



UK Trade
& Investment



Withdrawn 17 May 2019

Canada Rail Opportunities
Scoping Report

Preface

Acknowledgements

The authors would like to thank the following organisations for their help and support in the creation of this publication:

Agence Métropolitaine de Transport
Alberta Ministry of Transport
Alberta High Speed Rail
ARUP
Balfour Beatty
Bombardier
Calgary Transit
Canadian National Railway
Canadian Urban Transit Association
Edmonton Transit
GO Transit
Metrolinx
RailTerm
SNC-Lavalin
Toronto Transit Commission

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Agence Métropolitaine de Transport
British Columbia Ministry of Transportation and Infrastructure
BC Transit
Calgary Transit
City of Brampton
City of Hamilton
City of Mississauga
City of Ottawa
Edmonton Transit
Helen Hemmingsen, UKTI Toronto
Metrolinx
OC Transpo
Sasha Musij, UKTI Calgary
Société de Transport de Montréal
TransLink
Toronto Transit Commission
Wikimedia Commons
Wikipedia

Contents

Preface	Foreword	10
	About UK Trade & Investment	10
	High Value Opportunities Programme	11
	Executive Summary	12
1.0	Introduction	14
2.0	Background on Canada	15
2.1	Macro Economic Review	16
2.2	Public-Private Partnerships	18
3.0	Overview of the Canadian Rail Sector	20
4.0	Review of Urban Transit Operations and Opportunities by Province	21
4.1	Summary Table of Existing Urban Transit Rail Infrastructure and Operations	22
4.2	Summary Table of Key Project Opportunities	24
4.3	Ontario	26
4.4	Québec	33
4.5	Alberta	37
4.6	British Columbia	41
5.0	Non-Market suppliers	45
5.1	Contractors	45
5.2	Systems and Rolling Stock	48
5.3	Consultants	49
6.0	Concluding Remarks	51
7.0	Annexes	52
7.1	Doing Business in Canada	52
7.2	Abbreviations	53
7.3	Bibliography	54
7.4	List of Reference Websites	56
7.5	How can UKTI Help UK Organisations Succeed in Canada	58
	Contact UKTI	59



About the Authors



David Bill

David is the International Development Director for the UK Railway Industry Association.

A civil engineer by qualification, David has over 40 years experience in the railway sector particularly focussed on international markets. He has travelled extensively on a business development capacity throughout his career and has held international posts in Hong Kong, Philippines, Dubai and Sweden.

The Railway Industry Association supports its members in international business development and offers a fast and efficient focal point for sourcing equipment, services and expertise from the UK.



Helen Hemmingsen

Helen Hemmingsen is a Trade Officer with the British Consulate General in Toronto. She works with British companies who are interested in exporting to Canada, and helps Canadian organisations source products/services from the UK. Her sectors include construction, power and rail.

Withdrawn 17 May 2019



Amit Khandelwal

Amit Khandelwal is Head of UKTI's Mass Transport Unit focussing on sectors such as rail, airports and ports. He has over twenty years experience working in sectors such as metals trading, defence, chemicals and pharmaceuticals, and has been involved in exporting and importing commodities to and from countries such as India.

His expertise lies in innovation, knowledge management, marketing, people resourcing, project management, talent management and R&D.



Maarten Kroes

Maarten is Associate Director with Network Rail Consulting and is their North America Business Development Director. He is an experienced consultant and project manager with a strong track record of providing strategic advice to transport operators, infrastructure developers, government organisations and financial institutions. He has significant knowledge of privately-financed transport infrastructure projects including road, railway and light-rail systems during various phases of project development. He has 16 years experience, leading numerous feasibility studies, concession bids and airport rail link projects around the world.



Jake Ludham

Jake Ludham is the Rail Specialist working with UKTI where he advises on the UK rail supply chain and International rail opportunities.

Prior to working with UKTI, Jake worked for Balfour Beatty's International Rail Business.

Jake is an experienced strategic marketer and has extensive experience researching markets and developing strategies in International markets. This experience spans large corporates and SMEs in rail and a number of other verticals including technology, engineering, manufacturing, construction and professional services.

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Vancouver

Edmonton
Calgary

Toronto

Montréal

Ottawa

3330 Miles
Travel distance
from London

7.5 h.
Flight time
from London

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Capital: Ottawa
Population: 35 million
Official languages: English & French

Currency: Canadian Dollar (CAD)
Time difference from GMT:
Ottawa, Montréal and Toronto -5 hours,
Calgary and Edmonton -7 hours
Vancouver -8 hours

Canada has a GDP of around \$1.5 trillion
and per capita purchasing power is some
\$43,594 (2012)

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Foreword from Britain's High Commissioner to Canada



It gives me great pleasure to present a report on opportunities for the UK rail industry in the Canadian urban transit sector.

This report is published as part of UK Trade and Investment's flagship initiative, the High Value Opportunities (HVO) programme, which identifies large scale overseas infrastructure projects, selecting those that offer the most accessible (and lucrative) opportunities for UK companies. Teams comprising individuals from across UKTI and wider government are created to provide long-term support to UK companies to help them take advantage of these opportunities.

The transport sector forms a significant element of the HVO programme. Canada features prominently in this programme, with significant transit projects in Vancouver, Calgary, Toronto, Ottawa and Montreal. This study presents an assessment of the opportunities for UK companies to compete with an analysis of international participation and competition in the market. A market scoping mission to Canada was undertaken in March 2013, to understand the market and to address these opportunities.

I believe the UK is uniquely placed to respond. Our companies span the full lifecycle including planning and design, project delivery, technology and equipment supply, operations and service delivery, maintenance and renewal, including asset management.

UKTI is fully committed to assisting you with this process. I encourage you to reach out to our teams in the UK and Canada for any further information. Their contact details can be found at the back of this report.

I hope you that will find this report of value, and wish you every success.

A handwritten signature in black ink, appearing to read "Howard Drake".

Howard Drake,
High Commissioner to Canada

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About UK Trade & Investment



UK Trade & Investment is the Government Department that helps UK-based companies succeed in the global economy. We also help overseas companies bring their high-quality investment to the UK's dynamic economy, acknowledged as Europe's best place from which to succeed in global business.

UK Trade & Investment offers expertise and contacts through its extensive network of specialists in the UK, and in British embassies and other diplomatic offices around the world. We provide companies with the tools they require to be competitive on the world stage.

Trade

UKTI staff are experts in helping your business grow internationally.

We provide expert trade advice and practical support to UK-based companies wishing to grow their business overseas. Whatever stage of development your business is at, we can give you the support that you need to expand and prosper, assisting you on every step of the exporting journey.

Through a range of unique services, including participation at selected trade fairs, outward missions and providing bespoke market intelligence, we can help you crack foreign markets and get to grips quickly with overseas regulations and business practice.

Investment

UKTI's comprehensive range of services assists overseas companies, whatever their size and experience, to bring high-quality investment to the UK. They are delivered in partnership with teams in London and the Devolved Administrations of Scotland, Wales and Northern Ireland.

Our services include providing bespoke information regarding important commercial matters, such as company registration, immigration, incentives, labour, real estate, transport and legal issues.

Deciding where to locate your international business is often a long and involved process. It is UKTI's job to know the UK's strengths and where investment opportunities exist and to help businesses coming to the UK get up and running with speed and confidence.

How can UKTI help UK organisations succeed in Canada?

Further information on how UKTI can help your organisation can be found in Annex 7.5.

High Value Opportunities Programme



The High Value Opportunities (HVO) Programme is UKTI's flagship initiative which identifies large scale overseas infrastructure projects, selecting those that offer the most lucrative and accessible opportunities for UK companies in the near to immediate term.

Large scale international projects and contracts offer huge opportunities for British businesses of all sizes and specialities. From major infrastructure, manufacturing and engineering, through to large supply or value chain opportunities, in the last two years UKTI has helped many UK companies of all sizes win contracts with a total value exceeding £3.6 billion.

Through its overseas network of staff, UKTI has access to a vast amount of intelligence and stakeholders organisations to assist UK businesses in winning contracts from these opportunities. In particular the HVO team:

- Provides intelligence and information on forthcoming and current High Value Opportunities overseas
- Cascades this information to British business and supply chains
- Facilitates networks and establishes the right contacts in market and within the UK
- Helps to identify suitable British capability and capacity and facilitate consortia where appropriate
- Works with UK companies to develop and implement tailored strategies to win contracts

The HVO programme includes a significant number of opportunities across Urban Transport and Mainline projects. The opportunities cover the full UK rail capability across professional services, construction and specialist rail products and services.

Projects are at various stages of their lifecycles and the specific opportunities open to UK businesses at any one time will vary. The list of projects continues to evolve as new opportunities develop.

Canada Urban Rail is one such opportunity, and UKTI has a dedicated project team based in the UK and Canada who are working together to introduce these projects to UK businesses. The team works to obtain information on procurement methods, organisations and timing, international competition, local contracts and partnerships.

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Executive Summary

This report provides an overview of the existing rail operations and infrastructure, together with current and future projects, in Canada, which present real opportunities for UK companies. The principal focus is on urban rail rather than high speed and freight rail. This is simply because high speed remains a long term prospect whilst freight presents a more limited scope of opportunities.

Although the freight market will be of interest to some UK companies, by and large the freight operators (such as Canadian National and Canadian Pacific) are well serviced by incumbent suppliers and in-house capability.

Canada does, however, represent an attractive and accessible market with both near- and long-term urban and metro rail opportunities for UK companies rather than solely one-off

export opportunities. The most prominent opportunities for UK companies identified in the report include:

- Specialist rail contracting or project management on urban rail projects where the volume of work exceeds limited local capacity and clients are keen to see new competition and innovative capability in the market. There is an opportunity for tier one and subcontract participation in partnership with the local players
- Asset management technologies and services (including advisory services) to support existing mature rail networks and help reduce costs
- Consultancy services, in particular to support service expansion
- Electrification equipment and installation

Toronto and the surrounding cities represent the best prospect and a key market entry point for UK companies. For example, in the short to medium term, GO Transit re-signalling may present an opportunity for UK companies already engaged in the market. Eglinton Crosstown may also present supply chain opportunities for those companies in a position to engage now with the shortlisted consortia.

In the mid-term Finch West Light Rail Transit (LRT) followed by Sheppard East offer tier one, sub contract and supply chain opportunities for UK firms. However, these projects are likely to be developed using a Public Private Partnership (PPP also known as P3) model and



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SkyTrain in Vancouver

companies interested in participating at tier one level will require the relevant PPP capability and experience.

The electrification of the Air Rail Link from Union Station to Pearson Airport may offer an opportunity for equipment supply and installation. Crucially, this project could act as a useful market entry point for further electrification work over an extended period should the GO Kitchener and Lakeshore line electrification project move forward.

In the longer term there is a good pipeline of potential projects to target including the Sudbury Relief Line, Yonge North Subway extension, Hamilton LRT, and Hurontario-Main Line. Although currently unfunded, these projects are well supported by regional governments.

In addition to the major project opportunities there are opportunities for asset management technology (for example, GO Transit recently tendered for a track geometry vehicle) and consultancy services. GO Transit looks to increase their reliance on its network.

In Montréal, the Blue Line and Orange Line metro extensions represent the most tangible near term opportunities. Additionally there is a trend towards outsourcing in Montréal which should create more opportunities around asset management, maintenance and renewals.

In Calgary, the Westbrook Transit Operations Control and Data centre (currently in planning phase) should generate opportunities for equipment and systems supply within the next few months.

Calgary Transit has a growing need for solutions to help manage and maintain its ageing infrastructure in an environment subject to extreme weather conditions. It is looking for assistance in this area.

The key opportunity in Edmonton is the Southeast to West LRT. This significant project will present opportunities across the board for UK businesses, from tier 1 PPP consortium opportunities, to subcontract services and equipment supply.

With regards to Vancouver, uncertainties over funding and the outcome of the Regional Transportation Strategy in 2014 mean that the number and type of significant project opportunities is yet to be determined.

However, the Expo Line upgrades programme may generate opportunities. Furthermore, Transnet's need to do more-with-less will drive the requirement for asset management technologies that can help reduce maintenance costs and support preventative maintenance regimes.

Overall, the requirements of a number of mature rail networks together with the prospect of short, mid and long term projects mean that Canada offers sustainable and recurring opportunities for UK business.

Withdrawn 17 May 2019

1

Introduction

Far right: Toronto streetcar on King Street, in front of King Edward Hotel



Presto Card trial- automated purchasing at Union Station (Toronto)



This report presents an overview of the Canadian rail sector and potential opportunities for UK companies. The output presented here is based on a series of in-market interviews and telephone interviews with rail operators, government departments, industry bodies and market suppliers. This primary research was supplemented by desk research. The in-market interviews were conducted as part of a market Scoping Mission that took place in Canada in March 2013. Tables presented in the report have been compiled from multiple sources.

Whilst the research considered opportunities in freight rail and the proposed high speed projects, they are not covered in this report. High speed remains a long term prospect and freight rail provides a more limited scope of opportunities. The freight market will be of interest to some UK companies, but by and

SkyTrain in Vancouver

large the freight operators are well serviced by in-market suppliers and in-house capability.

The report also presents some background information on Canada including an overview of a Public Private Partnership which plays an important role in Canadian infrastructure projects. This is followed by an overview of rail in Canada, then detail is provided on the existing urban rail operations, infrastructure, current and planned projects. Information is then provided on the suppliers in market followed by concluding remarks on the market opportunity.

An annex is included for further reference, in particular relevant websites are referenced where further information can be sourced. Contact details are also provided at the back of this report.



2

Background on Canada



Canada is the second largest country in the world in terms of land area, with six time zones, ten provinces and three territories. The capital city is Ottawa, with a commercial centre of Toronto, both in the province of Ontario.

Canada has a population of about 35 million people and 90% live within 200 km of the United States border. English and French are the two official languages.

Canada ranks 9th globally in the Economic Intelligence Unit's "Where-to-earn index, 2013", based on life-satisfaction surveys (how happy people are) to other determinants of quality of life (crime, access to public institutions, health) across countries. Vancouver, Toronto and Calgary are also within the top five most liveable cities (Economic Intelligence Unit – 2012).

Canada is an important trade and investment partner for British companies of all sizes, across the spectrum of business activity. It is one of the world's richest and most developed countries,

ranking among the top ten industrial powers. With low inflation and positive economic growth, particularly given the recent global economic downturn, Canada offers good trade and investment opportunities for British companies in many sectors including aerospace, biotechnology, construction, defence and security, energy, financial and business services, food and drink, and rail.

The proximity of the US market to much of Canada's industrial activity (based largely in Ontario and Québec) is of fundamental importance to Canada with 75% of Canadian exports going to the USA. This offers UK companies North American Free Trade Agreement (NAFTA) access to the US and Mexican market from Canada. There are also good opportunities for strategic business partnerships and technology transfers between UK and Canadian companies. The market remains receptive to British products and Canadian businesses are familiar with UK business practices.

Withdrawn 17 May 2019



Interior view of new Bombardier subway cars in Toronto



2.1 Macro Economic Review

Canadian Economy

Managing the economy remains a top priority for the Canadian Government as the global economy remains a much watched issue. For Canada, sustainable public finances are of particular interest, with the Government placing a high priority on balancing the budget in 2015/16. Recent Federal Budgets have outlined spending cuts via a variety of means as well as closing tax loopholes to raise revenue. In terms of GDP growth, the economy expanded by 2.5 percent, on an annualised basis, in the first three months of the year, a sharp turnaround from the 0.9 percent gain in the fourth quarter of 2012. Observers in Canada are closely watching the health of the US economy, the destination for 75 percent of Canadian exports, as it will have a large impact on growth prospects here. Despite a low public sector debt-to-GDP ratio, increasing attention is being drawn towards household debt. The Federal Government has taken action by introducing tighter rules for mortgage lending, which observers predict will slow demand for housing credit and help ward off a potential housing market bubble.

