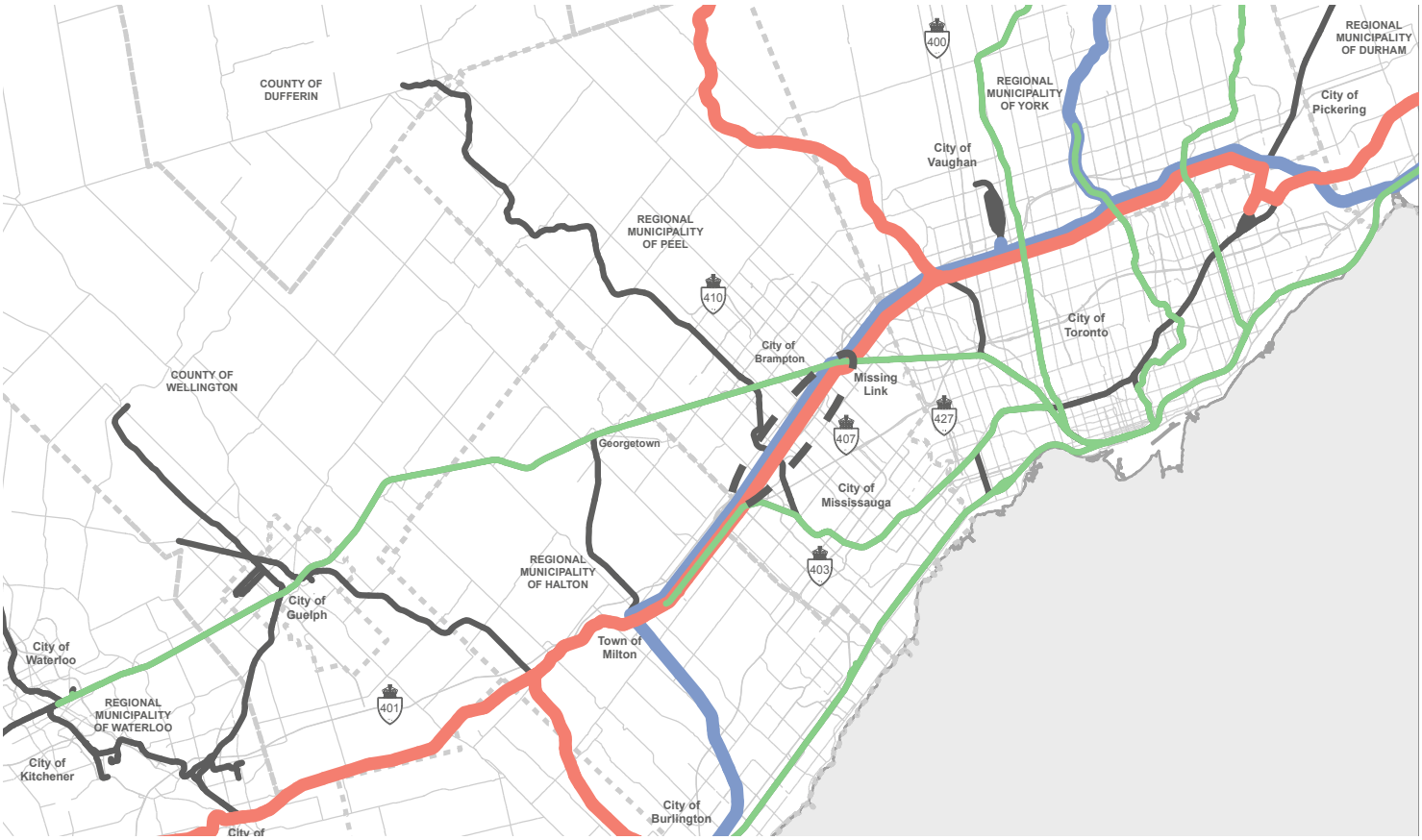
Appendix I

Feasibility Study and Business Case of Constructing the Missing Link



By IBI Group
with Stantec
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Executive Summary

Attached is a report on the feasibility of adding the "Missing Link" to the Greater Toronto rail network. The Missing Link is a new rail corridor linking the CN bypass line at Bramalea with the CP through route near the Milton-Mississauga border. The purpose of the Missing Link is to separate major through rail freight flows from passenger services on the GO Transit Milton and Kitchener lines. Just constructing the Missing Link does not fulfil all the requirements for rerouting of through freight flows; this requires upgrading of several other lines and providing new connections between CP and CN.

Constructing the Missing Link and the other rail improvements has three major benefits:

- It eliminates the impacts of the widening of the Milton and Kitchener GO Transit routes. These will be considerable and will be felt in the centres of Mississauga and Brampton. In fact the impacts of widening may be so serious that the objective may not be achieved for many years. Constructing a major project of this nature in active rail corridors will incur significant risks and dangers that can be avoided through the construction of the Missing Link.
- By removing heavy through freight flows, electrification of these two lines can be achieved. Without the separation of through freight and regional passenger service, electrification may not be acceptable.
- By freeing up the inner parts of the Milton and Kitchener lines, it will permit additional two-way service on the outer ends of these lines including new services to Cambridge and two-way all day service to Kitchener.

The conclusion from this initial feasibility analysis is that the Missing Link can be constructed without major impacts on the urban fabric. A cost analysis indicates that, within the margin of error of a planning level study, adding the Missing Link would incur approximately the same cost as the present plan to add trackage and widen the Milton and Kitchener lines to implement the Regional Express Rail (RER) concept on these lines.

The Missing Link proposal has several other benefits:

- It will remove heavy through freight traffic from central areas in Toronto, Mississauga, Brampton and Georgetown with their nuisance impacts.
- It will make feasible several new GO Transit services which are included in the Big Move transportation plan for the Greater Toronto and Hamilton Area (GTHA) including new services to Bolton, Agincourt and north Pickering and a Midtown Toronto service on the existing CP North Toronto line.
- It makes feasible a shortening and acceleration of the Richmond Hill GO Transit service.
- By separating major freight and passenger flows and therefore limiting impacts of passenger services on freight it will contribute to the achievement of the objectives of the Continental Gateway strategy of the Federal, Ontario and Quebec governments by facilitating through freight traffic to and from the US border.
- By separating heavy freight traffic from regional passenger services it offers the possibility for a future high speed rail to enter the centre of the GTHA.

Therefore it is our conclusion that the Missing Link should be investigated in more detail with Metrolinx, CN, CP and senior levels of government.

This strategy can best be achieved with the cooperation of the major freight railways.

As the study team sees it, the next steps in the process are:

- Engage Metrolinx in discussion of the feasibility and desirability of this project.
- Develop a process that will include Metrolinx, CN, CP and the concerned municipalities to develop the optimum solution.
- Apply to the Government of Canada for funding of additional studies and for funding of the project itself.

This study was sponsored by the City of Mississauga, City of Toronto, Town of Milton and City of Cambridge.

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1 Introduction

The Greater Toronto and Hamilton Area (GTHA) and the adjacent Waterloo Region is the fastest growing area in Canada with over one-fifth of the national population and a much higher proportion of national economic activity. However, with growing population and employment, the area faces increasing problems of road congestion. While many transportation improvements have been made in individual communities, the expanded region needs much better passenger transportation.

