Requirement is Addressed
A statement of the purpose of the transit project	Section 1 (Introduction)
and a summary of any background information	
relating to the transit project.	
A final description of the transit project including a	Section 3 (Preferred Transit
description of the preferred design method.	Project Design)
A description of any other design methods that	N/A
were considered once the project commenced the	
transit project assessment process.	
A map showing the site of the transit project.	Section 1 (Introduction)
A description of the local environmental conditions	Section 5 (Existing and Future
at the site of the transit project.	Conditions)
A description of all studies carried out, including a	Section 5 (Existing and Future
summary of all data collected or reviewed and a	Conditions), Section 6 (Detailed
summary of all results and conclusions.	Assessment of Impacts, Proposed
	Mitigation and Monitoring of the
	Transit Project), Appendix 3-3,
	and Appendix 6-1 through 6-4
The assessments, evaluation and criteria for any	Section 6 (Detailed Assessment
impacts of the preferred design method and any	of Impacts, Proposed Mitigation
other design method (described above) that were	and Monitoring of the Transit
considered once the project's transit project	Project)
assessment process commenced (does not	
include pre-planning work).	

Table 1-4: Concordance Table (2/2)

TPAP Requiremen

If mitigation measures are propose of the proposal for monitoring or ve effectiveness of the mitigation mea

A description of any municipal, pro or other approvals or permits that in A consultation record, including: A description of the consultations a efforts carried out with interested p including Aboriginal communities; A list of the interested persons, including communities who participated in the Summaries of the comments subminiterested persons, including Aboriginal communities;

A summary of any discussions with communities including discussions impacts of the transit project on co protected Aboriginal or treaty rights all written comments submitted by communities;

A description of what the proponer to concerns expressed by interested including Aboriginal communities.

If a "time out" was taken during the assessment process, a summary o including:

A description of the issue; A description of what the proponer

to the issue and the results of those The dates that notices for the "time to the Director and the Regional D

nt	Section of EPR Where Requirement is Addressed
ed, a description erifying the asures.	Section 6 (Detailed Assessment of Impacts, Proposed Mitigation and Monitoring of the Transit Project)
ovincial, federal, may be required.	Section 7 (Commitments to Future Work)
and follow up persons,	Section 4 (Consultation), Appendix 4-1 through 4- 12
cluding Aboriginal he consultations; nitted by riginal	
h Aboriginal s of any potential onstitutionally is, and copies of Aboriginal	
nt did to respond ed persons,	
e transit project of each issue	No time out required.
nt did to respond se efforts; e out" were given Director.	