Canada and the UK have strong commercial ties that are underpinned by well developed cultural, historical, and linguistic links. In 2012, two-way merchandise trade between the UK and Canada was \$27 billion (CAD). The UK is currently

Canada's third largest export market after the US and China, with top Canadian exports including gold, diamonds, uranium, metals, aircraft and aircraft components. Canada is the UK's 16th largest export market for goods. Top British exports include petroleum, aircraft parts, pharmaceuticals, and automobiles. The conclusion of the EU-Canada Comprehensive Economic and Trade Agreement negotiations will help facilitate even greater commercial relations.

Canadian Rail Sector

The Canadian rail sector is a large contributor to the economy both as an employer and vital mode of transportation. It is estimated that in 2011 approximately 32,000 people were employed in the Canadian Rail sector. There are more than 48,000 km of tracks in Canada, and it is believed to generate around \$10 billion (CAD) per year – 95% coming from freight operations and approximately 5% from commuter, intercity and tourist passenger rail services in major urban centres.

The regulatory environment by the rail sector is characterised by a mix of federal and provincial regulations (for example safety and environmental legislation). Rail systems which operate interprovincially or across the Canada-US border are subject to Federal jurisdiction, whereas those operating within a province are subject to provincial legislation. Yet, some

Toronto
Downtown
aerial view



provinces' regulations track those found at the Federal level.

The highest concentration of privately owned railways is in Western Canada. Similarly Ontario and Quebec have a high number in Eastern Canada. Some lines, particularly urban rail, are owned by provincial or municipal governments. Scrutiny of safety in the Canadian rail sector is likely to increase in the aftermath of the tragic train accident at Lac-Mégantic. As a result of the accident, Canadian Premiers have called on the Federal Government to set up a system to track trains carrying hazardous material and to increase insurance requirements to ensure sufficient coverage.

As the populations of large city centres continue to grow, there is much interest in the future of the urban rail sector in Canada. Urban public transit is generally the responsibility of individual municipalities, though some provinces such as Ontario and British Columbia have created regional transit agencies to coordinate services in the greater Toronto and Vancouver areas, respectively. As the cost of operating urban transit is high, the tax capacity of most municipalities (which rely on property taxes and user fees), funding from the Federal and Provincial Government is a necessity. Support from other levels of government often comes in the form of shared fuel tax revenues and targeted cost-sharing funding.

Withdrawn 17 May 2019

Queue at Union
Station for VIA Rail



2.2 Public-Private Partnerships

The term “public-private partnership” (PPP also commonly known as P3 or Alternative Financing and Procurement (AFP)) carries a specific meaning in the Canadian context. First, it relates to the provision of public services or public infrastructure. Second, it requires the transfer of risk between partners. PPPs span a spectrum of models that progressively engage the expertise and capital of the private sector (from contracting-out to finance/design/build/operation). In Canada, the term PPP is not interchanged with privatisation, unlike the USA.

Canada, with its resource-based economy, has managed to weather the global recession while developing and implementing modest national infrastructure plans using well-thought-out PPP approaches to help finance projects. Canada is successfully deepening its use of PPP to help finance and build a range of transportation, water, sewerage treatment and social infrastructure project, with PPP representing 10-15% of overall infrastructure development.

A number of rail projects have already been developed using a PPP model and PPP is set to play an important role in future rail projects, as shown in Figure 1.

Canada is at the top of the global PPP list, and is seen as an exemplar of best practices for executing PPPs. Its effectiveness is a result of strong national leadership (with the creation of the federal crown corporation, PPP Canada), and the establishment of provincial procurement offices in Ontario, British Columbia, Alberta, Québec, New Brunswick and Saskatchewan, which ensures a better co-ordinated, more efficient infrastructure procurement.

Canada’s high standing is driven by robust processes and Governments that have developed a sophisticated understanding about how and when to use the tool and whether or not to employ user fees. They drive very competitive procurement bidding, giving private operators confidence about schedules for what will come to market.

Withdrawn 17 May 2019



British Columbia Trans Link train at station, Vancouver, Canada

Figure 1: PPP Rail Projects

Rail Projects	Detail
A rail project already developed using PPP is the Canada Line in Vancouver – Canada’s first PPP rail project.	<p>Canada Line</p> <p>This is a \$1.9 billion (CAD) (2003) Design Build Finance Maintain (DBFOM) project. \$1.247 billion (CAD) was provided by Public Funding (Federal, Provincial, TransLink, YVR) and \$657 million (CAD) by delivery providers (SNC Lavalin, bcIMC, CDP). SNC is also the constructor, maintainer and operator. The project was constructed under a 4-year EPC contract, through SNC-Lavalin Transport. Operation and maintenance is under a 31 year contract through SNC’s subsidiary Protrans BC. The line opened in August 2009, 3 months ahead of schedule.</p>
PPP rail projects currently under construction are Ottawa LRT and the Evergreen line in Vancouver	<p>Evergreen Line</p> <p>The Evergreen Line is \$1.43 billion (CAD) project. Funding for the line is through the federal and provincial governments and TransLink. The \$889 million (CAD) Design Build Finance (DBF) contract was awarded to EGRT Construction, a company owned by SNC-Lavalin. Construction began in early 2013 and TransLink will operate the system when the line opens.</p> <p>Ottawa LRT</p> <p>Ottawa LRT is a \$2.1 billion (CAD) Design Build Finance Maintain (DBFM) PPP project. Funding for the line is through federal and provincial governments as well as the City of Ottawa. The project was awarded to Rideau Transit Group which is led by ACS Infrastructure Canada Inc and includes SNC-Lavalin.</p>
PPP rail projects currently being tendered are Waterloo LRT, Whitby East Rail Maintenance Facility in Toronto and Eglinton Crosstown-Scarborough RT also in Toronto	<p>Waterloo LRT</p> <p>Waterloo LRT is \$818 million (CAD) DBFOM PPP project. Funding for the line is through federal and provincial governments as well as the Region of Waterloo. There are currently 3 shortlisted bidders for the project.</p> <p>Whitby East Rail Maintenance Facility</p> <p>GO Transit’s Whitby East Rail Maintenance Facility is a \$300 million (CAD) DBFM PPP project. Funding for the facility is through federal and provincial governments. There are currently 3 shortlisted bidders for the project.</p> <p>Eglinton Crosstown-Scarborough RT</p> <p>Eglinton Crosstown-Scarborough RT is a \$5 billion (CAD) DBFM PPP project. Funding for the facility is through federal and provincial governments. Shortlisted bidders are to be announced before the end of 2013.</p>
Projects which are planned to be developed using PPP	<p>Edmonton Southeast to West LRT</p> <p>The planned Southeast to West Line will cost \$3.2 billion (CAD). The type of PPP model to be used is currently undecided.</p>

Withdrawn 17 May 2019

3

Overview of the Canadian Rail Sector

Interior view of Union Station, Toronto, with arrivals/departures board



The Canadian railway systems encompasses more than 48,000 route-kilometres of track. This network is dominated by freight and in particular Canada's two principal carriers, the Class 1¹ railroads Canadian National (CN) and Canadian Pacific (CP) which own extensive domestic railway networks.

Freight Operations

CN is the larger of the two, with approximately 21,000 route-kilometres of track in Canada. CP operates over 15,000 route-kilometres of domestic track. Together these carriers control 72% of the national rail system.

In addition to the major railways, Canada is home to around 100 smaller, regional or shortline carriers. These railways provide a localised service and frequently partnered with major railways.

Although there are a few long standing regional railways which have been in existence since the early 1900's, most of the shortlines have been formed relatively recently. Their emergence has come chiefly from the rationalisation of non-core branch line operations by both CN and CP. The operations of these regional and shortline railways now extend to over 16,000 route-kilometres of track.

¹ The Surface Transportation Board of the USA defines a Class I railroad in the United States as having annual carrier operating revenues of \$250 million or more. In Canada, a Class I railroad, is defined as a company that has earned gross revenues exceeding \$250 million (CAD) for each of the previous two years.

Passenger Services

Existing passenger services in Canada comprise:

- Five dedicated Metro or Light Rail Transit lines in Calgary, Edmonton, Montréal, Toronto and Vancouver
- Commuter rail networks in the greater suburban areas of Montréal, Toronto, and Vancouver. These commuter services run on a combination of CN and CP networks as well as some dedicated passenger lines
- VIA Rail - which was created in 1977 and took over management of all rail passenger services previously operated by CN and CP Rail, except commuter services. VIA contracts with the Canadian government for the provision of passenger services specified by the Minister of Transport. Under the government's Regional & Remote Passenger Rail Services Contribution Program, funding is made available to support and develop socially necessary rail passenger services in remote areas. In turn, VIA contracts with railway companies for the operation of these services and with non-railway companies for the provision of incidental goods and services; 92 per cent of track used is contracted from CN
- Rocky Mountaineer - a tourist line that operates trains over four principal routes primarily on CN and CP lines

Withdrawn 17 May 2019

Automated purchasing kiosk at Union Station for commuter rail (GO) passes



It is noteworthy that there is currently no high speed passenger service in Canada although a number of potential schemes are under consideration or have been considered at various points. These include:

- Edmonton to Calgary
- Windsor to Québec City via London, Toronto, Ottawa and Montréal
- Various proposals linking the Canadian cities of Windsor, Montréal and Toronto to major US cities in the Midwest or Northeast

The scoping study completed in 2013 concluded that these projects remain long term prospects and no further consideration is given to them in this report.

Commuter rail, LRT and Metro networks offer the best opportunities for UK suppliers. Accordingly, these networks are covered in greater detail in this section.

Review of Urban Transit Operations and Opportunities by Province

This section provides an overview of urban rail operations and opportunities across Canada. Information is presented on the existing rail network and infrastructure, planned and proposed future projects as well as an assessment of the opportunities for UK companies.

Figure 2 summarises the existing urban rail infrastructure and operations in alphabetical order whilst Figure 3 highlights the key project opportunities for UK companies. The tabled projects are not a full list of the current or future planned projects which are identified in this report, but represent the projects which may generate attractive opportunities for UK firms in the next two years. This view is taken with the best information currently available and notwithstanding projects being delayed or other projects coming to market quicker than currently indicated.

It should be noted that the projects are all at various stages. The Expo Line upgrade in Vancouver is already underway but part of a long-term programme which will have on-going requirements. Waterloo LRT and Whitby East Rail Maintenance Facility already have shortlisted bidders whilst Eglinton Crosstown is due to announce shortlisted bidders. Supply chain opportunities remain with the various bidding consortia. Other opportunities such as Edmonton Southeast to West, Toronto Finch West and Sheppard East, Montréal Blue and Orange Line extensions represent opportunities for both UK primes and supply chain players. GO Kitchener and Lakeshore Line electrification represents a relatively small initial project but potentially a series of opportunities over a longer term period if electrification rolls out across GO Transit's Network.

Withdrawn 17 May 2019

4.1 Summary Table of Existing Urban Transit Rail Infrastructure and Operations

Figure 2

Operator - System	Location – City / Area	Province	Type	Notes
Calgary Transit - C-Train	Calgary	Alberta	Light Rail Transit	<p>Infrastructure Composed of two lines:</p> <ul style="list-style-type: none"> • Route 201 Crowfoot/Somerset-Bridlewood • Route 202 – CTrain Saddletowne to 65th Street NW <p>49 km (mostly at surface with short tunnels) 44 surface stations</p> <p>Service / Ridership Ridership - 84,722,200 passenger trips per annum (2012 including bus) Annual hours of service - 14,000 Hrs</p>
Edmonton Transit System - Edmonton LRT	Edmonton	Alberta	Light Rail Transit	<p>Infrastructure Composed of 2.7 km line (4.4 km underground) 15 stations (10 underground, 9 surface)</p> <p>Service / Ridership Ridership - 97,120 daily ridership (2012)</p>
TransLink - West Coast Express	Vancouver area	British Columbia	Commuter Rail (Diesel)	<p>Infrastructure One 65 km line (mostly CP track) 8 stations</p> <p>Service / Ridership Ridership - 2,872,488 passenger trips per annum (2012) Services per day – 10, 5 each way at peak times working weekdays only</p>
TransLink – SkyTrain	Vancouver	British Columbia	Metro	<p>Infrastructure Three lines:</p> <ul style="list-style-type: none"> • Expo Line – 28.9 km, 30 stations • Millennium Line – 20.3 km, 13 stations • Canada Line – 19.5 km, 16 stations <p>Both the Expo line and Millennium line use linear induction motor technology and Bombardier fleet The Canada line uses traditional motor technology and a Rotem fleet</p> <p>Service / Ridership SkyTrain Ridership – 50,481,641 passenger trips (2012) Canada Line Ridership – 29,396,173 passenger trips (2012) SkyTrain combined frequency – 1.8 min at peak to 3-4 min at off peak Canada line combined frequency – 3.5 min at peak to 3.5-10 min at off peak</p>
OC Transpo -Capital Railway (O-Train)	Ottawa	Ontario	Commuter Rail (Diesel)	<p>Infrastructure One 12 km line 5 stations</p> <p>Service / Ridership Ridership – 12,000 daily passenger trips</p>

Operator - System	Location – City / Area	Province	Type	Notes
Metrolinx (Greater Toronto Area Transport Executive) GO Transit	Greater Toronto area	Ontario	Commuter Rail (Diesel)	<p>Infrastructure 390 km network (GO, CN and CP track) 7 lines 63 Stations</p> <p>Service / Ridership Ridership – 187,000 daily passenger trips Frequency - 240 train departures daily</p>
Toronto Transit Commission (TTC) – Toronto Subway and RT	Toronto	Ontario	Metro	<p>Infrastructure Underground and elevated system comprised of four lines:</p> <ul style="list-style-type: none"> • Bloor-Danforth – 27.2 km, 31 stations • Sheppard – 13.9 km, 5 stations • Yonge-University-Spadina – 30.2 km, 32 stations • Scarborough RT – 6.4 km, 6 stations <p>The Scarborough RT is to be replaced with an LRT system</p> <p>Service / Ridership Ridership 510 million trips per annum (Oct 2011 to Oct 2012)</p>
Agence Métropolitaine de Transport (AMT)	Greater Montréal area	Québec	Commuter Rail (mainly diesel, but some electrified)	<p>Infrastructure 212 km network (includes CN, CP & Québec Gatineau track)</p> <ul style="list-style-type: none"> • Blainville–Saint-Jérôme – 60 km, 13 stations • Candiac – 23 km, 8 stations • Deux-Montagnes – 30 km, 12 stations • Vaudreuil-Hudson – 64 km, 19 stations • Mont-Saint-Hilaire – 35 km, 7 stations <p>Service / Ridership Ridership - 17.4 million trips (commuter trains 2012)</p>
Société de Transport de Montréal (STM) – Montréal Metro	Montréal	Québec	Metro	<p>Infrastructure Four lines comprising:</p> <ul style="list-style-type: none"> • Green – Angrignon to Honoré-Beaugrand – 22.1 km, 27 stations • Orange – Côte-Vertu to Montmorency – 30 km, 31 stations • Yellow – Berri-UQAM to Longueuil–Université-de-Sherbrooke – 4.25 km, 3 stations • Blue – Snowdon to Saint-Michel – 9.7 km, 12 stations <p>Service / Ridership Ridership - 404.8 million trips and a total of 250 million passengers per annum</p>