Since the inauguration of the GO Transit commuter rail system in 1967 it has grown in extent and become more and more important to the region. Historically its function has been mainly to carry commuters to the central area of Toronto and home again at night. However, Metrolinx, which operates GO Transit, has developed the concept of a Regional Express Rail (RER) network, to be created by upgrading the service to be two-way, all-day on all of its regional rail lines in order to better serve employment lands throughout the GTHA. GO lines will be electrified to provide faster more frequent service.

The RER concept represents a new phase in providing convenient public transit services throughout the GTHA and beyond. By providing rapid, frequent transit services it can alleviate many of the problems created by road congestion which are being experience today and which can only get worse with increased development. By connecting workers, business travellers, students and other passengers across the many road centres included in the provincial plans, RER passenger rail would help to sustain and enhance a vibrant southern Ontario economy and encourage thriving urban growth centres. The region would then experience the economic and social benefits of a much bigger metropolis without all the other impacts that could be incurred. Metrolinx has been given a mandate to introduce RER service within ten years.

To do this, however, will require separating major freight flows from the regional passenger trains. GO has purchased much of the network but has not been able to purchase the major freight lines used by CN and CP. In particular, the Milton and Kitchener lines currently share track with substantial flows of CP and CN through freight trains and the lines continue to be owned by CP and CN. Implementing the RER concept to these lines is very difficult without expanding them to provide separate tracks for the passenger services. To overcome this problem the concept of a “Missing Link” was developed; it is described in this report along with an analysis of its impacts.

1.1 Outline of Report

The railway configuration of the Greater Toronto Area and the possible need for construction of the Missing Link is described in Section 2. Section 3 of this report describes the possible configuration of a future Missing Link in terms of alignment, number of tracks, connections, signalling, etc. Section 4 develops an order of magnitude cost estimate. Section 5 describes the potential impacts of the concept. In Section 6 possible implementation steps are outlined. Section 7 provides the study team’s recommendations.

1.2 Commissioning of Study

To investigate the feasibility and desirability of constructing the Missing Link, this study was commissioned by a consortium of four municipalities:

- City of Mississauga;
- City of Toronto;

- Town of Milton; and
- City of Cambridge.

2 The GTHA Railway Network

Map 1 at the end of the report shows the ownership of railway lines in the region. Metrolinx, the operator of GO Transit, has purchased many of the railway lines over which GO runs. In fact it has been successful in doing this for a major portion on all its lines except for the Milton and Kitchener services. This is because both of the lines are used by the strategic through freight services of CN and CP.

Map 2 highlights the through freight routes carrying traffic to, from and through the Greater Toronto and Hamilton Area (GTHA). This network was not planned in any comprehensive way but has evolved over the last 160 years as railway companies have come and gone, been amalgamated and new construction undertaken. Both CN and CP have constructed major suburban rail yards in the 1960s but the network shows many signs of its historic background with heavy freight trains going through the centres of Mississauga, Brampton and Toronto with the attendant impacts.

Map 3 shows the freight routes combined with the seven existing GO Transit regional rail lines. On most lines the GO Transit services are separated from the through freight flows. However, as shown on Map 3 the Milton and Kitchener GO lines share track and right-of-way with CP and CN through freight services for considerable distances.

The rail network is being asked to carry more and more regional rail and rapid transit passenger services. Metrolinx has announced a goal to implement all day, two way service on all GO lines. High speed intercity services have also been proposed. There is a potential to reshape the network in order to separate major freight and passenger flows.

2.1 The Evolving Network

Canadian rail geography and operating practises have evolved over the years. In general freight traffic has been concentrated onto main lines. Instead of mostly single car movements, rail traffic has been concentrated in more specialized trains. Bulk trains now move directly from origin to destination. Containers, either domestic or international, are used for most general freight shipments. Container trains operate on main lines between intermodal terminals located near major traffic generators, and the journeys are usually completed by trucks hauling the containers from the shipper or to the consignee or both. This means that today there is a lot less local rail traffic on the rail lines than in the past but heavier flows on through lines. In addition the railways are now running much longer trains which generally marshalled to minimize handling at intermediate terminals between origins and destinations. The railways have rationalized and consolidated their networks to take advantage of these trends.

In particular, both CN and CP have abandoned their Ottawa Valley routes which means that all traffic from both Western Canada and from the US Midwest and West must pass through the GTHA to reach any point east of Toronto and in fact to reach GTHA distribution points. There are only three rail routes through the GTHA from west to east (and from the northwest: Northern Ontario and Western Canada). These are:

- The CN Lakeshore line. However this goes right through the financial district as well as the highly populated Railway Lands. It also carries high volumes of GO Transit regional rail and VIA services as well as local freight assignments. It is not used for through freight traffic and is not a candidate for additional rail freight.

- The CP North Toronto route which goes through the centres of Toronto and Mississauga.
- The CN York and Halton Subdivisions, often called the CN Bypass Line, which runs from Pickering in the east on the historic route from Montreal, is located north of Steeles Avenue on the south edge of York Region and passes through central Brampton, Georgetown and Milton to regain the historic route in Burlington.

The main CN freight route from the southwest through to the east utilizes the CN Bypass Line incorporating sections of previous routes that were upgraded; the line was constructed in the 1960s from Burlington through Milton, Georgetown, Brampton, Bramalea and the York Subdivision north of Steeles Avenue to rejoin the original CN main line to Montreal in Pickering. It provides the access to CN's main Toronto Yard, the McMillan Yard, north of Highway 7 between Keele and Jane Streets. Construction of the CN Bypass Line moved heavy freight traffic away from the Lakeshore Line. Although built by CN for its own purposes (to connect with its new Toronto Yard in Vaughan, now called MacMillan Yard), it freed up the Lakeshore Line for GO Transit services; the first GO Transit service started on this line in 1967. Traffic from Western Canada links to this line in Thornhill. This line has almost complete double track and road/rail grade separations along it. Much of the line has berms separating it from adjacent residential areas.

CP, by contrast, still operates on its historic routing. It enters the GTHA from the west through Milton and then passes through Mississauga, Toronto, and Scarborough before connecting to the CPR main line to Montreal. Traffic from Western Canada comes from the north on a line that passes through Bolton, Kleinburg and Weston, connecting with the east-west main line at West Toronto. The main CP Yard is located in Agincourt in Scarborough. East of Toronto the CP follows its historic route through Pickering, Whitby and Oshawa.

It is notable that to get to this central Toronto route all three CP entries into the GTHA cross the main CN freight line, from the southwest at Milton, from the northwest close to Woodbridge and from the east close to the Pickering-Scarborough border.

2.2 Upgrading the GO Network

Metrolinx/GO Transit has implemented many upgrades to the railway network it uses. In particular it has purchased most of the lines on which it runs. In addition to new expanded track and signals constructed over major parts of the GO network, rail to rail grade separations have been constructed at the following locations:

- West Toronto Junction to separate GO Kitchener, VIA Rail Canada and Union Pearson Express trains from east-west rail freight on the CP North Toronto line;
- Snider in Vaughan to remove interference between GO Barrie trains and east-west freights on the CN Bypass line;
- A planned grade separation in Thornhill (Doncaster) to remove interference between GO Richmond Hill trains and east-west freights on the CN Bypass line; and
- Markham to remove interference between GO Stouffville trains and east-west freights on the CN Bypass line.

However, there is still major interference between freight and GO passenger services on the Kitchener and Milton GO lines and on several lines that could potentially be used for future passenger services. To increase GO traffic on these lines and provide all day service on these lines will require adding second, third and fourth tracks at huge cost and high impacts on the urban fabric.

A proposal to alleviate these problems is to implement the "Missing Link" as described in this report. The report describes the genesis of the proposal and then examines the feasibility and implications.

2.3 The Missing Link

A proposal has been made to construct the "Missing Link" between the CP main line near Trafalgar Road in Milton and the CN Bypass Line at Bramalea. All CP and CN through freight traffic including traffic to and from their major Toronto yards and intermodal facilities would use this route from Milton through Bramalea and along the CN bypass line. This would require new connections between CP and CN in Milton, south of Woodbridge and in the east near the Scarborough/Pickering boundary. The revised routings for freight trains are shown on Map 4. Map 4 also shows the existing GO Transit lines, showing how construction of the Missing Link will separate freight and passenger services on the Milton and Kitchener lines.

This new route is mostly located within the Parkway Belt adjacent to Highway 407. Such a new rail route will require many bridges and new connections between CN and CP.

As mentioned the CN freight bypass was constructed or rebuilt in the 1960s and therefore is mostly grade separated, has berms separating it from the newer residential developments and does not carry any GO Transit or VIA passenger traffic.

3 Feasibility of the Missing Link

To examine the feasibility of constructing the Missing Link, alternative alignments for the Missing Link itself and for new connections between the freight routes were examined.

Currently both CN and CP have mostly double track lines through the GTHA on the through east-west lines with single track on the connections to the north and western Canada. A like for like replacement of infrastructure would provide each of the railways with their own double track alignment. It is probable however, that by combining the traffic of the two railways as they have done in other parts of the country, a two or three track joint railway would suffice. To be acceptable to the railways there would have to be provisions made for some sort of joint authority to dispatch such a line and security for the railways in their long term access.

This would not be novel; there are many parts of the railway network in Canada where the railways share track. For example, CP has had running rights on the CN line between Hamilton and Toronto for over a century. In addition the railways are sharing infrastructure in other parts of the country, calling it co-production. Examples of this include sharing the lines between Sudbury and Parry Sound and between Kamloops and Vancouver.

A routing was developed to provide a shared freight train corridor from the east near CP's Agincourt Yard to the west side of Milton where CN's Halton Subdivision and CP's Galt Subdivision intersect. This 74 kilometre route would require upgrades to existing rail corridors and construction of a new corridor, the Missing Link, to accommodate both CN and CP freight trains.

The following numbered components of the new route are shown on Map 5. They include:

1. A new connection from the Staines connection to the Havelock Subdivision adjacent to CP's Agincourt Yard. This will allow CP trains direct access from the Belleville Subdivision to the Havelock Subdivision.
2. Upgrades to the west end of the CP's Havelock Subdivision including CTC and an additional track.

3. New double track connection between CP's Havelock and CN's York Subdivisions providing CP trains access to the York/Halton Subdivision rail corridor.
4. Expansion of CN's York and Halton Subdivisions to a minimum of three main tracks between the new Havelock connection and the Bramalea start of the Missing Link. This includes expansion of signal equipment, new grade separations of existing road/rail crossings, and a new rail/rail grade separation with GO Transit's Richmond Hill line at Doncaster. As mentioned the CN freight bypass was constructed or rebuilt in the 1960s and therefore has a wide right-of-way, is mostly grade separated, has berms separating it from the newer residential developments and does not carry any GO Transit or VIA passenger traffic.
5. Construction of a new three track rail corridor, the Missing Link, between CN's Halton Subdivision at Halwest and CP's Galt Subdivision west of the Lisgar GO Station. The Missing Link will start at CN's Malport Yard, include a rail/rail grade separation with GO Transit's Kitchener line and run between Highway 407 and the Hydro Transmission line to the Mississauga/Milton border. Many alignment variations are possible, some of which may require Hydro Line relocation. The entire route will be grade separated and will not create new road level crossings.
6. Expansion of CP's Galt Subdivision. This will include a rail/rail grade separation allowing GO Transit trains to cross over the Missing Link. It will include five tracks, three freight and two passenger, between the Lisgar GO Station and the Milton GO Station. West of the Milton GO Station three freight tracks are proposed to the new Milton Connection.
7. New connection from CP's Galt Subdivision to CN's Halton Subdivision allowing CN trains to return to the Halton Subdivision.
8. New east and west connections from CP's Mactier Subdivision to CN's Halton Subdivision. These will allow both east and westbound CP trains access to the transcontinental route to western Canada and to the Vaughan Intermodal Facility.

These routes, connections and upgrades are not necessarily the final configuration of the Missing Link but have been shown to be physically feasible.

This arrangement effectively separates GO Transit's commuter operations from CN and CP's core freight operations with rail/rail grade separations. In addition it accommodates CN and CP's through freight operations by providing routes equivalent to those available with the existing rail network.

4 Costing of Improvements

A planning level estimate of the costs of implementing the Missing Link along with connections to other lines and widening of existing lines was developed. Unit costs were based on those used by Metrolinx on other programs and include a 50% contingency allowance.

4.1 Capital Cost Estimates

The Missing Link estimate is based on a predominately three track corridor carrying traffic of both CN and CP with new and modified bridges sized to accommodate a fourth track. The estimated cost is $5.3 billion. Approximately 89 hectares of land will be required. Although much of this is in public ownership the estimate of the land cost includes these amounts.

Exhibit 1: Missing Link Capital Requirements

COMPONENT	ESTIMATED COST ($MILLION 2015)
New Connections	$526
Missing Link	$1,970
Widening Sections of York, Halton and Galt Subdivisions	$2,841
Total Construction Cost	$5,337
Property Requirements - 89 ha	$86-$173

To provide a comparison with the costs of not implementing the Missing Link, a similar cost analysis was done of Metrolinx's current plan to add additional tracks to both the Milton and Kitchener lines so that these can carry both the through freight traffic and the expanded numbers of GO Transit trains running with implementation of the RER concept. This might be called the Widening Option. The estimated costs of this plan are shown on Exhibit 2 and amount to $5.0 billion. Approximately 17 hectares of land are estimated to be needed; it is very difficult to estimate a price for these lands because much of it is in very built up areas. The land price could be considerably higher if full lots and buildings had to be acquired.

Exhibit 2: Kitchener/Milton Line Capital Improvements without the Missing Link (The Widening Option)

COMPONENT	ESTIMATED COST ($MILLION 2015)
Widening of Milton Line	$3,508
Widening of Kitchener Line	$1,507
Total Construction Cost	$5,015
Property Requirements - 17 ha	$56-$108

This case requires the construction of capital improvements in active and operating rail corridors implying that there is considerable additional risk associated with this capital cost estimate although the contingency allowance used is the same as for the Missing Link. Also the land costs for the widening option are probably low because they are for raw land only; they do not provide for expropriation of buildings and relocation of activities.

The improvements costed in Exhibits 1 and 2 allow extensive RER service to Milton and to Georgetown on the Milton and Kitchener lines respectively. They do not include upgrades to the extensions of these lines to Cambridge and Kitchener respectively. Thus they are directly comparable.

These estimates are at a planning level. They include a 50% contingency. Given this wide margin of error it can be said that the two proposals have approximately the same price tag.