Key: CN – Canadian National, CP – Canadian Pacific

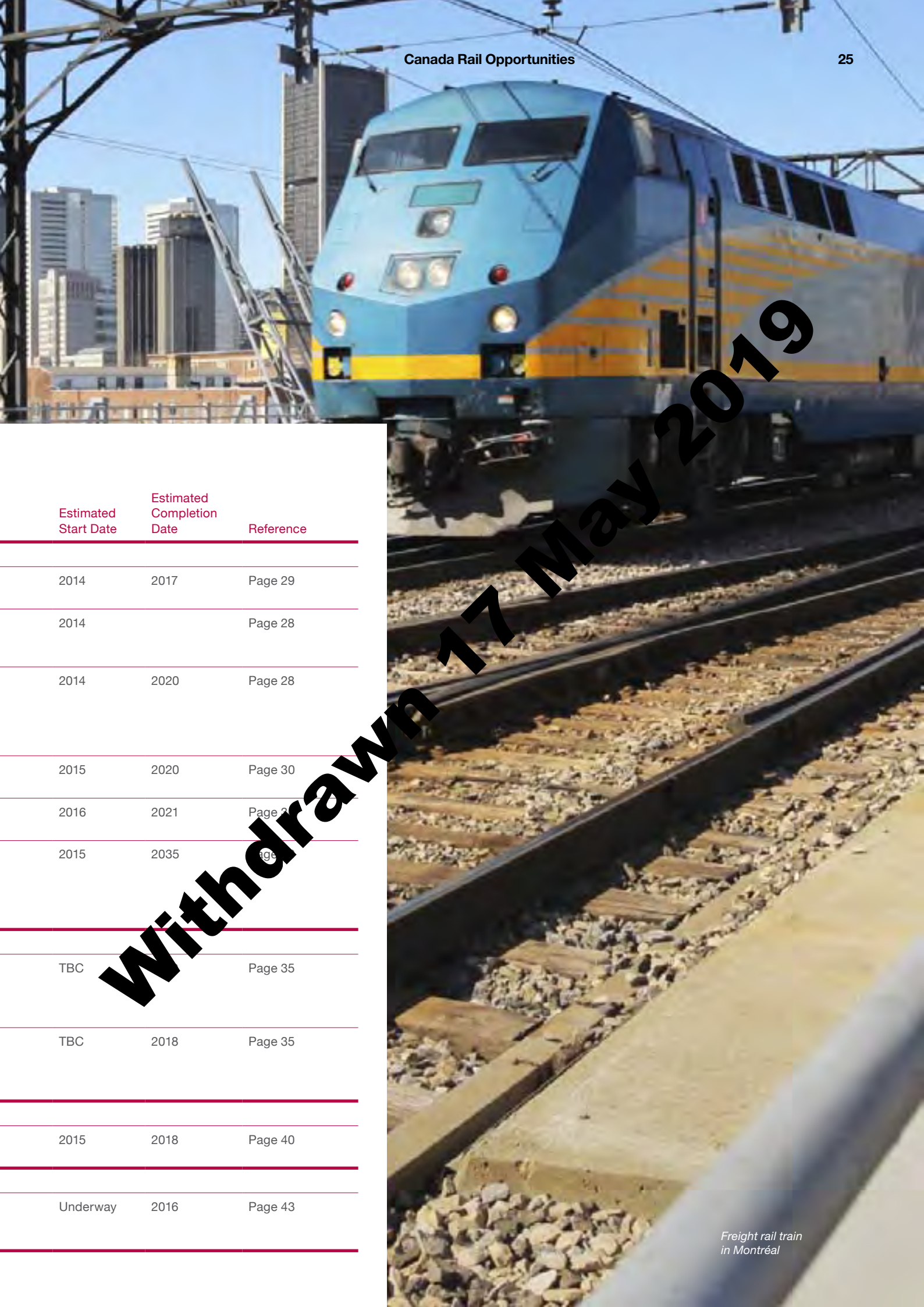
Note: Track lengths are route km

Withdrawn 17 May 2019

4.2 Summary Table of Key Project Opportunities

Figure 3

Project	Client	City	Value	Project Type	Stage
Ontario					
Waterloo LRT (Phase 1)	Infrastructure Ontario	Waterloo	\$816 million	LRT Line Construction	Shortlisted bidders announced Contract award expected 2014
Whitby GO Transit East Rail Maintenance Facility	Metrolinx	Toronto	\$300 million	Commuter Depot Construction	Shortlisted bidders announced Contract to be awarded 2013
Eglinton Crosstown and Scarborough RT Extension	Metrolinx	Scarborough	\$5.3 billion	LRT Line Construction	Request for Qualification (RFQ) closed May 2013 Shortlisted bidders to be announced Contract award expected 2014
Finch West LRT	Metrolinx	Toronto	\$1 billion	LRT Line Construction	RFQ to be issued in 2014
Sheppard East LRT	Metrolinx	Toronto	\$1 billion	LRT Line Construction	RFQ to be issued in 2015
GO Kitchener and Lakeshore Lines Electrification (including Phase 1 Union Pearson Express electrification)	Metrolinx / GO Transit	Toronto	\$1.8 billion	Electrification Commuter Lines	Environmental Assessment - Phase 1 Union Pearson Express
Québec					
Orange line extension from Côte-Vertu to Bois-Franc	AMT / STM	Montréal	\$1.5 billion	Metro Line Construction	The strategic presentation document has been completed and work on the business case begins autumn 2013
Métro Blue line northeast extension to Anjou	AMT / STM	Montréal	\$1.6 billion	Metro Line Construction	The strategic presentation document has been completed and work on the business case begins autumn 2013
Alberta					
Southeast to West LRT	City of Edmonton	Edmonton	\$3.3 billion	LRT Line Construction	Request for Qualification likely to be issued in 2014
British Columbia					
Expo Line Upgrades (including 7 Stations)	Metro Vancouver - TransLink	Vancouver	\$160 million	Metro Line and Station Upgrades	Awards already made - under construction but part of a long term programme

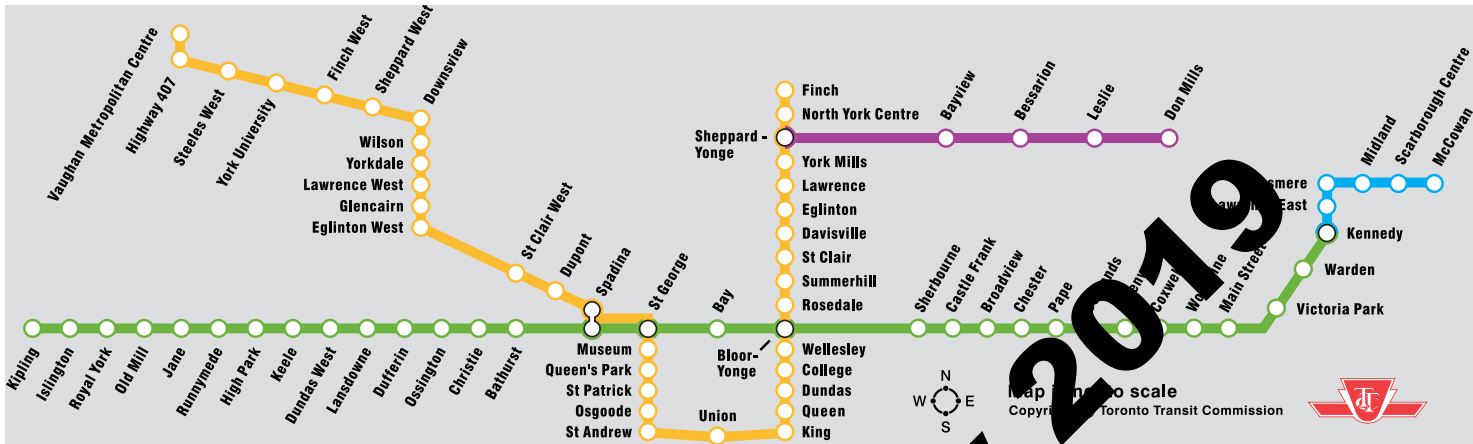


Withdrawn 17 May 2019

Estimated Start Date	Estimated Completion Date	Reference
2014	2017	Page 29
2014		Page 28
2014	2020	Page 28
2015	2020	Page 30
2016	2021	Page 31
2015	2035	Page 32
TBC		Page 35
TBC	2018	Page 35
2015	2018	Page 40
Underway	2016	Page 43

Freight rail train in Montréal

Figure 4: How the Toronto subway will look in 2016



4.3 Ontario

The Role of Infrastructure Ontario

Infrastructure Ontario is a crown corporation wholly owned by the Province of Ontario and plays a key role in the Province's long-term infrastructure plan to repair, rebuild and renew the Province's roads and highways, bridges, public transit, post secondary institutions, hospitals and courthouses in communities across Ontario.

It has four businesses:

- Project Delivery of provincial and other Ontario public sector initiatives
- Lending to big public sector entities in Ontario
- Real estate management to satisfy its responsibilities as a landlord to public sector clients in Ontario

Infrastructure Ontario works with Ontario Lands to meet short and long term multi-year portfolio plan objectives

Projects delivered by Infrastructure Ontario are guided by five key principles: transparency, accountability, value for money, public ownership, public control and public interest are paramount.

Infrastructure Ontario partners with public sector agencies, including provincial ministries, Crown corporations, municipalities and not-for-profit organisations to renew infrastructure across Ontario.

On behalf of the Province of Ontario, Infrastructure Ontario procures and delivers:

- large projects using an AFP PPP delivery model
- special projects using other delivery models

Infrastructure Ontario also provides commercial procurement advice to municipalities that are using Ontario's alternative financing and procurement model to renew municipal infrastructure.

Toronto and Surrounding Cities

Toronto

Existing Rail Network and Administration

Metrolinx

Metrolinx is the governmental agency that manages and integrates road transport and public transportation in the Greater Toronto and Hamilton Area in Ontario.

Since its creation in 2006, Metrolinx has merged with GO Transit (making it an operating division), and has assumed other key initiatives including the PRESTO card implementation (PRESTO is the regional transit fare card system that utilises a stored value e-purse technology), the construction of the Union-Pearson Airport Rail Link, and created a Regional Transportation Plan called 'The Big Move'.

'The Big Move: Transforming Transportation in the Greater Toronto and Hamilton Area' (GTHA) was one of Metrolinx's first deliverables. It is a Regional Transportation Plan including a rolling five-year capital plan and investment strategy for the GTHA. The plan covers 52 GO train, subway, light rail and bus rapid transit projects proposed by the Government of Ontario in its Move Ontario 2020 plan announced on June 15, 2007, and includes new projects to support them. In total, it covers 713 km of rapid transit enhancements to the GTHA.

In 2012 Metrolinx issued some proposed changes to the Big Move and in 2013 issued a

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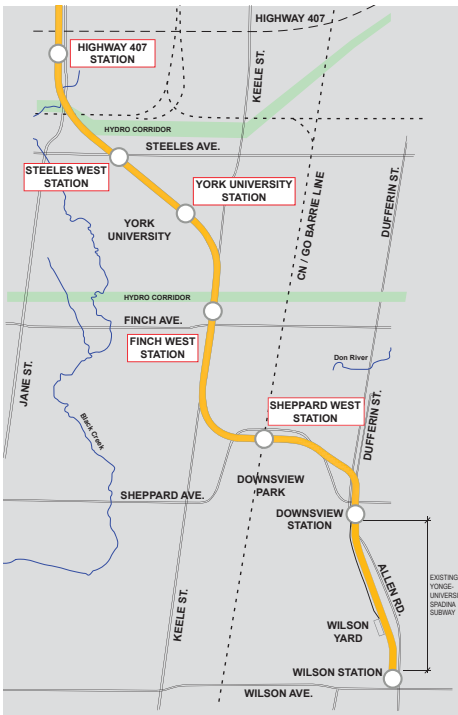


Figure 5: Spadina Subway Extension

next wave project update. A complete review of the Big Move is not expected until 2016.

Metrolinx is also responsible for The Transit Procurement Initiative (TPI), a program, which supports local municipal transit operators with procurement of vehicles, equipment, technologies, facilities and related supplies. The TPI program provides full support through the procurement process along with project management to local municipalities. The program has grown to over 21 municipalities and transit agencies.

GO Transit

GO Transit is the regional public transit service provider for the Greater Toronto and Hamilton Area.

GO Transit's network of commuter train lines and bus routes delivers over 11 million passengers a year over an area of 11,000 square kilometres, stretching from Hamilton and Kitchener-Waterloo in the west to Newcastle and Peterborough in the east, and from Orangeville, Barrie and Beaverton in the north to Niagara Falls in the south.

Historically, much of the network that GO Transit operates over has been CN and CP track. However, Metrolinx / GO Transit is looking to take control of the network it operates on and has already bought significant stretches of track or right of way from CN and CP.

TTC – Subway and Rapid Transit

The Toronto Transit Commission (TTC) is a public transport agency that operates transit bus, streetcar, and rapid transit services in Toronto.

TTC operates the fourth most heavily used urban mass transit system in North America (after the New York City Transit Authority, the Mexico City Metro and the Société de Transport de Montréal).

The network consists of three full metro lines (1495 mm gauge) and one light rail type line (Scarborough Rapid Transit). The network is 70 km long (52 km underground, 8 km elevated, and 10 km ground level) and has 69 stations. Figure 4 shows the TTC Subway and Scarborough Rapid Transit networks.

Current Projects

Spadina Line Extension

The Toronto-York Spadina Subway Extension Project will provide a critical extension for the existing Toronto Transit Commission subway system across the municipal boundary between the City of Toronto and The Regional Municipality of York (York Region)

The extension is 8.6 km long and will include 6 stations. The total project is scheduled to cost around \$2.6 billion (CAD) and is jointly funded by the Government of Canada, the Province of Ontario, the City of Toronto and The Regional Municipality of York.

The line is under construction and expected to be open for service in 2016. Figure 5 shows how the subway will look in 2016.

Union Pearson Air Rail Link (UP Express)

A division of Metrolinx, the Union Pearson Express will provide a 3 km line connecting Canada's busiest transportation hub, Union Station in downtown Toronto and Toronto Pearson International Airport. Once operational in 2015, it is expected to cater for an estimated 5,000 travellers per day.

AirLINX Transit Partners consisting of Aecon Construction and Materials and Dufferin Construction are delivering the \$300 million (CAD) project.

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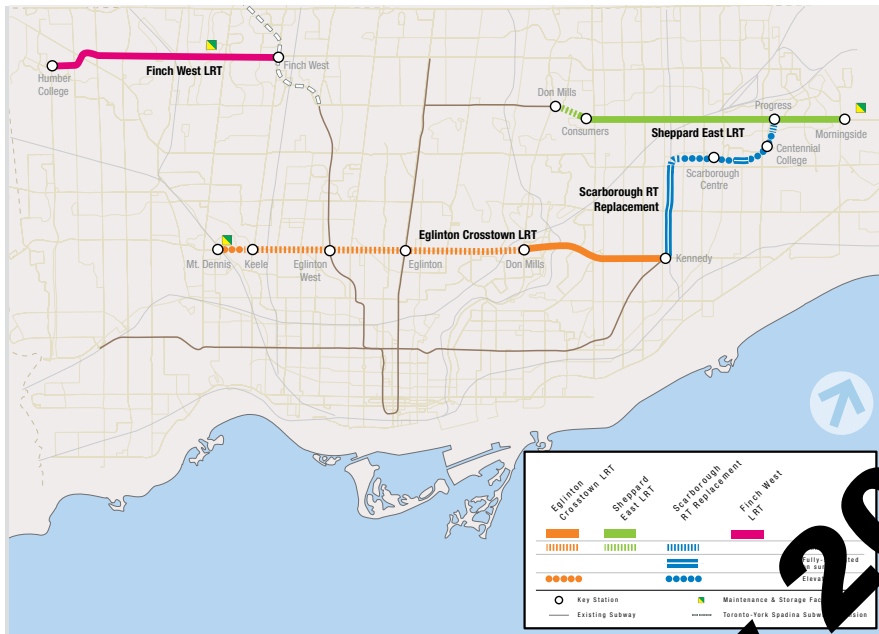


Figure 6: Planned Eglinton Crosstown LRT, Finch West and Sheppard East networks

Once complete the UP Express will be operated by Metrolinx.

Union Station

The City of Toronto is leading the Union Station revitalisation project with three objectives namely to improve the quality and capacity of pedestrian movement in and around the station; to restore heritage elements; and to transform Union Station into a major destination for shopping, dining and visiting. Union Station's revitalisation is a \$676 million project initiative supported by investments of \$24 million (CAD) from the Government of Canada, \$172 million (CAD) from the Government of Ontario, and \$340 million (CAD) from the City of Toronto.

Substantial project completion is expected in 2015, with final completion in 2016.

Eglinton Crosstown

The Eglinton Crosstown is an estimated \$5 billion (CAD) 25 km LRT project incorporating a new line and replacement for the existing Scarborough Rapid Transit line (see Figure 6).

Eglinton Crosstown is to be developed using the PPP Alternative Finance Procurement (AFP) procurement model. The winning consortium will be selected to design, build, finance and maintain both LRT lines. TTC will be the operator.

Metrolinx and Infrastructure Ontario released the RFQ for the project in January 2013 and shortlisted bidders will be announced in the autumn of 2013. The successful company will be announced in the autumn of 2014 and construction is expected to start shortly thereafter.

However, construction is already underway. The first tunnelling contract worth \$320 million (CAD) stands outside of the AFP model and has

already been awarded to Crosstown Transit Construction, a joint venture of Obayashi Canada Limited, Kenny Construction Company, and Technicon Contracting Limited and Technicore Underground Inc.

Metrolinx and Infrastructure Ontario has admitted that Eglinton is something of a 'hybrid' AFP and will not bring the subsequent projects out in this piecemeal format.

Design for 7 stations is underway and public consultation has been undertaken for the following: Keel, Caledonia, Dufferin, All-Eglinton West, Bathurst and Chaplin. Construction for the underground stations is scheduled to be from 2013 – 2017.

GO Transit - Whitby East Rail Maintenance Facility

The new 600,000 square foot facility GO Transit East Rail Maintenance Facility will be located in Whitby and will provide mechanical maintenance, body repair, as well as day-to-day cleaning and operational services. An investment in this project will allow GO Transit to increase maintenance capacity and expand reliable public rail transportation.

The project is being developed using a DBFM PPP model and is due to be awarded before the end of 2013.

Shortlisted bidders are:

- East Rail Development Group comprising SNC Lavalin / Dragados Canada Inc. / URS Canada / National Bank / Geo. A. Kelson Company Limited / Guild Electric Limited
- Integrated Rail Partners comprising Aecon Construction Group Inc. / Balfour Beatty Group Canada Inc. / Pomerleau Inc. / Black

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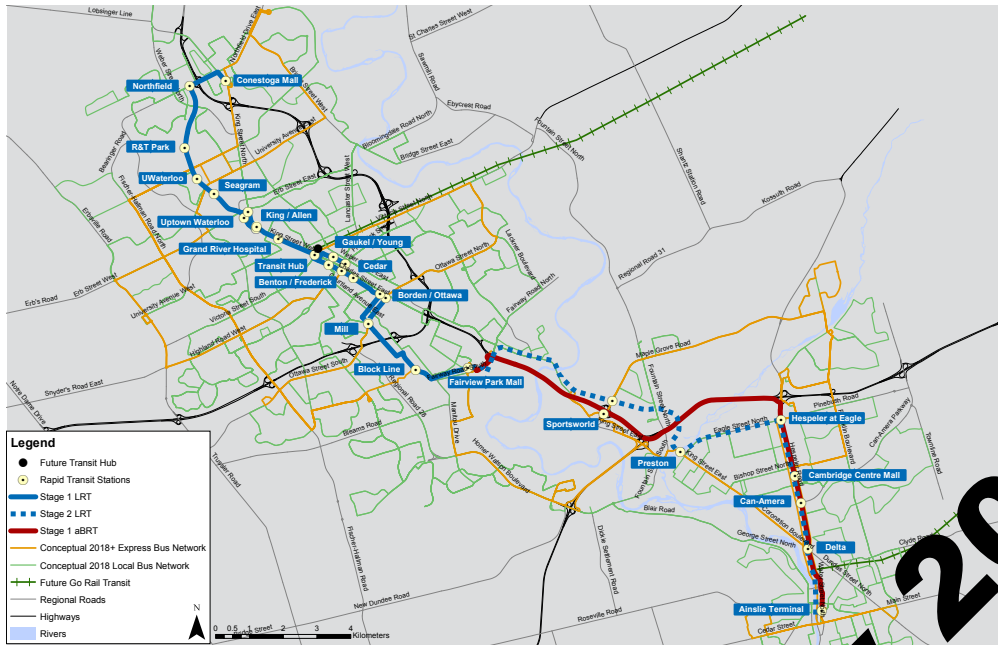


Figure 7: Waterloo LRT network

& McDonald Limited / Investec / Parsons Brinckerhoff / Sowinski & Sullivan Architects / Strasman Architects / Lea Consultants

- Plenary Infrastructure ERMF comprising Plenary Group (Canada) Limited / Kiewit Canada Development Corp. / Bird Design Build Construction Inc. / Peter Kiewit Infrastructure Co. / Honeywell Limited / Toronto Terminals Railway / Stantec Consulting / Arup Canada Inc. / TD Securities / Cofely Adelt / Industrial Electrical Contractors Limited

Limited / Parsons Enterprise Inc. / Graham Infrastructure LP / IPI Group / Exp Services Inc. E & E Seegmiller Limited

- Tricity Transit Systems comprising SNC Lavalin Capital Inc. / SNC Lavalin Constructors / SNC Lavalin Operations & Maintenance Inc. / SNC Lavalin Inc. / EllisDon Capital Inc. / Fengate Capital Management Limited / URS Canadian Operations Limited / Hatch Mott MacDonald Limited

Region of Waterloo – Waterloo LRT

The Region of Waterloo will develop a Rapid Transit system that will connect the cities of Waterloo, Kitchener and Cambridge (see Figure 7).

The LRT will be built in stages, following a transit master plan that includes Express Rapid Transit (ERT) as well as an LRT system covering 39 km.

Stage one will run from Conestoga Mall to Fairview Park Mall and will be developed as a PPP project costing \$818 million (CAD). Construction is scheduled to start in 2014 and the line is to be operating in 2017.

Shortlisted bidders are:

- GrandLinq consortium comprising Plenary Group Canada Limited / Meridiam Infrastructure Waterloo LRT ULC / Aecon / Kiewit / Mass Electric Construction Canada Co. / Keolis / AECOM / STV Canada Construction Inc. / CIBC World Markets Inc.
- Kitchener Waterloo Cambridge Transit Partners comprising Gracorp Capital Advisors Limited / Fluor Canada Limited / Connor Clark & Lunn GWest Traditional Infrastructure Partnership / Parsons Canada

GO Transit - Resignalling

Metrolinx is undertaking a program to improve significant portions of its GO Transit Signalling and Train Control Systems. The work includes the replacement of the existing signalling system in Toronto's Union Station Rail Corridor (USRC) and a new Train Control System that will integrate and centralise control of the signalling system.

This program is to be performed under three separate contracts which will be awarded through three separate Request for Proposals (RFP) processes. However, a pre-information notice has already been issued and the Requests for Proposals are imminent.

Metrolinx's three Request for Proposals are as follows:

- **USRC Signalling Project**
The scope of work includes; the replacement of all signals, track circuits and cables in the USRC; the provision of all associated computer based interlocking and control equipment; the provision and installation of a Supervisory Control and Data Acquisition (SCADA) system, local control panels, equipment cases, bungalows, signal bridges, and cable routing and ducting. Planned issue date of Request for Proposal: August 2013

Withdrawn 17 May 2019



Figure 8: Planned Hamilton LRT network

- GO Transit Control System Project**
 The scope of the project includes: the provision of a new computer based train control system including all associated hardware, software, and geographically specific data. Planned issue date of Request for Proposals: Winter 2013
- GO Transit Signalling and Train Control Technical Consultant Services**
 The scope of work of the project includes: the provision of expert staff to act as part of an Integrated Program Management Team for the GO Transit Signalling and Train Control Program. Planned issue date of Request for Proposal: Summer 2013

GO Kitchener and Lakeshore Line Electrification

In 2011, Metrolinx released the findings of its comprehensive study on the electrification of the entire GO Transit rail system and the future Union Pearson Air Rail Link.

Following the electrification study, it was subsequently recommended to the Metrolinx Board of Directors to proceed with the electrification of the GO Kitchener Georgetown and Lakeshore corridors in phases, beginning with the Union Pearson Air Rail Link on the Kitchener corridor.

The entire project would cost \$1.8 billion (CAD) and could extend to 2035.

The Province of Ontario, through the Ministry of Transportation, has funded the environmental assessment for Phase 1: the Air Rail Link from Union Station to Pearson Airport as a first step toward electrification. This environmental assessment is currently on-going.

Subway Relief Line

The subway Relief Line is currently unfunded but was identified in The Big Move and was advanced to the Top Priorities by the Metrolinx Board in February 2013.

The line would provide relief to Toronto's crowded transit system and provide new rapid transit links into the downtown, serving the business district and other attractions. Metrolinx is currently undertaking a Relief Line Network Study looking at wider network options and phasing (including the use of GO corridors). This study is being coordinated with the TTC's study to evaluate potential Relief Line alignments.

The line would cost around \$7.4 billion (CAD) and will take around 10 years before construction is complete.

Future Projects

Finch West

Finch West is a planned and funded 11 km line that is estimated to cost around \$1 billion (CAD).

This is the next priority project after Eglinton and is scheduled to be completed by 2020. The tender process could begin in 2014. Finch West is shown in Figure 6.

Sheppard East

Sheppard East is a planned and funded 13.6 km line that is estimated to cost around \$1 billion (CAD). This is the next priority project after Finch West and is scheduled to be completed by 2021. The tender process could begin in 2015. Sheppard East is shown in Figure 6.

Withdrawn 17 May 2019



Figure 9: Planned Hurontario-Main LRT network

Yonge North Subway Extension

The Yonge North Subway extension is currently unfunded but was identified in The Big Move and was advanced to the Top Priorities by the Metrolinx Board in February 2013.

This 6 km extension of the Yonge-Spadina subway would connect Richmond Hill to the Toronto transit system and will include 5 new stations.

The project would cost \$3.4 billion (CAD) and would take an approximate 9 year timeline to realise through design and construction. Environmental assessment was approved in April 2009 and the project is currently in design phase.

Hamilton LRT

Hamilton LRT is currently unfunded but was identified in The Big Move and was advanced to the Top Priorities by the Metrolinx Board in February 2013.

Metrolinx's Big Move plan identifies four rapid transit corridors for development within Hamilton. These are shown in Figure 8 and listed below:

- A-Line - Downtown to the Airport
- B-Line - Eastgate to McMaster University
- T-Line - Hamilton Mohawk (Mohawk Road to Ancaster Meadowlands)
- S-Line - Centennial Rymal (Eastgate Square to Ancaster Business Park)

The A and B-lines are part of Metrolinx's 15-year plan, the T-line is part of the 25-year plan and the S-line is beyond 25 years.

The first stage will most likely be the B-Line and

which would be 14 km long and cost around \$1 billion (CAD) to realise. Comprehensive planning, design, and engineering work have been completed in May 2013 and the expected remaining timeline to realise the project is approximately 5 to 7 years through design and construction. A decision on funding is expected during 2013.

Hurontario-Main LRT

Hurontario-Main LRT is a proposed 23 km LRT line running between the cities of Mississauga and Brampton along the Hurontario-Main corridor (see Figure 9).

The project is currently in preliminary design and transit project assessment phase due to finish in early 2014. This includes a review of Alternate Finance and Procurement possibilities.

The project is expected to cost \$1.6 billion (CAD).

Waterloo Stage Two

Assessment for Stage 2 (see Figure 7) of the Waterloo LRT is scheduled to begin in 2014.

The stage will extend the system from Fairview Park Mall to the Ainslie Street Terminal but is a long term opportunity.

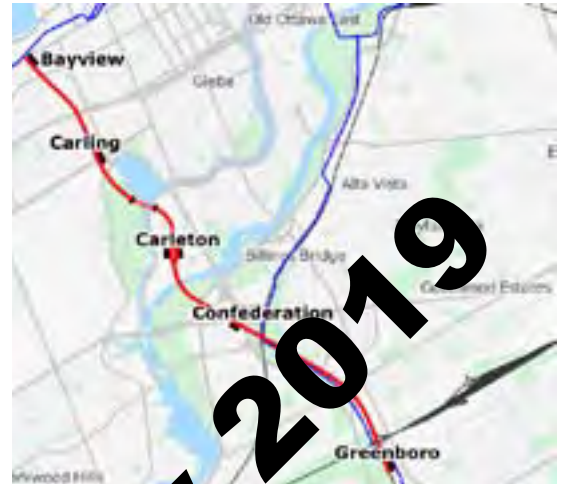
Assessment of Opportunities

In the short to medium term GO Transit resignalling may present an opportunity for UK companies already engaged in the market. Eglinton Crosstown may also present supply

Figure 11: Ottawa LRT expansion



Figure 10: OC Transpo – O-Train network



chain opportunities for those companies in a position to engage now with the shortlisted consortia. In the mid-term Finch West LRT followed by Sheppard East offer tier one, sub contract and supply chain opportunities for UK firms. However, these projects are likely to be developed using a PPP model and companies interested in playing at the top table will require the relevant PPP capability and experience.

The electrification of the Air Rail Link from Union Station to Pearson Airport may offer an initial small opportunity for equipment supply and installation. However, this project may act as a useful market entry point for further electrification work over an extended period should the GO Northlander and Lakeshore line electrification projects move forward.

In the longer term, there is a good pipeline of potential projects to target including the Subway Relief Line, Yonge North Subway extension, Hamilton LRT, Hurontario-Main LRT. Although currently unfunded these projects are well supported by regional government.

In addition to the major project opportunities there are opportunities for asset management technology (for example, GO Transit recently tendered for a track geometry vehicle) and consultancy services as GO Transit looks to increase the service on its network. However, opportunities for maintenance and renewals work are unlikely to emerge in the short term with either TTC or GO Transit – existing long term contracts are in place, much of the maintenance work being done in house and tight union regulations limiting what can be outsourced.

Ottawa Existing Rail Network and Administration

OC Transpo – O-Train

OC Transpo is the public transport agency responsible for the day to day running of Ottawa's bus transit way systems and O-Train services.

The O-Train is a train service which runs north-south from Bayview to Greenboro, a distance of approximately 8 km (see Figure 10).

Current Projects

Ottawa LRT – Increment 1 Confederation Line

Ottawa's LRT system is being developed in phases (see Figure 11). Increment 1 known as the Confederation Line will span the downtown from Tunney's Pasture in the West to Blair Station in the East. The system will include a 2.5 km tunnel, the Downtown Ottawa Transit Tunnel.