4.2 Service to Cambridge

Providing two way service regional rail service to Cambridge would be an important upgrade to regional connectivity. This could be achieved in three ways, perhaps in a phased approach:

- As investigated by the City of Cambridge, provide a connecting shuttle service to Milton GO station on a pilot basis using Diesel Multiple Unit (DMU) technology.
- Extend some services on the Kitchener line via a former CN line from Guelph to Hespeler in Cambridge.

- Extend Milton services to Cambridge. This would almost certainly require the double tracking of the CP line from Guelph Junction to Cambridge which is now single track and extend electronic signalling on this line.

5 Impacts of Implementing the Missing Link

The implementation of the Missing Link will have a number of impacts. In this section these impacts are described.

To analyze of the potential benefits we have contrasted two cases as described in the previous section. The first case is to construct the Missing Link and to detour freight trains onto this line to eliminate or reduce freight/passenger interference. This is compared with the current plan which would widen the Milton and Kitchener corridors to handle all day, two-way service without the Missing Link.

5.1 Capital Costs

As indicated in the preceding section the difference in the capital costs of the two cases is well within the uncertainty area of the estimates. Given the greater degree of certainty of the costs of widening the lines, they can be said to be equivalent.

5.2 Operating Costs

The implementation of the proposals described previously will decrease train mileage for CN (by almost 11km for trains to and from the west) and not impose any additional train mileage for CP. There will be no interference between GO and through freight trains which will reduce delays to CN and CP. By sharing track there will be a lower length of track to maintain and signal. Track geometry (e.g. super-elevation on curves) and maintenance routines can be planned for freight-only operations, without having to deal with significant speed differences and passenger comfort issues on the freight lines. Also, the mitigation of train interference is a favourable factor. The nature of these changes are less evident in day-to-day savings as they are in the reduction of risks to disrupt normal operations and allow for speedier recovery to normal conditions after incidents of delay. One would not expect a near-term noticeable reduction in train starts or crew starts, or in the deployment of section gangs (track maintenance crews); these are the main cost-drivers for operations in a given territory.

On the other hand, there will likely be changes to local assignments to serve carload customers in the GTHA, especially for CP. In some cases, alternate scheduling might be required to avoid conflict with passenger trains; in other cases alternate routing and intermediate staging on side tracks might be the best approach. This aspect was outside the present scope, and would have to be include in a more detailed evaluation if the Missing Link concept is advanced. Similar to the situation for through traffic described above, the changes are important considerations to ensure undisrupted services; but, the cost impact is likely minor, and could be either positive or negative depending on the approach taken by CN, CP and GEXR.

Therefore, on balance, it is our opinion that there will be net operating cost savings to the two freight railways including a reduction in their ongoing infrastructure maintenance costs.

The operating costs savings for the GO rail lines with the freight trains moved off of the Milton and Kitchener GO lines should be similar or lower than the costs for the widening of the Milton and Kitchener lines as there will be less interference with the freight trains. For example, under the widening scenario, the Kitchener GO trains have to cross the CN freight flows between Bramalea and Brampton; with the Missing Link in place this interference would no longer occur.

5.3 Impacts of Widening of the Milton and Kitchener GO Transit Routes

The current plan of Metrolinx is to introduce all day, two way, full service on the Milton Line and on at least the inner portion of the Kitchener GO Transit lines. To do this while still carrying through freight services will require constructing at least two additional tracks, widening the Milton Line from two to four tracks and the Kitchener line from one and two tracks to three and four. This will have serious implications such as:

- Increasing the impact of rail services on the urban environment, including noise, and other impacts;
- While much of the additional trackage can be accommodated within the existing corridors, there will be additional land take required in some sections to accommodate retaining walls, drainage, etc. (There is also a report that CP is requiring a 9 metre separation between RER tracks and their tracks, increasing the land take and cost.) Construction on the widened lands will occur in built up urban areas with serious implications. In some cases entire properties will have to be obtained. In fact, the impacts on urban development will almost certainly delay the widening of these two corridors and perhaps even make them impossible to achieve.
- Both corridors have at-grade crossings with roads. While this may be acceptable under existing conditions, it would almost certainly not be acceptable when the corridors are four tracks wide and carrying both large numbers of through freights and very frequent GO RER services, requiring several grade separations to be constructed. The costs of these are included in the estimates but construction of the grade operations will also have impacts on the urban fabric, possibly including the removal of historic buildings.

5.4 Electrification of the GO Lines

Metrolinx has the long term intention to electrify all seven existing GO lines. Electrification of the Kitchener line as far as Bramalea has already been announced.

The freight railways, however, do not wish to have electrification on lines where they are carrying heavy volumes of freight. Overhead electrification could interfere with tall loads such as double stack containers, tri-level auto racks, oversized loads, etc. By removing these heavy freight flows these lines should be suitable for electrification. Otherwise electrification will not be acceptable on the Milton and Kitchener lines, the third and fourth busiest GO Transit routes.

Metrolinx has also expressed the intention of implementing some form of “Positive Train Control”, a supervisory system for train operations to improve safety on the RER lines. This would not be possible on lines that are shared with major flows of freight trains as through trains would not necessarily be properly equipped.

5.5 Removal of Heavy Freight Traffic from Central Areas

The Missing Link proposal will remove heavy freight traffic from central Toronto, downtown Brampton and central Mississauga. This will have beneficial impacts in terms by reducing the nuisance impacts of running heavy freight services through these high activity areas. It must be realized, however, that there will still be some freight services on the Milton and Kitchener lines to serve local industries. These will be infrequent and typically involve only short trains.

The new lines will be constructed in such a way as to minimize problems with adjacent development. The CN Bypass Line already has a wide alignment with berms in most locations.

5.6 Other Benefits

In addition to the main aim of freeing up the Milton and Kitchener GO lines from through freight traffic, there are other potential benefits of rationalizing the railway network in the GTHA by constructing the Missing Link. These are discussed below.

5.6.1 Additional Service to Cambridge and Kitchener

The Missing Link facilitates not only improved freight movement in the GTHA, but also the connection of communities west of the GTHA. By freeing up the inner parts of the Milton and Kitchener lines (from Union Station to Milton in case of the Milton Line and from Union Station to Georgetown in the case of the Kitchener line), additional, two-way service on the outer ends of these two lines can be put in place thus strengthening the overall economic vitality of the entire region.

Cambridge has already developed a proposal to provide a two way shuttle service between Milton and Cambridge. While extending GO rail service to Cambridge is not contingent upon the Missing Link, it would help to facilitate it. In the longer term RER service could also be extended to Cambridge.

The extension to Cambridge and the expansion of service to Kitchener would greatly contribute to the achievement of the Province's Places to Grow strategy, achieve a significant reduction in vehicular greenhouse gas emissions and unlock the economic potential of the region by facilitating significant economic development activity, the interchange of skills between urban areas and providing broader opportunities to work, study and live.

Similarly freeing up the Bramalea to Georgetown portion of the Kitchener line will allow additional service to be operated to Guelph and Kitchener. Removal of the CN freight traffic from all of the Kitchener line would also permit service to Cambridge via the Kitchener line to Guelph and a relatively lightly used CN line to Cambridge..

5.6.2 Enabling New GO Transit Services

By taking the freight traffic off of the central lines, several new lines will be available for adding GO Transit service. These include the North Toronto Line to connect with the TTC subway at Dupont and/or Summerhill stations, the Agincourt (north Pickering) Line, and the lower portion of the Bolton Line. All of these future lines are in Metrolinx's GTHA transportation plan (The Big Move). Map 6 shows these lines.