The \$2.1 billion (CAD) Confederation Line is being developed as a PPP project and is due to start construction in 2013. The winning consortium responsible for delivering the line is Rideau Transit Group comprising: ACS Infrastructure Canada Inc. with EllisDon Corporation / EllisDon Inc. / Dragados Canada Inc. / SNC-Lavalin Capital / SNC-Lavalin Constructors (Pacific) Inc. / Veolia Transportation Services Inc. as prime team members.

O-Train Upgrades

In 2011, OC Transpo announced a \$35 million (CAD) investment in new rolling stock. OC Transpo also announced it would spend \$12 million (CAD) on tracks to accommodate the DMUs including 2

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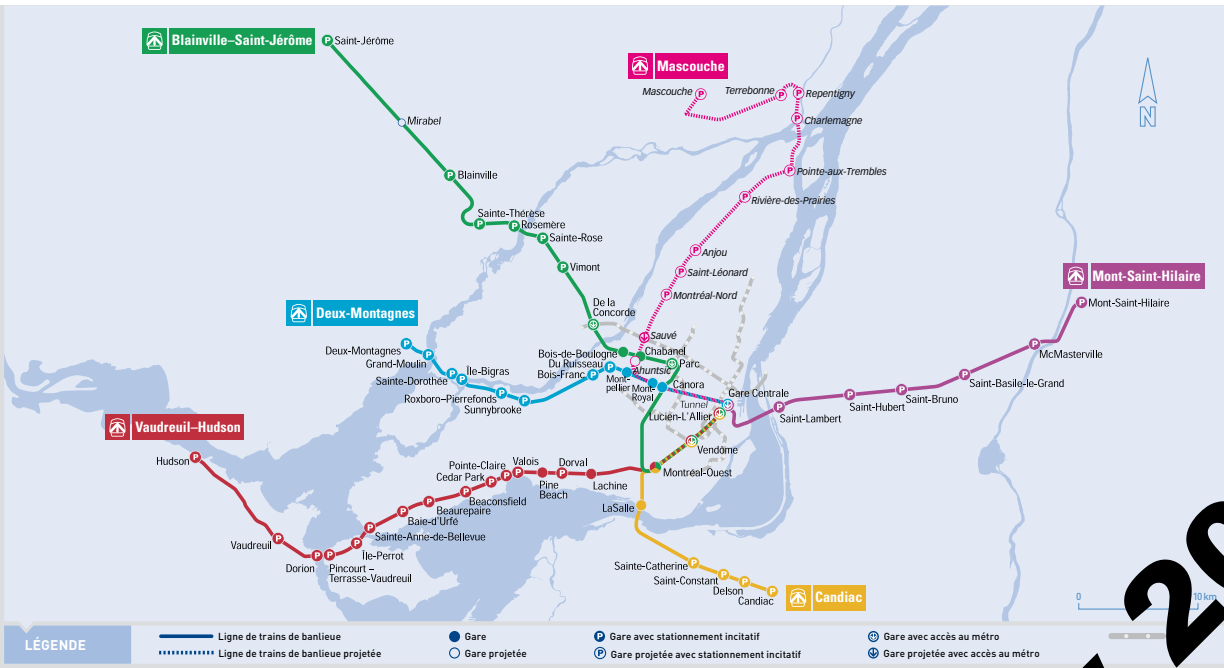


Figure 12: Planned Montréal AMT network

new passing loops, a signalling system upgrade increasing capacity of safety override system and improving existing stations.

Future Projects

Ottawa LRT Expansion

Further increments of the Ottawa LRT are planned once the initial project is complete (see Figure 11).

O-Train Conversion to LRT

Conversion of the O-Train line to electric light rail is anticipated in Phase 2 of the City of Ottawa’s Transportation Master Plan. However, the timing of this conversion is dependent on funding and the completion of the Capital Light rail project.

Assessment of Opportunities

Opportunities in Ottawa are currently limited. However, in the short term, it may be worth approaching Rideau Transit Group and its suppliers which may have specialist niche requirements.

In the long term, further increments of the Ottawa LRT and the conversion of the O-Train to an LRT system should offer opportunities but these are some way off.

4.4 Québec

Existing Rail Network and Administration

Agence Métropolitaine de Transport (AMT) – Commuter Rail

The AMT’s mission is to expand public transit services in order to improve transportation efficiency in the Greater Montréal Area. Its mandate includes the planning, coordination, integration and promotion of public transport services in close collaboration with its various partners. The AMT is responsible for operating the commuter rail network and the metropolitan bus network; planning and building eventual extensions to the metro system; funding the services provided by 14 regional transport authorities.

The AMT serves a population of approx. 3.6 million people, representing 480 million passengers per year (versus Toronto at 600 million and Vancouver at 180 million). It covers 83 municipalities representing an area of approximately 4,000 square kilometres.

The AMT commuter rail network consists of 5 train lines (a 6th line will be open in 2014) for a total of 51 stations, using nearly 90 km of reserved lanes. The AMT network represents 25% of the modal share in the Montréal region. It owns the Deux Montagnes line but mainly operates on tracks owned by CN and CP. Annual ridership on the commuter rail network was estimated as 17.4 million in 2012.

Figure 12 shows the planned Montréal AMT network.

Société de Transport de Montréal (STM) – Metro

The STM provides public transport services including bus and metro throughout the area forming the agglomeration of Montréal.

Withdrawn 17 May 2019



Figure 13: Montreal STM network

The metropolitan area covered by the STM includes Montréal Island, Laval, Longueuil, North and South Shores. The metro system utilises a rubber tyre system and has 4 lines with a total of 68 stations - it handles more than 1.2 million trips each day.

The STM registered 404.8 million trips and a total of 250 million passengers in 2011. The Metropolitan transport ridership was 1.6 million in 2012.

In 2010, the STM won an award as 'Outstanding Public Transit System in North America', from the American Public Transportation Association. Figure 13 shows STM network.

Current Projects

AMT - Train de l'Est

The Train de l'Est project is a new commuter train line aimed at meeting the public transit demand in eastern Montréal and the north-east of the metropolitan region. The line will connect Montréal to Mascouche (see Figure 14). This large-scale AMT project involves the construction of 10 new train stations, various railway trestles and overpasses, tunnels and walkways, along with several kilometres of railway tracks. The new line of 52 km (including 13 km of new railway) will be able to transport 5,500 commuters during rush hour, almost 30% of whom are currently travelling by car. With 16 daily departures, the new line will have the capacity of 11,000 per day.

Construction work is underway and the Train de l'Est's entry into service is expected for 2014.

AMT - Lachine and Pointe-Saint-Charles Maintenance Centres and Rolling Stock Garage Sites

The AMT wants to have its own garage sites

and maintenance centres for its equipment. Equipment maintenance is presently handled by CP and CN at their existing facilities (Sortin, Desjardins and Taschereau marshalling yards as well as Central Station). These facilities, which were initially designed for freight equipment, do not offer availability, modern equipment and trained personnel.

Two new maintenance centres and garages are therefore being created: the first, in Lachine, will accommodate rolling stock running on CP rails, while the second, in Pointe-Saint-Charles, will accommodate trains running on CN tracks.

The contract for the Lachine maintenance centre has been granted and construction should be completed before the end of 2013. Tender documents are being prepared for the Pointe St-Charles maintenance centre.

Eastern Junction

The Eastern Junction is the intersection of the Deux-Montagnes Line tracks with those of the Saint-Laurent subdivision. These are the tracks currently used by CN freight trains. The Saint-Laurent subdivision track is being raised and the Deux-Montagnes Line track, lowered. A new connection track is also being built to allow the Train de l'Est access to the Deux-Montagnes line starting at the Saint-Laurent subdivision.

Increase Track Capacity on the Saint-Jérôme Line

The Saint-Jérôme Line is a 62.8 km route between Montréal and Saint-Jérôme. It carries some 10,000 commuters a day via the 13 stations on the route. As things stand, this line has 20 departures daily. Some railway infrastructure improvement work has been in progress on the St-Jérôme Line since April

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Figure 14: AMT Eastern train line

2011 and is due to continue until November 2013. Taking place on several sections between Montréal and St Jérôme, the upgrade is designed to increase both track capacity and service on this line, as well as improve its infrastructural reliability.

Metro Fleet Renewal

In October 2010, STM signed a contract with the Bombardier-Alstom Consortium to purchase 468 metro cars. This project, which will be spread out over several years, is financed jointly by the Ministry of Transport (MTQ) (75%) and the agglomeration of Montréal (25%). New AZUR cars are scheduled to enter service in autumn 2014.

Future Projects

AMT and STM 2020 strategic development plans to identify the major projects planned for public transport in the Greater Montréal area. Rail accounts for \$10.5 billion (CAD) of capital expenditure and identified rail projects are as follows:

Metro Extensions: Orange, Yellow and Blue Lines

Extending the orange, yellow and blue lines will increase the coverage of the metropolitan area's metro network (see Figure 13). Falling under the joint responsibility of the Ministère des Transports du Québec (MTQ) and the AMT, a project office has been tasked with completing studies on projects to extend the orange line towards Bois-Franc and Laval, the yellow line into Longueuil territory and the blue line to Anjou.

- The 6.1 km Blue line extension is scheduled for completion in 2016 and will comprise five stations: Provencher, Viau, Lacordaire,

Langelier and Anjou

- The first Orange line extension from Côte-Vertu to Bois-Franc is scheduled for completion in 2016.
- Studies for extending the Yellow line, in Longueuil, and the Orange line (Bois-Franc and Montmagny stations), in Laval, deemed a priority by the Communauté métropolitaine de Montréal, should be completed between 2011 and 2020.

LRT or Rapid Transit Service in the A-10/ Downtown Corridor

The Champlain Bridge reserved bus lane accounts for more than 40,000 trips daily. Given that current infrastructure is at capacity, establishing an LRT or a rapid transit service in the A-10 corridor will increase capacity and allow for rapid travel between the South Shore and downtown Montréal, without the unpredictability of traffic congestion. A partnership office has been set up to identify a rapid transit service solution for the A-10 corridor in consultation with various stakeholders. This office will take particular account of the scenario under consideration for replacing the Champlain Bridge. The 15 km line is stated to open in 2021 and will cost \$1.5 to \$2 billion (CAD).

Electrification of the Public Transit Network

Currently, Deux-Montagnes is the only electrified commuter line. The AMT would like to extend electrification to other lines on the network. It has already acquired bimodal diesel-electric locomotives with a view to gradually electrifying the network. It continues to work with the partners involved, especially CN and CP railways, to establish an electrification schedule. Electrification may be considered

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Figure 15 Vaudreuil-Hudson line

AMT
Commuter
Trains



for the major metropolitan corridors. However, currently CN and CP which own most of the region's commuter rail tracks, will only allow electrification of a 7 km stretch of tracks (Vaudreuil-Hudson line) used entirely by commuter rail, on one of the four lines that AMT hopes to electrify.

West Island Mobility Plan

Increasing congestion on the road network, access to the Pierre-Elliott-Trudeau International Airport and inconveniences associated due to extensive road work to be carried out over the next few years are important concerns for West Island citizens and commuters. Municipal leaders, residents as well as Pierre-Elliott-Trudeau International Airport administrators and customers have been requesting additional public transit service for several years. In August 2012, the AMT and MTQ began a collaborative process on the strategic issues associated with improving mobility in the West Island of Montréal. To this end, a partnership office was set up. It is a forum to exchange ideas and ensure the coherence of mobility needs and service solutions in this sector.

Train de l'Ouest

The AMT plans to increase the number of train departures on the Vaudreuil-Hudson line (see Figure 15) to provide speedier and more frequent access to downtown, as well as to major centres in Montréal's West Island. Currently a major issue is sharing infrastructure with freight transportation. The solution for improving passenger transit is to develop a railway corridor exclusively reserved for passenger trains between the West Island and the Lucien-l'Allier terminal.

Preparatory and preliminary layout studies to confirm prefeasibility as well as a land surveying

mandate are underway. The studies are scheduled to be completed in 2013.

Mont Royal Tunnel Capacity and Blainville-Saint-Jérôme Line Connection

Currently, only the Deux-Montagnes commuter train line runs through the Mont Royal Tunnel. It is imperative that tunnel capacity be increased before it can accommodate planned service increases on the Deux-Montagnes line as well as trains from the Train de l'Est line (Mascouche line). In addition, to reduce travelling time on the Blainville-Saint-Jérôme line towards downtown, a tunnel rail link is planned between Parc Station and the Mont Royal Tunnel, as far as the Central Station.

Tram

A study was completed for new tram network in 2011. It recommended an initial 13.2 km line comprising 32 stops linking Côte des Neiges, downtown and Old Montréal. The line would cost in excess of \$1 billion (CAD) and would draw a ridership of 70,000 passengers per day. However, although the line was originally scheduled for completion in 2017 the Québec Provincial Government has stated that it has no money to fund the project until at least 2018. It is thought that a tramway is a medium-term priority and the earliest one could open, if required funding is found, is 2021.

Aéroports de Montréal - Montréal-Trudeau Airport Light Rail Shuttle

The proposed Montréal-Trudeau Airport Light Rail Shuttle is not currently covered in the strategic plans of STM or AMT. However, the project is being brought forward by Aéroports de Montréal.

An earlier proposed project, named Aérotrain, proposed a rail link between Montréal-Trudeau



Airport and Gare Centrale, using CN right-of-ways. However, the project faced a number of issues not least of which was that subsequent negotiations with CN resulted in a more complex, expensive and riskier project than had been originally anticipated.

Consequently ADM has proposed a new dedicated line which will utilise an elevated electrified light rail system. The line will serve two markets:

- An airport service, charging \$15 (CAD) per journey, with a ridership of 10,000 per day
- A commuter service serving the West Island, with pricing integrated to the STM network and a ridership of 40,000 per day

According to the published timetable, the project is undergoing consultation, detailed engineering, environmental assessment and Governmental approval through to 2015 when the project should be put out to tender. Construction is expected to start in 2017 and complete in 2020.

Assessment Opportunities

In terms of projects the Blue line and Orange line metro extensions represent the most tangible near term opportunities.

However, compared to GO Transit, AMT outsources more work and this should create more opportunities around asset management, maintenance and renewals.

**4.5 Alberta
Calgary**

Existing Rail Network and Administration

Calgary Transit C-Train

Calgary Transit operates the bus rapid transit system and the “C-Train” light rail system which is composed of two distinct lines known as the Route 201 Crowfoot/Somerset-Bridlewood and the Route 202 – C-Train Saddletowne to 69 Street W (see Figure 16).

Since a new West leg of the LRT system opened in December 2012, the system is 56 km with 44 stations and several short tunnels but no underground stations.

Current rolling stock comprises a fleet of 192 Siemens trains. These are Duwag built high floor light rail vehicles which were procured in three phases, 1980 to 1987, 2000 and 2012; 82 of these trains are now 30 years old. Calgary Transit is procuring 50 new trains, 20 of these are to replace the old trains and 30 are to accommodate growing demand.

Calgary Transit is experiencing increasing maintenance issues and is looking for solutions to better manage its operations and maintain its infrastructure. The C-Train is now 30 years old, and Calgary Transit is now experiencing full lifecycle issues with fatigue, cracking, and corrosion leading to structural failure of certain assets. Furthermore, as with other Canadian Rail networks, weather is an important issue as the transit system has to operate between extreme temperatures of -40C to +40C.

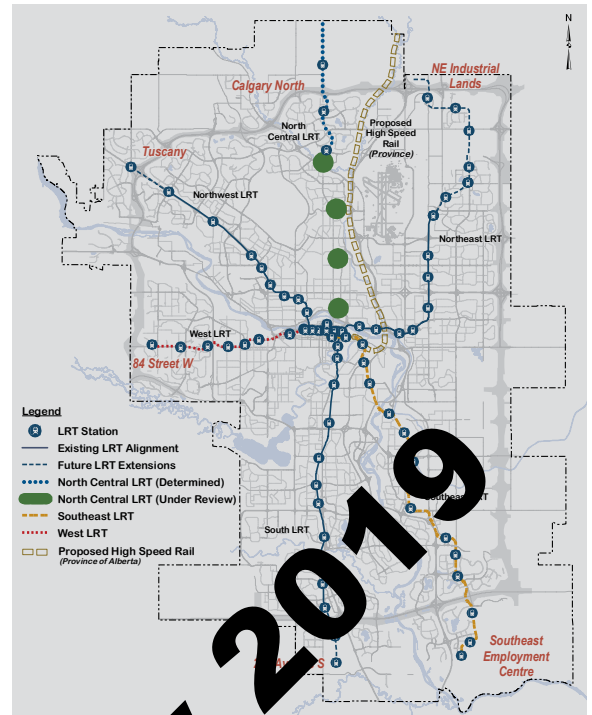
Interior of Shaganappi Point Station, Calgary Transit

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Interior of Shaganappi Point Station, showing new C-Train



Figure 16: Calgary existing and planned network



Current Projects

Projects currently underway are:

Rolling Stock Replacement

As noted above Calgary Transit is procuring 50 new trains. The tender for this closed in May 2013. The trains will be four car trains.

Northeast LRT Platform Extension

All existing Calgary Transit LRT station platforms are being upgraded to accommodate four-car trains, which will be introduced in the near future.

Northwest LRT Extension

An extension to Tuscany/Rocky Ridge started construction in 2012 with a projected completion date of 2014.

Redevelopment of the Calgary Transit Operations Control and Data Centre 2

The next major project for Calgary Transit is the redevelopment of the Calgary Transit Operations Control and Data Centre which will be housed in the new Westbrook Centre and is due to complete in 2015. This is a three phase project which began in 2012 when Calgary Transit awarded a contract to the engineering consultants Delcan to conduct a visioning study, business process review and to develop an operational concept document as the initial phase of this program.

Future Projects

Calgary's overall future transit plans are currently outlined in the 'Route Ahead' transit strategy document. Specific LRT plans are covered in the LRT Network Plan. However, whilst there are a good number of future projects, they are dependent on future city growth and available funding. None of the projects have funding in place. Figure 16 shows the existing and planned network.

Northeast LRT Extension

In November 2012 Calgary Council approved a plan for future LRT extensions in northeast Calgary. The plan provides for a 7.5 km future extension including four new stations and considerations for a long-term connection to the airport.

Although there is a desire to have an LRT to the airport, funding has not been allocated.

West LRT to 85 Street

In the LRT network plan there is a plan to extend the West LRT to 85 Street, however no timeline or funding has been allocated to this project.

City Centre LRT

This project looks to separate the combined operation of the South / Northwest (Red Line) and Northeast / West (Blue Line) along 7th Avenue in downtown Calgary. Separation of these routes will eliminate delays that occur at the entry points to the downtown where the lines must be switched onto a common piece of track. Provision has been made for construction of a future subway under 8 Avenue S to accommodate the South / Northwest service. The Northeast / West route will remain on 7th Avenue. This will allow for higher capacity services on both lines in the future.

North Central LRT

The future North Central LRT will help complete and tie into Calgary's existing LRT system. It will travel between the city centre and future communities north of Stoney Trail, providing service to existing communities along the way.

The proposed 18 km line is estimated to cost \$3 to 4 billion (CAD). A feasibility study is being undertaken by Calgary Transit on this account. A low floor system is envisaged as this will reduce land requirements. But funding remains an issue.

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Interior/Exterior of Shaganappi Point Station showing C-Train



South LRT

There are 2 future stations planned for South LRT that will serve communities developing south of Marquis of Lorne Trail. However, there is no funding or timelines for the extensions.

Southeast Transitway

The Southeast LRT is one of Calgary’s planned future LRT lines. It is proposed that the Southeast LRT could connect to North Central LRT Line.

An alignment for Southeast LRT has been approved and the line will be over 26 km long with 14 stations. LRT cars operating on this line will be a low floor design that will require minimal station platforms and allow a tight turning radius for better community integration. The downtown section of the route will be located in a subway under Centre Street SW.

To construct the Southeast LRT could cost over \$2 billion. In the absence of sufficient funding for even a short segment of LRT, the City is studying options for staying improvements in the form of LRT that could operate on exclusive transitways.

Assessment of Opportunities

Calgary Transit new build LRT projects may present an opportunity for professional services in the short to medium term, but currently they remain long term prospects for construction services and equipment supply.

However Westbrook Transit Operations Control and Data centre, currently in planning phase, should generate opportunities for equipment and systems supply within the next few months.

As noted earlier, Calgary Transit has a growing need for solutions to help manage and maintain an ageing infrastructure in an environment subject to extreme weather conditions. Calgary Transit is

looking for assistance in this area and there are a number of opportunities as set out below.

- Guidance on how to maintain mature rail systems and develop life-cycle strategies for fixed asset management
- Assistance developing performance indicators, reliability models and methods to measure the performance of its operations. The UK is seen as a lead in this area
- Predictive maintenance solutions for rolling stock
- Solutions to better manage the effects of winter and temperature shifts on track infrastructure and rolling stock
- Sensor technology to monitor and help predict failures
- Improved analytics for asset management and servicing
- Solutions to address the problem of ageing electronics and thermal shock (thermal cycling between -40C to +40C is an operational issue)
- Non-contact measurement technology for measuring track condition. Calgary Transit has already had some engagement with one international supplier in this area
- Maintenance services for overhead contact systems and solutions to improve reliability
- Skill development and training for electro-mechanics and LRT rolling stock maintenance

Calgary transit is actively investigating these areas and intends to issue an RFP in 2014 for technical solutions and services to complement its in-house developments.

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Figure 17:
Existing and
planned
Edmonton LRT
network



Edmonton

Existing Rail Network and Administration

Edmonton LRT

Edmonton LRT is run by Edmonton Transit System a department of the City of Edmonton public authority.

The system was opened in 1978 and has been extended in stages. After the completion of the South LRT project in 2010, the LRT system consists of one 21 km line (4 km underground), with 6 underground and 9 surface stations. While the underground sections have full metro standards, there are grade crossings along the surface sections.

Figure 17 shows Edmonton's existing and planned network.

Current Projects

North LRT to North Alberta Institute of Technology (NAIT)

Expanding the LRT system is a key priority for the City of Edmonton. North LRT to NAIT is the first segment of a planned LRT expansion to Edmonton city limits near St. Albert and is part of the Transportation Master Plan's vision to expand LRT service to all sectors of the City by 2040.

The North LRT to NAIT is currently under construction. The 3.3 km line will connect the Churchill Station in downtown Edmonton to new LRT stations at Grant MacEwan University, the Royal Alexandra Hospital and Kingsway Mall, and NAIT. The project is planned to be complete in December 2013 and open to the public in 2014.

Future Projects

In 2009, Edmonton City Council adopted a long-term LRT Network Plan that defines the

future size, scale and operation of Edmonton's LRT system. The LRT Network Plan balances Edmonton's long-term transportation needs with a commitment to grow green and create a compact, more integrated urban environment where roads move goods and transit moves people.

Key directions within the plan include:

- Growth in outlying communities is unlikely to be sufficient to support LRT. Transit service to regional areas, where demand warrants, would be best provided in a different form such as bus rapid transit
- LRT lines not tying into the existing LRT system will feature surface (street-level) operation and will provide convenient connections to the existing LRT system in multiple locations
- An urban-system design should be pursued for the existing system and any new LRT lines
- Low-floor LRT technology should be adopted for any new LRT line that does not physically tie into the existing LRT system
- Some sectors such as the West will require premium bus service to supplement the LRT service

Planned projects are:

Southeast to West LRT

Southeast to West (Valley Line) is the next priority project for Edmonton and will be developed as PPP project (see Figure 18).

Unlike the existing network, the Southeast to West LRT will be a low-floor urban line running a total length of 27 km. The estimated total cost of the line is \$3.2 billion (CAD).

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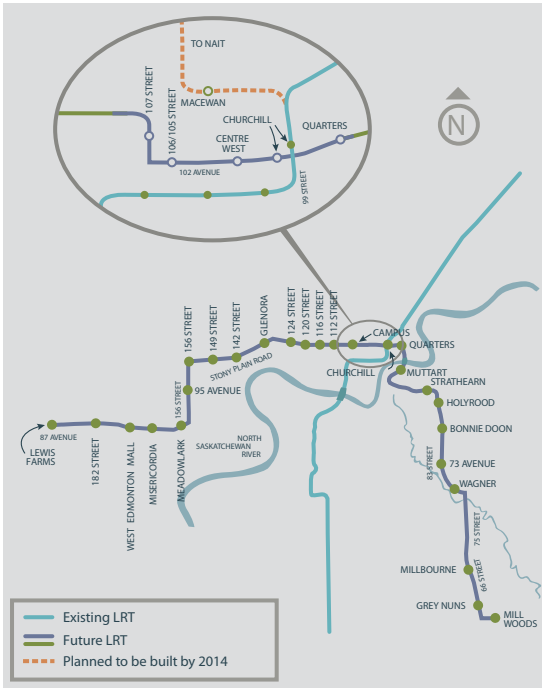


Figure 18: Planned Edmonton Southeast to West LRT network



Edmonton LRT crossing Sask River

The route has been approved by the City Council, the project is currently in the preliminary design phase which is expected to be complete by the end of 2013.

The City Council has approved a funding strategy for the line, starting with \$1.8 billion (CAD) Mill Woods to Centre West leg. The financing plan depends on cost sharing with the governments of Canada and Alberta. If the remaining funding is secured in 2013, tendering could happen as early as 2014 with construction starting in 2015.

Northeast LRT to Gorman

Preliminary engineering for an 2.9 km LRT extension north of Clareview station was completed in 2010. The City will move forward to design and construction once funding becomes available.

Northwest LRT

Whilst the concept plan for this project has been approved, funding has yet been allocated to confirm the Northwest LRT to the next stages of preliminary engineering, design and construction.

South LRT to Heritage Valley

This project is in various stages of development with concept plans defining alignment and station locations approved for certain sections and preliminary engineering completed on others. However, the situation regarding funding and timescales for construction are unclear.

Assessment of Opportunities

The key opportunity in Edmonton is the Southeast to West LRT. This significant project will present opportunities across the board for UK businesses, from tier 1 PPP consortium opportunities, to subcontract services and equipment supply.

**4.6 British Columbia
Vancouver**

Existing Rail Network and Administration

TransLink is the regional transport authority for the Vancouver area and is responsible for transit projects, consulting options, major roads, air quality and transport systems. With regard to rail, TransLink oversees the West Coast Express Commuter line and the SkyTrain metro network.

West Coast Express Commuter

West Coast Express is a commuter rail serving Vancouver and the northeast sector of the Greater Vancouver Regional District (see Figure 19). Services run over a 65 km CP route which is all double-track and equipped with CTC (Centralised Traffic Control) between Mission and central Vancouver. The service contract is operated by CP Rail and the maintenance contract by VIA Rail.

SkyTrain

Launched in 1986, SkyTrain is the oldest and one of the longest fully-automated, driverless, rapid transit systems in the world.

The system currently comprises three lines (see Figures 20 and 21), these are the Expo, Millennium and Canada Lines which run on mostly elevated rail, above city streets, though there are a few stations located underground.

The Expo and Millennium SkyTrain Lines connect downtown Vancouver with the cities of Burnaby, New Westminister and Surrey. Both these lines utilise a linear motor system and they are maintained and operated by British Columbia Rapid Transit Company Limited, on behalf of TransLink.

The newer Canada Line, was opened in 2009 and connects downtown Vancouver to the

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Figure 19: Vancouver West Coast Express network

Figure 20: Vancouver existing and future transit map

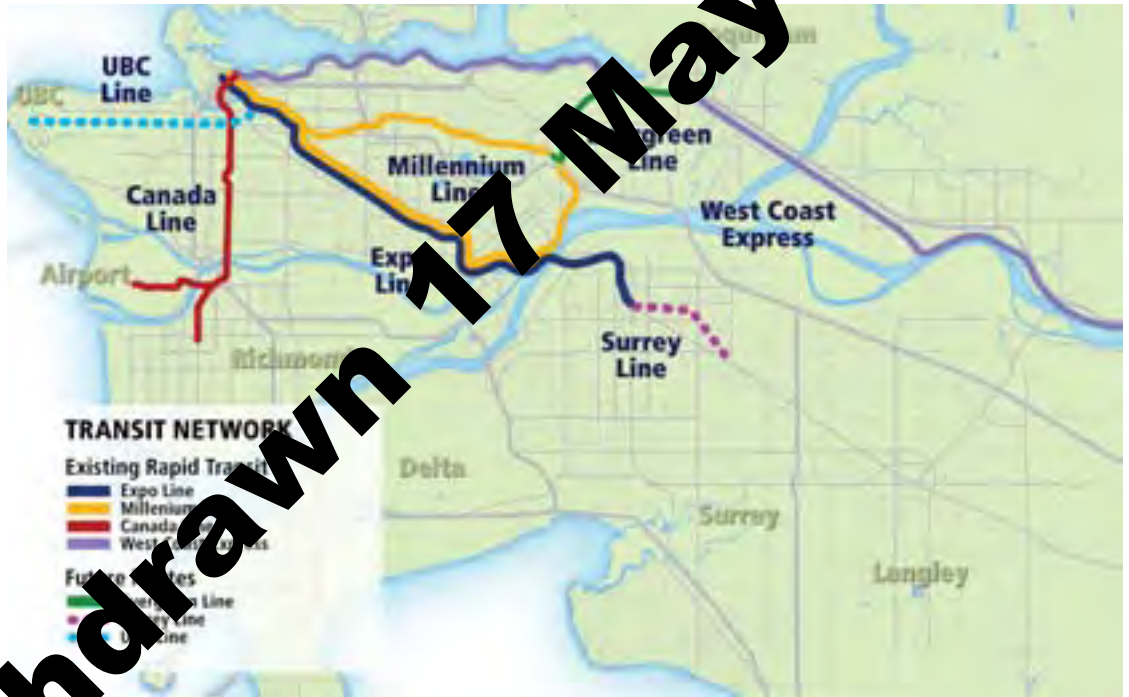
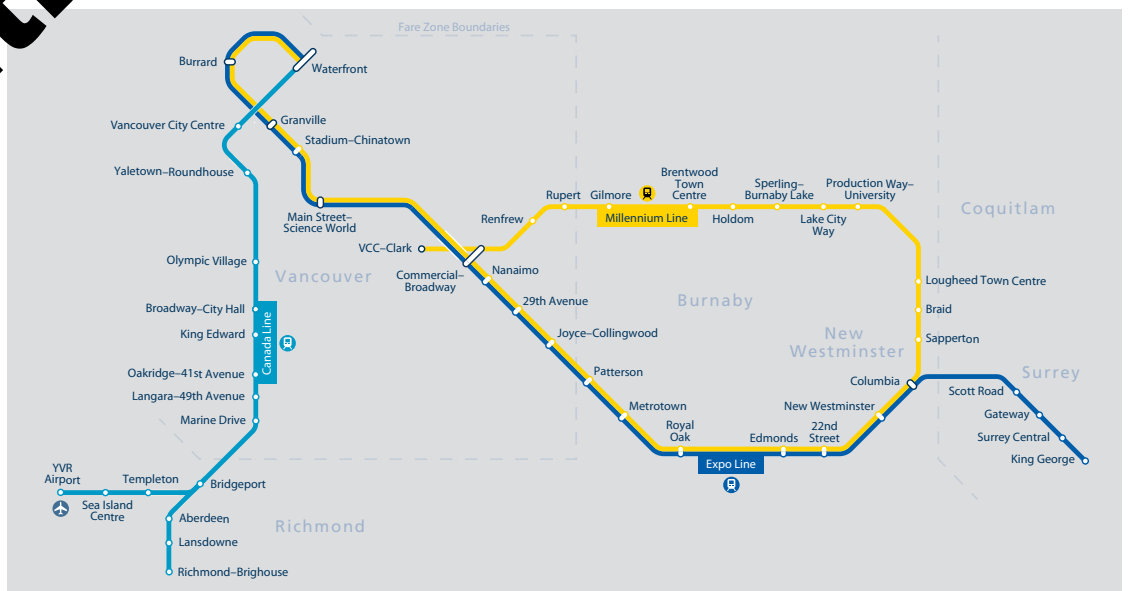


Figure 21: Vancouver SkyTrain Network



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Figure 22: Vancouver Evergreen Line network

Vancouver International Airport and the city of Richmond. The line was Canada’s first PPP rail project, it was constructed by SNC Lavalin and is being managed by InTransitBC under a 35 year contract to TransLink.