5.6.3 Acceleration of the Richmond Hill Line

The Richmond Hill Line follows a winding path through the Don Valley which causes low speeds and is susceptible to flooding. An alternative routing for these trains is using the CP line through the Don Valley and then a new connection between the CP North Toronto subdivision and the Richmond Hill Line where the CP to Agincourt line intersects with the Don Valley Parkway. This connection would not be possible with heavy freight traffic on the CP line as the Richmond Hill trains would have to cross the heavy through freight train flows. It would be feasible with the rerouting of the heavy through CP Rail traffic. This is also shown on Map 6.

5.6.4 Encouraging Coproduction by the Two Major Freight Railways

Over the last couple of decades the two major railways have improved their efficiency by joint use of trackage, called "coproduction" in the railway industry. The first major implementation of this was in the Fraser Canyon area of British Columbia. Both CN and CP have single track lines from Kamloops to Vancouver. A double track railway provides much greater capacity than the sum of two single lines and offers faster transit times. CN and CP made an agreement whereby

the CN line is used by westbound trains and the CP by eastbound trains between Vancouver and Kamloops. Such coproduction agreements are in place in other parts of Canada including between Parry Sound and Sudbury.

The new connections envisaged in this report would also prepare the way for coproduction to be extended from Toronto to Sudbury on the transcontinental lines of the two railways and perhaps eventually eastward to Montreal.

5.6.5 Implementing the Continental Gateway Initiatives

The Ontario-Quebec Continental Gateway is an initiative promoted by the federal government with the assistance of the two provinces to improve trade flows in the Quebec Windsor Corridor in order to facilitate international trade and to improve productivity. The CN and CP lines lead to the two most important rail border crossing points in Canada, the Sarnia and Windsor tunnels respectively. By separating freight and passenger train services and removing that interference in the GTHA, freight movements will be facilitated and the objectives of the Continental Gateway strategy facilitated.

Although CP train running distances remain the same, CN through trains from the west realize a saving of almost 11 kilometres, resulting in decreased transit times and substantial fuel savings. As mentioned in the previous section, by providing new connections between the two railways coproduction with its efficiency improvements is also encourage.

5.6.6 High Speed Rail

By removing the heavy freight traffic from the central lines in Toronto it offers the possibility for high speed rail to enter either by the Milton Corridor or the Kitchener Corridor from the west and the CP Agincourt corridor from the east.

6 Implementation

The impetus for the implementation of a major scheme such as the one described in this paper is the intent of the Ontario government, through the agency of Metrolinx, to implement the Regional Express Rail (RER) concept on the Milton and Kitchener GO Transit lines and throughout the Greater Toronto and Hamilton Area (GTHA). RER will bring very large improvements to the transit connectivity of the GTHA by providing fast, frequent, all day, two way rapid transit services. The major responsibility for implementing this scheme, if approved, therefore belongs to Metrolinx.

The question arises as to what role the municipalities and regions should embrace throughout the planning and implementation process. The status quo scenario would have Metrolinx working with the senior levels of government, CN and CP developing their plans to a certain point and then sharing the results in some advanced stage of definition with the municipalities. This interpretation is consistent with feedback both from Metrolinx and from the Minister of Transportation, according to senior municipal officials. This approach is susceptible to improvement.

The preceding discussion of impacts and accommodations necessary for implementation of RER with or without completion of the "Missing Link" suggests that the municipalities are significant stakeholders, such that their participation sooner rather than later in the planning process could result in better overall solutions.

The text that follows outlines the interests of the different types of stakeholder and offers suggestions regarding next steps based on a consolidated view of these interests.

6.1 Interest of the Federal Government

The federal government has a vital interest in the project as well because of:

- Its vital interest in the effective functioning of the GTHA, the most important economic region of Canada;
- Its objective to improve international trade through the Continental Gateway initiative;
- Its constitutional responsibility for railways;
- The New Canada Building Fund of Infrastructure Canada is a $14 billion component of the $53 billion New Building Canada Plan for which a project of the nature of the Missing Link might qualify under three of the four categories of funding assistance offered.

The federal government will have to be involved, for funding and because of the potential use of two acts that have been federally legislated.

The first of these acts is the *Canada Transportation Act* (hereinafter referred to as the Act). Sections 138 and 139 of the Act allow the federal government (i.e. the Canada Transportation Agency – CTA), on application from a municipal government, to request joint usage by two or more railways of a common right-of-way. In doing this the CTA must also provide for fair compensation to the railways for property and any impacts on operating costs.

The *Railway Relocation and Crossing Act* (RRCA) also allows the CTA to promote the relocation of railways upon request from a municipal government. The federal funding for such a venture would be established separate from granting the authority to proceed. The web site of the CTA states:

> "If provincial or municipal authorities cannot reach an agreement with a railway company on the relocation of railway lines, subsection 3(1) of the RRCA permits an application to the Agency for an order to carry out an accepted plan. The accepted plan will facilitate the relocation of specific railway lines or operations around and away from an urban area in order to promote urban development. The Minister of Transport, Infrastructure and Communities may authorize the payment, out of funds set aside by Parliament, of not more than 50% of the cost of preparing the urban development plan or the transportation plan or both."

The RRCA also permits the federal government to pay up to 50% of the costs of studies and of implementation of railway relocation. At the present time there is no budget available allocated to the RRCA which would permit the actualization a project of the scale of the Missing Link but this would only require an appropriation of funds, not new legislation.

Federal funds could also flow through the use of the New Building Canada Fund. A New Building Canada grant of up to $2.6 billion was recently announced for the implementation of SmartTrack which essentially is the upgrading of GO Transit routes to an RER standard.

6.2 The Interest of the Freight Railways

The property involved, however, belongs to the two major Canadian railways, Canadian Pacific Railway and Canadian National Railways. These are owned by a wide cross-section of shareholders. Therefore, if the necessary cooperation of the freight railways is to be obtained, they must either be in the same or a better position at the end of the project than they were before or be compensated accordingly in a manner acceptable to them.

In the past GO Transit/Metrolinx has had a problem in making infrastructure improvements on railway property. The railways have insisted that they retain title to all assets located on their

property. Even if Metrolinx pays for an additional track or a station, it is owned by the railway; this is usually mitigated by an agreement that the railways will not charge for the use of such assets but it does constrain the operating flexibility of GO. Metrolinx has purchased much of its network to overcome this problem; but, the major freight railways have refused to sell strategic through routes including: the Milton line which is the CP main east-west line, and the section of the Kitchener line between Bramalea and Georgetown which is part of the CN Bypass freight route.

It is very important to keep in mind that the long-term success of the railway companies depends on their ability to continuously provide reliable and efficient service to their clients. The Missing Link concept is designed to maintain and perhaps enhance the service to customers using these through routes. However, some customers are located along the lines that would be affected by expanded commuter rail service with or without coproduction and the Missing Link. An important follow-up investigation, if the concept advances to a more detailed level of consideration, would require developing operating plans for serving local customers of both CN and CP in the GTHA, and accommodating Goderich and Exeter Railway (GEXR) connections with MacMillan Yard.

6.3 Possible Mode of Implementation

These considerations lead to a possible implementation process:

- Refinement of the proposals in this paper, sponsored by Metrolinx with the participation of municipalities, the railways and the federal government;
- Application for any federal and provincial environmental approvals. The provincial approvals could probably be sought under the Transit Project Assessment Process (TPAP) which was implemented to expedite public transit projects;
- Application for funding assistance under the New Canada Building Fund, possibly in conjunction with the Province, depending on the scale of the request(s).
- Actual implementation by Metrolinx with the cooperation of the railways and possibly financial assistance from the federal government.

Experience elsewhere has shown that negotiations based on commercial principles carried out in a spirit of good faith among all participants produces the best results. The legal measures that are available in the background such as Sections 138 and 139 of the Act or the RRCA and other related measures are useful in providing a base point. If there is a failure to reach a commercial and fair agreement, then the provisions of transportation legislation can be helpful in establishing a process of mitigation, arbitration, or adversarial proceedings as a last resort.

The strategy for funding requests is a matter for the sponsors of this study to consider. The overall system has national, provincial and regional significance which would qualify it for one of the larger funding allotments. There are also elements of the system that occur entirely within one municipality, especially grade separations which would qualify under the RRCA for authorization and the New Canada Building Fund regional projects.

Clearly, there are significant advantages for a concerted approach that could be led by Metrolinx, involving all of the significant stakeholders, including the municipalities that would be served by RER and its connecting services.

The additional work to be undertaken is straightforward:

- Work together to decide on the final concept for expansion of RER.
- Through consultations and negotiations with various stakeholders, identify the accommodations necessary for the concept to be viable and establish Heads of Agreement or Memoranda of Understanding with the guiding principles for

participation of each stakeholder. This is especially important for determining a final route selection and ensuring that sufficient property can be acquired.

- Initiate planning and funding activities including environmental assessment, preliminary design, and funding applications.
- Determine the funding mechanism that will be employed, e.g. will there be a P3 element, or strictly public funding?
- Establish a governance regime for following through with implementation.

7 Conclusions and Next Steps

This planning level analysis indicated that implementing the Missing Link is feasible, has a similar cost to those that will be incurred for widening the current Milton and Kitchener lines and has many other advantages. We suggest that these are the next steps that should be undertaken:

- Engage Metrolinx in discussion of the feasibility and desirability of this project.
- Develop a process that will include Metrolinx, CN, CP and the concerned municipalities to develop the optimum solution.
- Apply to the Government of Canada for funding of additional studies and for funding of the project itself.