Current Projects

Significant current projects are:

Evergreen Line

The 10.9 km SkyTrain Evergreen Line will comprise of seven stations and connect Coquitlam to Vancouver via Port Moody and Burnaby (see Figure 22). It will seamlessly connect to the current SkyTrain network, including the Expo and Millennium Lines, and will integrate with the Canada Line and other regional bus and West Coast Express networks.

This is a \$1.4 billion (CAD) PFI design build finance project. Funding for the Evergreen Line is a partnership between the Government of Canada, the Government of British Columbia and TransLink.

The \$889 million (CAD) design-build-finance contract was awarded to EGRT Construction, a consortium led by SNC-Lavalin. Other consortium members are Graham Building Services, International Bridge Technologies Inc., Jacobs Associates Canada Corporation, Rizzani de Eccher Inc. and S.E.L.I. Canada Inc.

The project began construction in early 2013 and is expected to be in service by summer 2016. TransLink will operate the system when the line opens.

Expo Line Station Upgrades

As part of Tranlink’s 30 year Expo Line capacity upgrade strategy (see Future Projects) TransLink is in the process of upgrading 7

stations at a cost of \$160 million (CAD). This project is primarily about elevating platforms to accommodate longer trains.

Future Projects

TransLink recognises that Vancouver’s current transportation network – including the roads, bridges, sidewalks, cycling and transit infrastructure – requires substantial investment. Expanding the existing network will require \$23 billion (CAD) and an additional \$5 billion (CAD) is required for the upkeep of the existing system. This equates to an additional \$275 million to \$1 billion (CAD) in the region’s share of annual spending. This represents more than what has been historically spent on transportation in the region and comes at a time when the economy is strained and the regional government is trying to contain spending. In light of this, Translink is in the process of developing a 15 year implementation plan and in 2014 will bring forward a Regional Transportation Strategy that will identify initiatives and priorities for the next 15 years.

Notwithstanding the outcome of the Translink’s implementation plan current priority future rail projects are:

UBC Line/Millennium Line Extension

Following technical assessment conducted by Steer Davies Gleave, three alternative options are currently under consideration for the Broadway Corridor. These are LRT, rapid rail transit (aka light metro technology as currently used on the SkyTrain) or a combination of these two technologies. These three alternatives range in cost from \$1.1 to \$3 billion (CAD).

The preferred rapid transit alternative for the UBC Line will ultimately be decided by the region as part of the Regional Transportation

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Waterfront railway station, Vancouver

Strategy planning process in 2013. Future expansion plans will then determine the line's implementation timing and funding. If it goes ahead this line is scheduled for completion by 2020.

Expo Line Upgrades

The Expo Line upgrade strategy was completed in 2010 and looks at ways to increase capacity on the Expo Line to match projected demand and supports the B.C. Government's Provincial Transit Plan to double the capacity of the line.

The strategy considers using 4-car or 5-car trains. It recommends a 4-car option that all infrastructure upgrades (including power supply, yard space and train capacity) cater for this requirement. However, the decision on trains can still be delayed until 2015, after reviewing project ownership at that time.

The total cost, spread over the next 30 years, is estimated at \$850 million (CAD) for the 4-car option and \$1.1 billion (CAD) for the 5-car option. These figures include the cost of more trains and required infrastructure upgrades such as the station works which is currently underway.

Surrey Rapid Transit

A study has been completed which looks at options for rapid transit in the Surrey area. Four options have been shortlisted and are under consideration, these include SkyTrain metro rapid transit, two separate options for light rail transit and bus rapid transit.

The preferred rapid transit alternative for Surrey will ultimately be decided by the region, as part of the Regional Transportation Strategy planning process in 2013. Future expansion plans will then determine its implementation timing and funding.

Expo Line Extensions

In the long term, various extensions and infrastructure projects are planned for the Expo line. These include:

- Expo Line - Fleetwood Extension - a 6 km extension Surrey east to Guildford, then down 152 Street to the Fraser Highway and southeast as far as 168 Street. Currently in public consultation and scheduled for completion by 2020
- Expo Line - King George Extension – a 7 km extension scheduled for completion by 2030
- Expo Line - Langley Extension - a 7 km extension scheduled for completion by 2030

Assessment of Opportunities

Uncertainties over funding and the outcome of the Regional Transportation Strategy in 2014 mean that the number and type of significant project opportunities is yet to be determined.

In the short term opportunities are limited; however, the Expo Line upgrades programme may generate opportunities. Furthermore, Transnet's need to do more with less will drive demand for asset management technologies that can help reduce maintenance costs and support preventative maintenance regimes.

In-Market suppliers

This section provides a brief overview of the key rail market suppliers with particular focus on contractors, rolling stock and systems suppliers and consultants. Further information on Canadian rail suppliers can be found at The Canadian Association of Railway Suppliers (www.railwaysuppliers.ca) and further information on general contractors can be found at Reed Construction Data, which publishes an annual review of the leaders in Canadian construction (www.reedconstructiondata.com).

5.1 Contractors

General contractors offer an important route to market for companies looking to win business on the large urban rail infrastructure projects particularly the PPP projects.

With the exception of the largest players such

as PCL the general contractors tend to focus on projects in either West or East Canada and in general are active across the country will be concentrated in one area.

The market is still dominated by local companies but in recent years a number of overseas companies have begun to make in-roads in the market. New entrants from overseas include Spanish companies such as ACS, OHL and FCC as well UK companies including Balfour Beatty. Carillion is another UK company which is active in the market but has been present for some time.

The general contractors with an interest in rail are shown in Figure 23. These have won, are currently involved in, or are actively pursuing rail projects. However, this is a snapshot of the market and interested companies are strongly recommended to conduct their own research in this area.



Carillion signage at Union Station Toronto



Figure 23: Contractors Involved In Major Rail Projects

Contractor	Note
ACS Infrastructure (including subsidiary Dragados)	Spanish contractor Leading member of Rideau Transit Group delivering Ottawa Confederation Line See Waterloo LRT shortlisted bidders on page 29
Aecon	Second largest general contractor Regularly involved in rail projects. Examples include UP Express, Spadina Subway Extension, Union Station Train Shed Revitalisation, etc. See Whitby East Rail Maintenance shortlisted bidders on page 28 See Waterloo LRT shortlisted bidders on page 29
Balfour Beatty	Already in market through Pearson Brinckerhoff. Now targeting rail contracting opportunities See Whitby East Rail Maintenance shortlisted bidders on page 28
Bird Construction	Focused on Western Canada – has worked for SkyTrain and Calgary LRT projects
Carillion	Have been active in Canada for some time on PPP projects. Now targeting rail
CANA	Has delivered projects with Calgary LRT
Dufferin	In consortium with Aecon delivering UP Express
EllisDon	Projects include various TTC station projects
Fomento de Construcciones y Contratas (FCC)	Spanish contractor involved with OHL on Spadina line
Graham	Has worked with SNC on various projects Has delivered projects for Calgary and Edmonton LRTs Is involved in the Vancouver Evergreen line with SNC Lavalin
Kenaidan	Owned by Obayashi Involved in the consortium delivering Eglinton Crosstown tunnelling GO Transit is a key client
Kiewit Construction	Leading US contractor with a strong position in rail. Has its own rail contracting capability Owns Mass Electric Corporation Key projects include: <ul style="list-style-type: none"> • Spadina Subway Line • Laval Metro • Vancouver SkyTrain See Waterloo LRT shortlisted bidders on page 29 See Whitby East Rail Maintenance shortlisted bidders on page 28
McNally Construction	Tunnelling specialist involved in TTC and Edmonton tunnelling projects



for Shaganappi Point Station

Obrascon Huarte Lain (OHL)	Spanish contractor involved with FCC on Spadina line
PCL	Largest contractor in Canada Mostly involved in Edmonton LRT projects
Pomerleau	Leading Québec based construction player. AMT and STM are clients. See Whitby East Rail Maintenance shortlisted bidders on page 28
SNC Lavalin	The leading rail player Owns UK rail consultancy Interflex Key projects include: <ul style="list-style-type: none"> • City of Calgary West LRT - in joint venture with Graham • Vancouver Evergreen Line • Vancouver Canada Line • Montréal Metro extension to Laval • Vancouver SkyTrain - played a key role throughout the development, project management, design and construction of all three completed phases this system • In Rideau Transit Group delivering Ottawa Confederation Line See Interflex LRT shortlisted bidders on page 29 See Whitby East Rail Maintenance shortlisted bidders on page 28

Canadian general contractors tend to lack specialist rail contracting capability and will subcontract this work to specialist rail contractors.

Urban transit clients and general contractors are keen to engage with new rail contractors that can bring additional capacity and innovative capability to the market.

There are numerous rail contractors across Canada. However, mainly these are small localised companies serving shortline and regional railroads.

The two largest rail contractors are PNR Railworks followed by A&B Rail Services. PNR is the largest player and has a strong dominant position in the market.

Both PNR Railworks and A&B Rail Services companies serve urban transit and freight

operators and offer new build as well as maintenance and renewal contracts. Notably PNR has a long term contract with GO Transit for maintenance. Both companies operate nationally although A&B is predominantly in the West.

It is also worth noting the companies ENMAX and RailTerm. Enmax is based in Calgary and is a key partner for City of Calgary LRT providing all power and electrification installation and maintenance services. RailTerm is a diversified rail services contractor with operations throughout North America. They provide custom service solutions to railway operators who wish to outsource mission-critical activities. For example, such as terminal management, track and signal maintenance and dispatch services, in addition to offering Traffic Control software.

GO ticket purchasing area at Union Station



5.2 Systems and Rolling Stock

Figure 24 highlights the key rolling stock and systems players with an existing footprint in the Canadian urban rail market.

Canada is Bombardier's home market and the company can be considered the dominant player for rolling stock supply. However, other players win business. Alstom has recently won

a contract to supply Citidis rolling stock for Ottawa's Confederations LRT line and is in a joint venture with Bombardier for supplying rolling stock to STM in Montréal. In East Canada Siemens and Thales have been strong players. All rolling stock on Edmonton and Calgary LRT systems is Siemens fleet whilst the Thales SelTrac signalling system is used in Vancouver and Edmonton.

Figure 24: Systems and Rolling Stock Suppliers

Company	In Market Scope	Key Project Notes
Alstom	Rolling Stock / Signalling / Perron / Way / Electrification	Ottawa confederations line – providing Citidis rolling stock Montréal Metro Integrated Control Centre Montréal Metro Car replacement with Bombardier Joint Venture
Ansaldo STS	Signalling	Ansaldo STS MicroCab ATP/ATP/SESAM systems Montréal's new MPM-10 trains to be delivered by Alstom and Bombardier
ARINC	Signalling	Calgary Transit currently uses ARINC's Advanced Information Management (AIM) technology to control and monitor its vehicle fleet
Bombardier	Rolling Stock / Signalling	Canada is Bombardier's home market Bombardier Rolling Stock is on AMT, STM, GO, O-Train, TTC, SkyTrain, West Coast Express networks Montréal Metro Car replacement with Alstom Joint Venture
GE	Rolling Stock / Signalling	In 2007 GE won a contract to install a complete train control system, including crossing systems and signalling control technology on the Edmonton South LRT extension
Siemens	Rolling Stock / Signalling / Electrification	GO Transit re-signalling of Union Station Edmonton LRT - all Siemens fleet of light rail vehicles (Siemens-Duewag U2 cars or Siemens SD-160) Calgary C-Train - All Siemens fleet c227 light rail vehicles (Siemens-Duewag U2 cars or Siemens SD-160) Invensys - SystemICS is used on the Vancouver's Canada line
Thales	Signalling	Edmonton LRT - SelTrac Communications Based Train Control (CBTC) Toronto Scarborough - SelTrac CBTC Vancouver Expo, Millennium and Canada lines - SelTrac CBTC

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5.3 Consultants

The Canadian market is well served by existing engineering consultants. This includes home grown Canadian players as well as US and UK firms. Engineering Consultants with significant positions in rail are listed in Figure 25.

Figure 25: Leading Consultants Active In Rail

Consultant	Note – significant projects/activity
AECOM	Recent projects include: <ul style="list-style-type: none"> • Ashbridges Bay LRV Maintenance and Storage Facility - Engineering • Edmonton Southeast to West LRT: Engineer • Eglinton Crosstown LRT: Engineering • Georgetown South Track Layout and Grading Design Assignment: Project Manager and Engineering • Kingston Subdivision Project: Engineering • North LRT Extension, Downtown to NAIT: Project Management and Engineering • Scarborough LRT: Engineer • Train de l'Ouest: Engineering • TTC Spadina Line Extension: Engineer • Waterloo LRT: not known
ARUP	Recent projects include: <ul style="list-style-type: none"> • Eglinton Crosstown LRT: Engineering • TTC Spadina Line Extension: Engineer • Union Station Revitalisation • Whitby East Rail Maintenance Facility: In shortlisted consortium, Plenary Infrastructure ERMF
CANAC Railway Service Inc	Active across Canada and internationally. Particularly strong in freight and heavy haul markets but clients also include AMT, GO and OC transpo
CPCS Transcom	Originally established as the consulting arm of Canadian Pacific Railway, CPCS provides a range of strategic advisory services specific to the rail sector. Its services have been retained by all levels of government, in the sector actors including Class 1 Railways, as well as industry associations
CH2M Hill	Recent projects include: <ul style="list-style-type: none"> • Eglinton Crosstown LRT: Engineering • Finch Line Rapid Transit Line: Engineering • Finch LRT: Engineering • Scarborough LRT: Engineering • Sheppard LRT: Engineering
Deloitte	Recent projects include: <ul style="list-style-type: none"> • Eglinton Crosstown LRT: Project Management • Finch LRT: Project Management • Georgetown South Track Layout and Grading Design Assignment: Engineering • Ottawa Light Rail Project: Engineering • Scarborough LRT: Project Manager • Sheppard LRT: Project Management • West Toronto Diamond/Rail Grade Separation Project: Engineering • Union Station Rail Signalling Program
Hatch Mott MacDonald	Recent projects include: <ul style="list-style-type: none"> • Eglinton Crosstown LRT: Project Management • Finch LRT: Project Management • Georgetown South Track Layout and Grading Design Assignment: Engineering • Scarborough LRT: Project Manager • Sheppard LRT: Project Management • TTC Spadina Line Extension: Engineer • Union Station Rail Signalling Program • Waterloo LRT • West Toronto Diamond/Rail Grade Separation Project: Project Management