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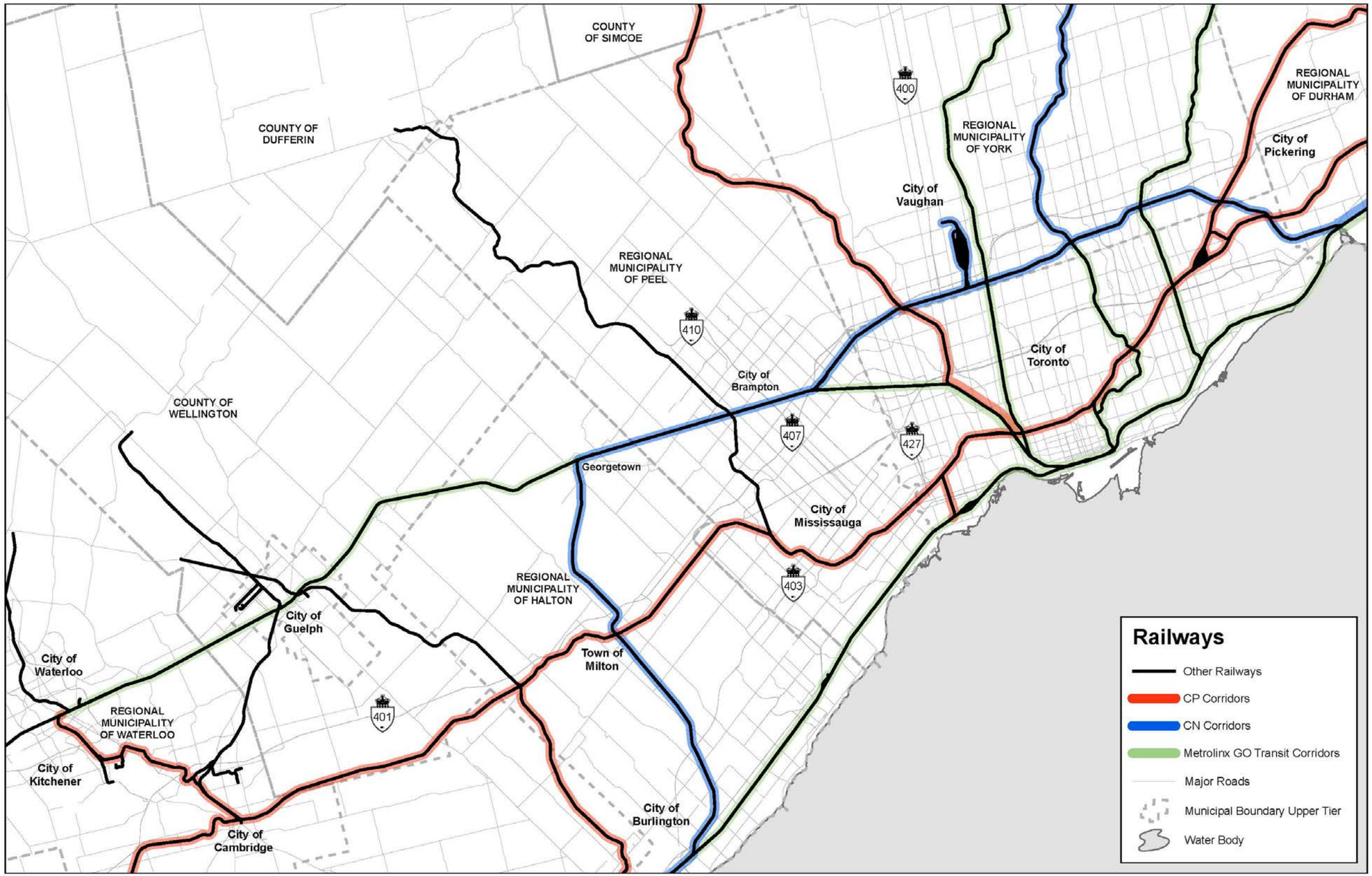
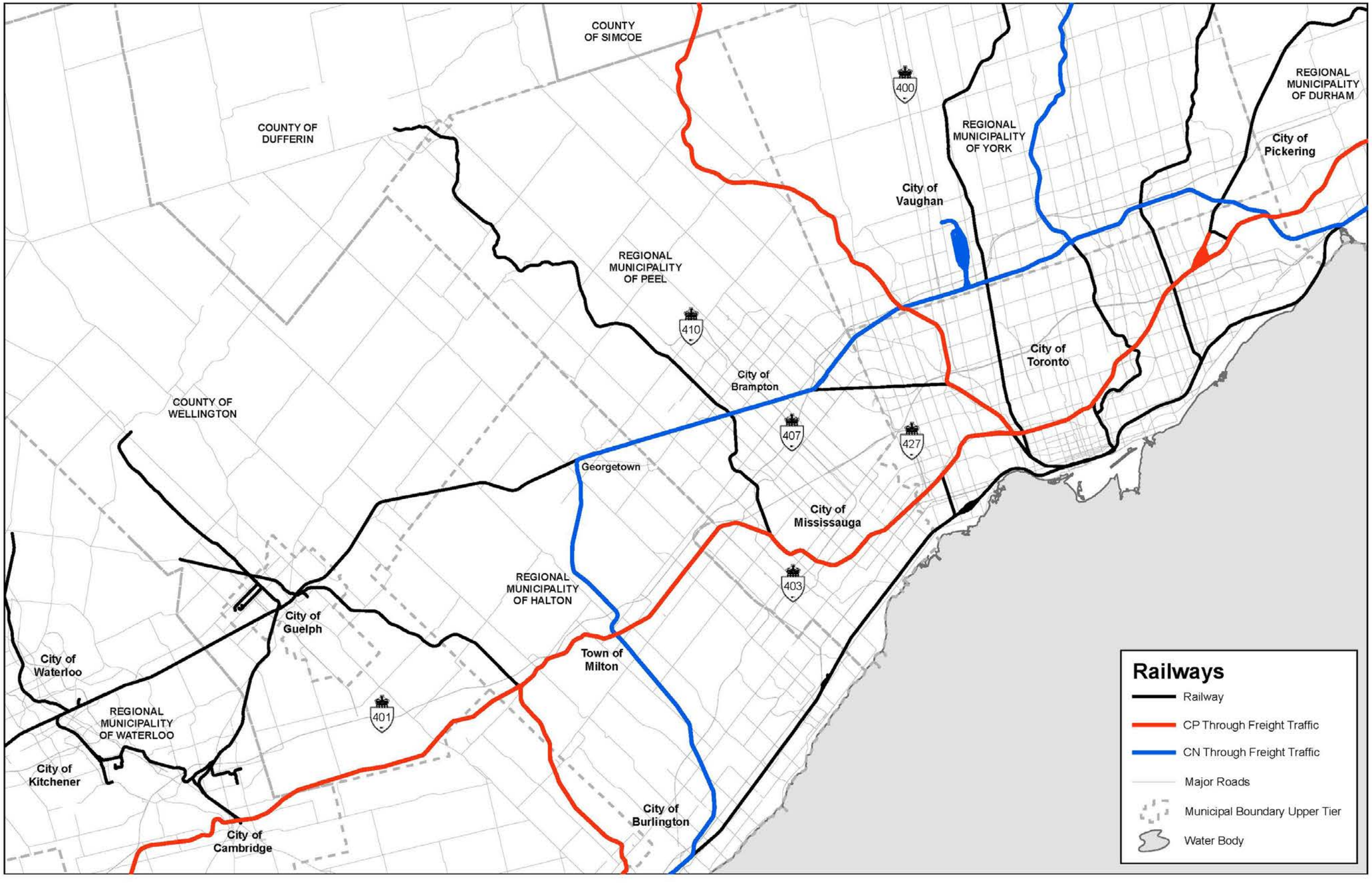
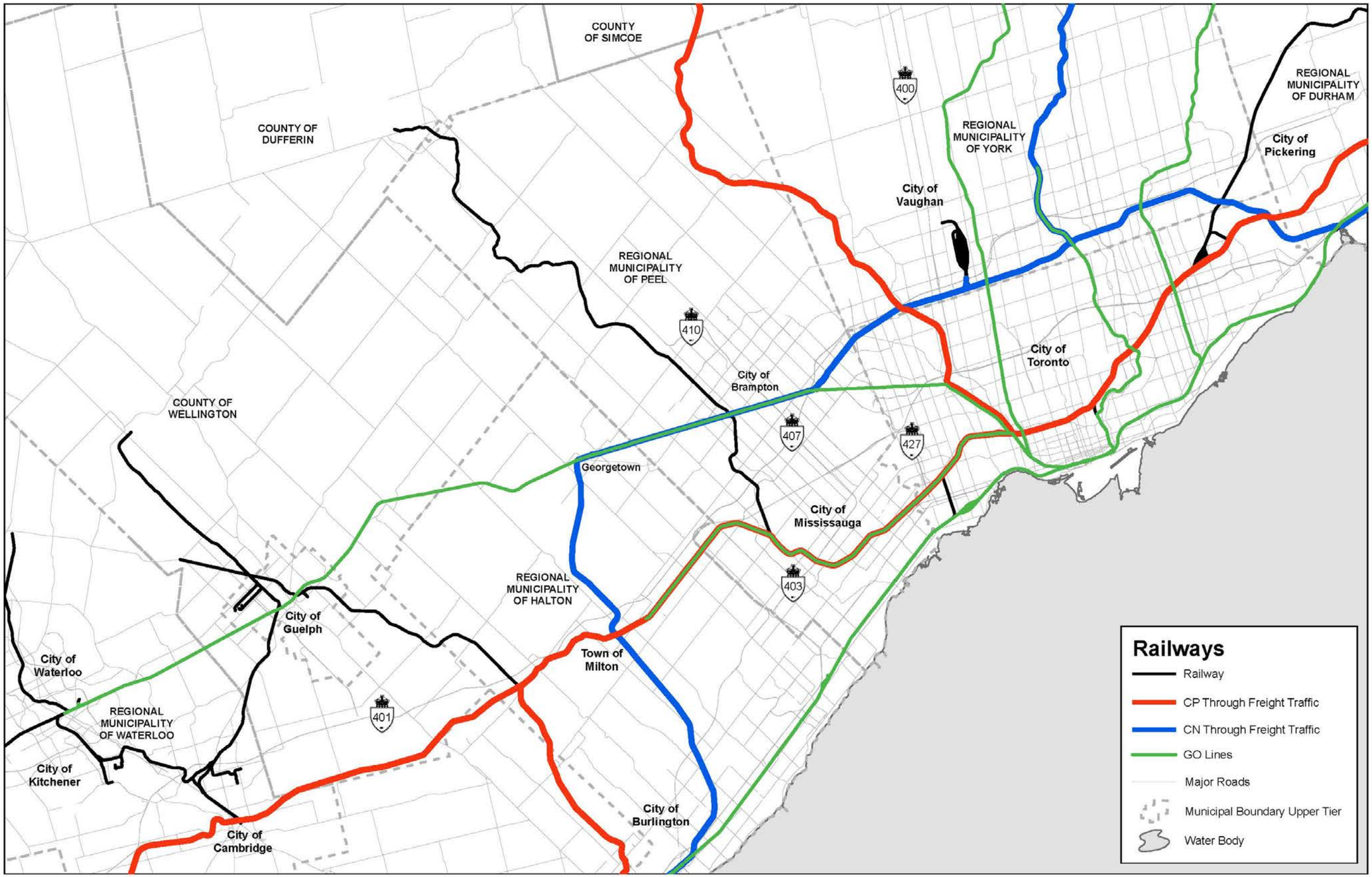
Map 1 – Ownership of Rail Lines



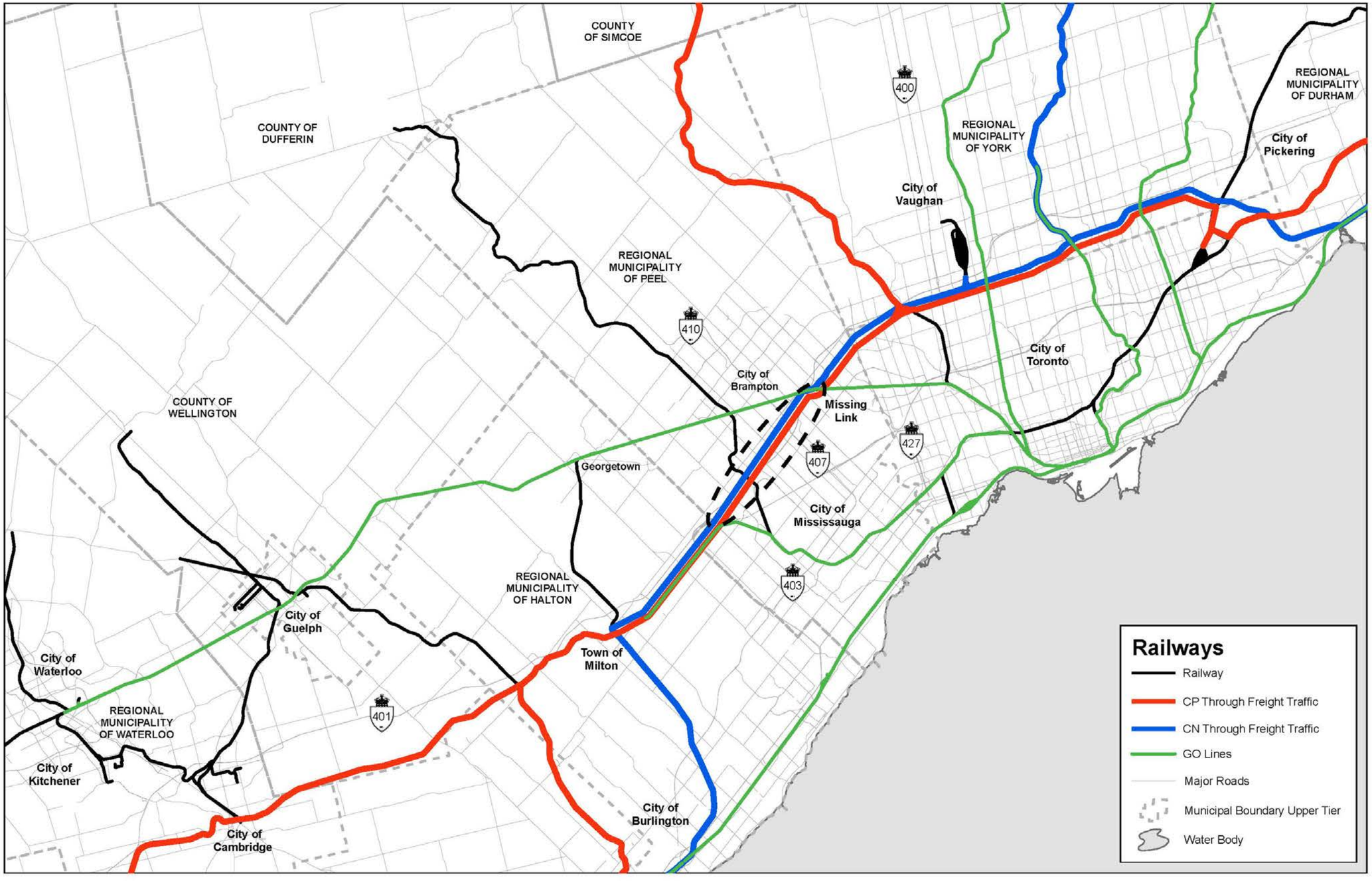
Map 2 – Existing Through Freight Routes



Map 3 – Freight Routes with GO Transit Services

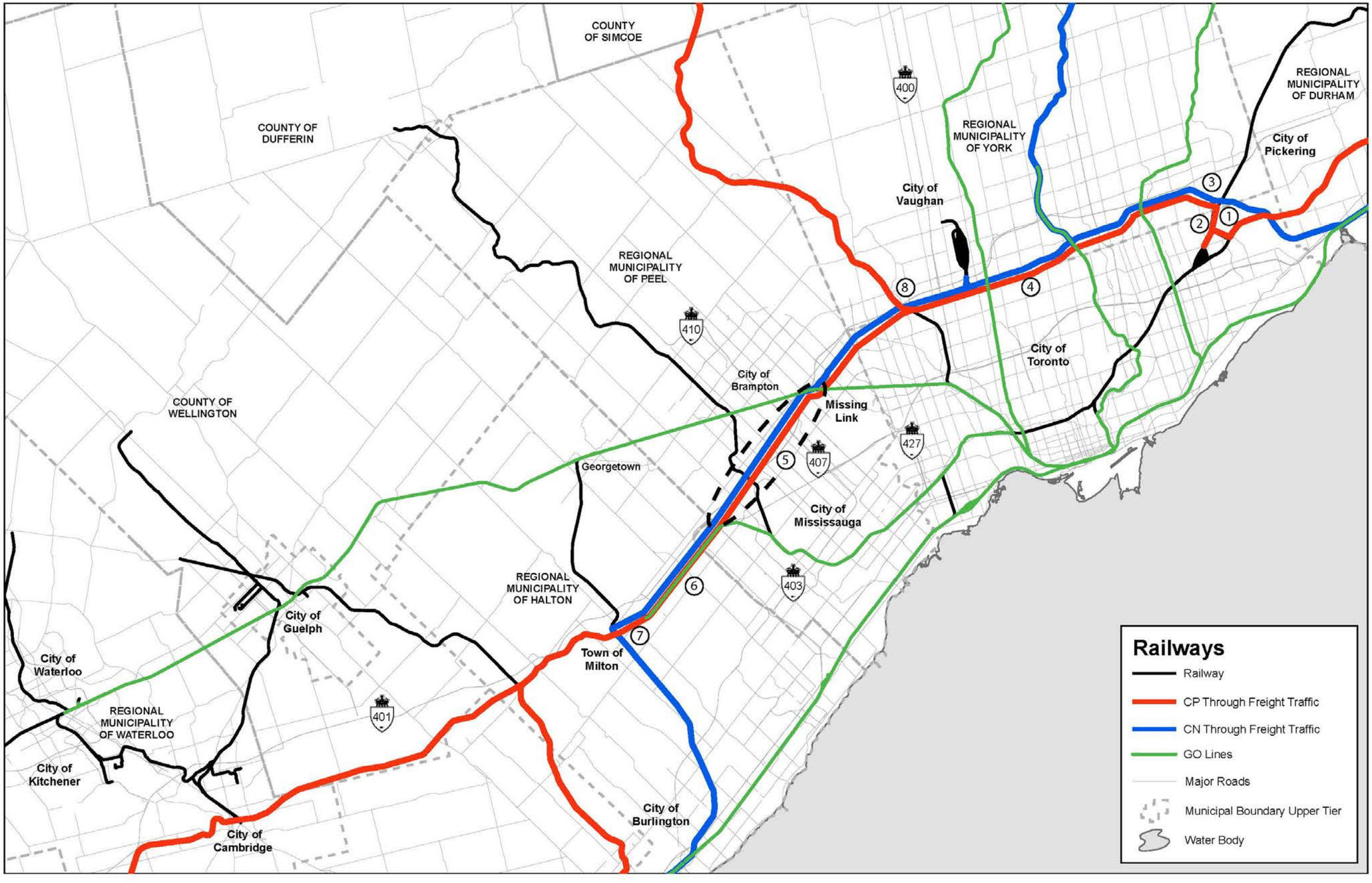


Map 4 – GO Transit Services with the Missing Link in Place



Appendix I

Map 5 – Components of the Missing Link



Map 6 – Future Lines Enabled by the Missing Link