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Construction work at Union Station, Toronto

Figure 25 continued

Consultant **Note – significant projects / recent activity**

HDR / HLB	Recent projects include: <ul style="list-style-type: none"> • BC Victoria – West Shore Rapid Transit: Study
IBI Group	Recent projects include: <ul style="list-style-type: none"> • Waterloo LRT: Shortlisted consortium - Kitchener Waterloo Cambridge Transit Partners • TTC Spadina Line Extension • Union Station Rail Signalling Program
Golder Associates	Recent projects include: <ul style="list-style-type: none"> • TTC Spadina Line Extension: Engineer • West Toronto Diamond/Rail Grade Separation Project: Engineering
MMM Group	Recent projects include: <ul style="list-style-type: none"> • Calgary West LRT: Engineering • Eglinton Crosstown LRT: Project Management • Evergreen Line Rapid Transit Line: DBF consortium member • Finch LRT: Project Management • Georgetown South Track Layout and Grading Design Assignment: Project Manager and Engineering • Scarborough LRT: Project Manager • Sheppard LRT: Project Management • TTC Spadina Line Extension: Project Manager • Waterloo LRT: not known • West Toronto Diamond/Rail Grade Separation Project: Project Management-
Parsons Brinckerhoff	Recent projects include: <ul style="list-style-type: none"> • Eglinton Crosstown LRT: Engineering • Waterloo LRT: Engineering • Metrolinx Go Transit Electrification: Study • Whitby East Rail Maintenance Facility: In shortlisted consortium, Integrated Rail Partners
Stantec Consulting	Recent projects include: <ul style="list-style-type: none"> • Eglinton Crosstown LRT: Engineering • Georgetown South Track Layout and Grading Design Assignment: Project Manager and Engineering • Kingston Subdivision Projec: Environmental Assessment • North LRT Extension, Downtown to NAIT: Engineering
URS Canada	Recent projects include: <ul style="list-style-type: none"> • Ottawa Light Rail Project: Engineering • Whitby East Rail Maintenance Facility: In shortlisted consortium, East Rail Development Group

Withdrawn 17 May 2019

6

Concluding Remarks



Passenger trains in yard, Vancouver

Canada represents an attractive and accessible market with near and long term rail opportunities for UK companies. The requirements of a number of mature rail networks together with the prospect of short, mid and long term projects mean that Canada can be considered more than a one off opportunity but rather a market which offers sustainable long term recurring opportunities.

A number of UK companies have recognised the potential Canada offers and are already active in the market in rail and wider infrastructure opportunities. This includes the likes of Arup, Balfour Beatty, Carillion and Hatch Mott Macdonald.

In terms of professional services, the market for financial engineering consultancy, design and architectural services is well served by existing Canadian firms and some UK firms. New market entrants without a sufficiently differentiated offer are likely to struggle in these areas.

The best opportunities for UK companies are in

- Specific rail contracting or project management on urban rail projects where the volume of work exceeds limited local capacity and clients are keen to see new competition and innovative capability in the market. There is an opportunity for tier one and subcontract participation in partnership with the local players
- Asset management technologies and services (including advisory services) to support existing mature rail networks and help reduce costs
- Consultancy services, in particular to support service expansion
- Electrification equipment and installation

In order to be successful, UK companies will need to make a commitment to the market. A 'fly-in, fly-out' approach will not serve well in developing relationships with clients and with partners. Companies will need to consider a permanent presence in market and developing relationships with partners who can support them and provide access to the opportunities.

Canadian urban rail opportunities are worthy of further consideration. UK firms are encouraged to engage with UKTI to investigate the market further and help develop their interests.

Withdrawn 17 May 2019



7.1 Doing Business in Canada

British companies will be comfortable doing business in Canada, as there are many similarities in culture, financial and legal structures and parliamentary/government systems.

Canada's legal system is unique from many others in that the Québec Act of 1774 created two systems of law – the “civil law” governing those in Québec and a common law system in all other provinces. Canada is generally viewed as less litigious than the United States and can be considered a “softer landing” when entering the North American market.

Labour unions are prevalent in the public sector, at all levels (federal, provincial and municipal) and across all sectors (such as education, health care, transit, office workers, rail and social services). Nearly 31% of Canadian workers are members of unions. There is 70% union density for the public sector and 18% for private industry (automotive, construction, transportation, and utilities).

In Canada, transit is operated by local municipal transit authorities, with funding provided primarily at the provincial and municipal levels.

Further guidance on expanding into or setting up operations in Canada can be obtained from the websites of Canadian service providers, like law firms. Two links are provided below.

Blake, Cassels & Graydon

www.blakes.com/english/resources/pages/doing-business-in-canada-introduction.aspx

Davies Ward Phillips & Vineberg

www.dwpv.com/en/Resources/Publications/2012/Doing-Business-in-Canada-Your-Complete-Guide

Withdrawn 17 May 2019

*Downtown. Business
district, Vancouver*

7.2 Abbreviations

Abbreviation	Definition	Abbreviation	Definition
AFP	Alternative Finance Procurement	MTQ	Ministère des Transports du Québec
AMT	Agence métropolitaine de transport	NAIT	North Alberta Institute of Technology
BRT	Bus Rapid Transit	NAFTA	North American Free Trade Agreement
CAD	Canadian Dollars	PPP	Public Private Partnership
CBTC	Communications Based Train Control	P3	PPP / Public Private Partnership
CETA	Comprehensive Economic and Trade Agreement	RFP	Request for Proposal
CN	Canadian National	RQ	Request for Qualification
CP	Canadian Pacific	SCADA	Supervisory Control & Data Acquisition
DBF	Design Build Finance	STM	Société de transport de Montréal Montréal Metro
DBFM	Design Build Finance Maintain	TPI	Transit Procurement Initiative
DBFOM	Design Build Finance Operate Maintain	TTC	Toronto Transit Commission
GTHA	Greater Toronto and Hamilton Area	UBC	University of British Columbia
HVO	High Value Opportunity	USRC	Union Station Rail Corridor
LRT	Light Rail Transit		

Withdrawn 17 May 2019

7.3 Bibliography

General

Blake, Cassels & Graydon (law firm) – Doing Business in Canada	www.blakes.com/English/sectors/Pages/Doing-Business-in-Canada-Introduction.aspx
Canadian Association of Railway Suppliers	www.railwaysuppliers.ca/
Canadian Council for Public Private Partnerships	www.pppcouncil.ca/
Canadian National Railway	www.cn.ca/
Canadian Urban Transit Association	www.cutaactu.ca/
Doing Business in Canada – HSBC Country Guide	http://premier.rw3cg.com/content/approved/Canada/premier_frame.htm
Economic Intelligence Unit	www.eiu.com/site_info.asp?info_name=The_Global_Liveability_Report
Ernst & Young, “Infrastructure 2013: Global Priorities and Global Insights”	www.uli.org/wp-content/uploads/ULI-Documents/Infrastructure-2013.pdf
Merx - Canadian Public Tenders Website	www.merx.com
PPP Canada	www.p3canada.ca/home.php http://doc.mediaplanet.com/all_projects/12727.pdf
Railway Association of Canada	www.railcan.ca/
Top 100 Canada's Biggest Infrastructure	http://top100projects.ca
UK Trade & Investment Canada Pages	www.ukti.gov.uk/pt_PT/export/countries/americas/northamerica/canada.html
Van Hornes	www.vanhorne.info/

Alberta

Calgary Transit	www.calgarytransit.com/
Calgary Transit LRT Planning	www.calgarytransit.com/planning/lrt-network-plan.php
Calgary Transit Strategic Plan	www.routahead.ca/
City of Edmonton	www.edmonton.ca/

British Columbia

BC Transit	www.transitbc.com/
Translink	www.translink.ca/
Translink Regional Transportation Strategy for Consultation	www.translink.ca/~media/documents/plans_and_projects/regional_transportation_strategy/draft_strategic_framework_for_consultation.ashx

Québec

Agence métropolitaine de transport	www.amt.qc.ca/
AMT Supplier Page	www.amt.qc.ca/suppliers/
AMT Vision 2020	plan2020.amt.qc.ca/
Ministère des Transports du Québec	www.mtq.gouv.qc.ca/
Société de transport de Montréal	www.stm.info/
STM Strategy	www.stm.info/en/about/financial_and_corporate.../strategic-plan-2020

Ontario

Eglinton Crosstown Project	www.thecrosstown.ca/
GO Transit	www.gotransit.com/
GO Transit Strategic Plan 2020	www.gotransit.com/public/en/docs/publications/strategic_plan_go_2020_lowres.pdf
Hamilton LRT	www.hamiltonrapidtransit.ca/
Hurontario-Main LRT	http://lrt-mississauga.brampton.ca/EN/Pages/Welcome.aspx
Infrastructure Ontario	www.infrastructureontario.ca/
Metrolinx	www.metrolinx.com/en/
Metrolinx Big Move	www.bigmove.ca
Metrolinx 2014-2017 Strategic Plan	www.metrolinx.com/en/aboutus/publications/StrategicPlanJun2012_FINAL-EN.pdf
OC Transpo	www.octranspo1.com/
Ottawa LRT	www.ottawalightrail.ca/
Region of Waterloo Rapid Transit	www.rapidtransit.regionofwaterloo.ca/
Toronto Transit Commission TTC	www.ttc.ca/

National Passenger Services

Rocky Mountaineer	www.rockymountaineer.com
VIA Rail Canada	www.viarail.ca/

7.4 List of Websites

This section presents a list of selected key websites relevant to railways in Canada.

Companies Mentioned in this Report

A&B Rail Services	www.abrail.com
ACS Infrastructure	www.grupoacs.com
AECOM	www.aecom.com
Aecon	www.aecon.com
Alstom	www.alstom.com
Ansaldo STS	www.ansaldo-sts.com
ARINC	www.arinc.com
Arup	www.arup.com
Balfour Beatty	www.balfourbeatty.com
Bird Construction	www.bird.ca
Black & McDonald Limited	www.blackandmcdonald.com
Bombardier	www.bombardier.com
CANA	www.cana.ca
Canadian National	www.cpr.ca
Canadian National	www.cn.ca
CANAC Railway Service Inc	www.canac.com
Carillion	www.carillion.ca
CIBC World Markets Inc	www.cibcwm.com
Cofely Adelt	www.adeltmechanical.com

Connor Clark & Lunn	www.cclgroup.com
CPC Transcom	www.cpcstrans.com
Delcan	http://delcan.com
Dessau Inc	www.dessau.com
Dragados Canada Inc	www.grupoacs.com
Dufferin	www.dufferinconstruction.com
EGRT Construction	http://egrtconstruction.ca
EllisDon	www.ellisdon.com
ENMAX	www.enmax.com
Fluor Canada Limited	www.fluor.com/canada
Fomento de Construcciones y Contratas (FCC)	www.fcc.es
GE	www.ge.com
Genivar	www.genivar.com
Geo.A. Kelson Company Limited	www.kelson.on.ca
Golder Associates	www.golder.com
Gracorp Capital Advisors Limited	www.gracorpcapital.com
Graham	http://graham.ca
Guild Electric Limited	www.guildelectric.com
GVest	http://gvestpartners.com

Hatch Mott MacDonald	www.hatchmott.com
HDR	www.hdrinc.com
Honeywell Limited	http://honeywell.com
IBI Group	www.ibigroup.com
International Bridge Technologies Inc.	www.ibtengineers.com
Investec	www.investec.com/products-and-services/canada.htm
Jacobs Associates Canada Corporation	www.jacobssf.com
Kenaidan	www.kenaidan.com
Keolis	www.keolis.ca
Kiewit Construction	www.kiewit.com
Lea Consultants	www.leaconsultants.com
Mass Electric	http://masselec.com
McNally Construction	www.mcnallycorp.com
Meridian Architecture	www.meridiam.com
MMM Group	www.mmm.ca
National Bank	www.nbc.ca
Obayashi	www.obayashi.co.jp/english
Obrascon Huarte Lain (OHL)	www.ohl.es
Parsons Brinckerhoff	www.pbworld.com/
PCL	www.pcl.com
Plenary Group	http://plenarygroup.com

PNR Railways	www.pnrail.com
Pomerleau	www.pomerleau.ca
ProTrans BC	www.protransbc.com
RailTerm	www.railterm.com
Rideau Transit Group	www.ottawalightrail.ca
Rizzani de Eccher Inc.	www.rde.it
S.E.L.I. Canada Inc	www.selitunnel.com
Siemens	www.siemens.ca
SNC Lavalin	www.snclavalin.com
Sowinski & Sullivan Architects	www.sowinskisullivan.com
Stantec Consulting	www.stantec.com/
Steer Davies Gleave	www.steerdaviesgleave.com
Strasman Architects	www.strasmanarch.com
STV Canada Construction Inc	www.stvinc.com
TD Securities	www.tdsecurities.com
Thales	www.thalesgroup.com/canada
Toronto Terminals Railway	http://ttrly.com
URS Canada	www.urs.ca

Withdrawn 17 May 2019



UKTI supports the wide range of British businesses through events and specialist workshops.

7.5 How can UKTI Help UK Organisations Succeed in Canada?

UKTI can provide UK organisations with a wealth of assistance to succeed in Canada. This is done through an extensive UKTI network across Canada which is headquartered at the British Consulate-General in Toronto. The types of trade support services that UKTI offers include:

- Tailored support for companies wanting to address urban rail opportunities, whether as primary contractors or subcontractors to the supply chain
- Up-to-date market intelligence and general information on urban rail projects are developing through to making contacts at the right decision-making level. This includes the monitoring of urban rail tenders and alerting relevant UK companies to the opportunities as well as covering cultural, political and business issues

- The identification of potential partners to form strategic partnerships
- Promoting and facilitating general and bespoke networking activities between UK and Canadian organisations that are engaged in the urban rail sector
- Delivering a range of events and missions in the UK and in Canada tailored to urban rail opportunities. This includes meet the buyer type events. Bespoke programmes for UK organisations wishing to engage with commercial players and government institutions in Canada can also be provided

Furthermore, the UK Government network in Canada can help promote organisational capability and expertise in-market, especially at a time when tendering opportunities are likely to be released or bids are being made. Contact details within UKTI are provided on the next page and we would encourage companies to speak to us.

Find out more

If you are interested in pursuing business opportunities in Canada, you can register your interest on www.ukti.gov.uk and arrange for an International Trade Adviser based in your UK region to help you.

Contact us

For further information on urban rail opportunities in Canada, mass transport activities, and the HVO programme, please contact:

UKTI Canada

British Consulate-General Toronto
777 Bay Street, Suite 2800
Toronto, Ontario M5G 2G2

Helen Hemmingsen, Trade Officer
Tel: +1 416 593 1290 (Ext. 2258)
Email: helen.hemmingsen@fco.gov.uk

Carley Crosby, Trade Associate
Tel: +1 416 593 1290 (x2242)
Email: carley.crosby@fco.gov.uk

UKTI London

Ricky Belgrave
Deputy Head, Rail
UKTI, 1 Victoria Street
London SW1H 0FT
Telephone: +44 20 7215 4750
E-Mail: ricky.belgrave@ukti.gsi.gov.uk

Mass Transport Activities and Projects

Matt Delve
Manager, Mass Transport Unit
UKTI, The Business Centre, Station
Road, Histon, Cambridge CB24 9LQ
Telephone: +44 207 215 8766
E-Mail: matt.delve@ukti.gsi.gov.uk

High Value Opportunities Programme

hvopteam@ukti.gsi.gov.uk

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