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The Impacts of Linear Infrastructure Development on the Greenbelt

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The Impacts of Linear Infrastructure Development on the Greenbelt

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1. Executive Summary

Since the Greenbelt Plan came into effect in 2005, new and existing infrastructure projects have contributed to creating vibrant communities and supported growth and economic development. There is concern, however, among many planners, municipal Councillors, and others that there is limited knowledge of the cumulative impact of infrastructure within and crossing the Greenbelt. The placement of infrastructure in a linear orientation has traditionally fragmented agricultural and natural heritage systems and supported sprawling patterns of growth. This clash between natural and agricultural systems and infrastructure is not unexpected. Natural systems generally do not fit a linear form: rivers meander, and wetlands expand and contract, for instance. The agricultural system requires a contiguous land base, which linear infrastructure can cut through. Through a literature review, interviews, and analysis, this report assesses the current and long-term threats of linear infrastructure to the Greenbelt.

The focus of this report is on three types of infrastructure: highways, public transit, water supply and sewers.[1] These types of infrastructure were chosen because they strongly influence the direction of urban development. This report covers only major infrastructure projects of these three types that are currently being built or are projected to be built before 2041.[2]

All three types of infrastructure projects adversely impact the Greenbelt as they influence urban development patterns adjacent to the Greenbelt, impair the connectivity of the natural heritage and agricultural systems, and put pressure on the Greenbelt. In 2020, seven major (GO) transit stations and two major highways are planned within or adjacent to the Greenbelt. Major transit stations and highways are designed to move goods and commuters and they are intended to support adjacent urban development. Transit infrastructure is expensive, and projects are dependent on higher density growth around transit stations to fund operations. Policies in A Place to Grow: Growth Plan for the Greater Golden Horseshoe (henceforth referred to as the "Growth Plan" throughout this report) require transit supportive densities of 150 pp/ha around GO stations, but municipalities can request lower targets. The placement of GO stations in the Greenbelt or adjacent greenfields fails to maximize the investment of existing transit infrastructure and removes land from the Greenbelt—it also misses an opportunity to invest in redevelopment of existing communities to be transit-supportive, optimize existing urban services, and may require more people to drive in order to take transit.

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[1] Electrical grids were not included in this report because preliminary investigation revealed that no major new projects were foreseen within the Greenbelt.

[2] It should be noted that many smaller infrastructure projects will most likely be undertaken within and near Greenbelt. The cumulative impacts of many small projects on the Greenbelt could potentially amount to the impacts of the major projects investigated in this report. This topic, which is beyond the scope of this report, could be a subject for future research.

Two highway corridors, the GTA West and the Bradford Bypass, would both pass through the Greenbelt. Due to a narrow study area, no alternative placement options for these highways were found or considered in the EA that avoided the Greenbelt. Recent changes to the EA Act exempting the Bradford Bypass and the GTA West highway from the fullness of an individual environmental assessment process may result in design and construction techniques that do not conform to the Greenbelt Plan.

Recent proposed and approved changes to various Provincial policies affect how the negative impacts of linear infrastructure could be mitigated. Linear infrastructure relies on a robust Environmental Assessment process to assess impacts and require mitigation on an individual project basis. Further changes to streamline the EA process to expedite project implementation may diminish the full analysis needed to assess and mitigate impacts. Furthermore, the recently reduced role of Conservation Authorities, as a result of changes to the Conservation Authorities Act in 2020, makes it unclear what other government body has the expertise to assess environmental impacts, and manage, monitor, and remediate flooding risks and erosion from construction impacts. We should anticipate negative impacts on ecological features and functions, and surface and groundwater as a result of changes to the EA process and the diminished role of Conservation Authorities. While each linear infrastructure project considered in this report has some impact on the Greenbelt, the extent of the impacts may be increasingly difficult to assess in the future.

Some municipal planning staff interviewed for this report suggested there is a lack of clarity and consistency of interpretation of Greenbelt Plan and Growth Plan infrastructure policies. While the Greenbelt Plan is generally permissive around allowing infrastructure to cross the Greenbelt if it meets certain conditions, the policies generally defer to the Growth Plan and the EA process. It has been suggested that technical guidelines are needed to ensure only essential infrastructure is permitted in the Greenbelt, and indirect impacts are given due consideration. Some interviewees also expressed a concern that there is limited understanding of the cumulative impact of infrastructure built within and/or crossing the Greenbelt.

It is a dynamic time for infrastructure planning in the Greater Golden Horseshoe. The Greater Golden Horseshoe Transportation Plan to 2051 is expected to be released in 2021. By mid-2022, Regional Official Plans will be updated to comply with revised provincial policy that encourages ground-related housing except near transit stations where density is encouraged. The pandemic has created new work from home options, potentially reducing the number of people commuting going forward. As the new planning horizon is 2051, it is anticipated many new infrastructure projects will be needed to support projected growth, but the outcome of the pandemic may challenge the underlying assumptions for new infrastructure.

For each type of infrastructure, an overview of the policy context and planning process is provided first. Next, projects that are under construction or being planned are identified and described. This is followed by a summary of the types of impacts expected from undertaking the projects. Mitigation measures to reduce the severity of the adverse impacts and, in some

cases, enhancements to maximize any positive effects that projects might have are discussed. Finally, an analysis of infrastructure planning in and around the Greenbelt is discussed.

2. Introduction

2.1 Research Scope

Linear infrastructure projects can have either direct or indirect impacts on the Greenbelt. Direct impacts are those that result from the construction and operation of infrastructure within the Greenbelt. The impacts involve damage to natural heritage systems and agricultural systems that lie in the path of the infrastructure. Damage to natural heritage systems could affect the ecological goods and services that they provide, while damage to agricultural lands could affect the practicality and economic viability of continued farming operations and access to local food, fuel, or fibre. Direct impacts may be transitory (occurring during the construction process but fading once construction is complete, such as dewatering) or permanent (remaining long after construction has been completed).

The ongoing expansion of highway infrastructure in the GGH entails many direct and indirect impacts. Highways have a very large immediate footprint—i.e., the space required for the physical right-of-way (ROW). Within this footprint, natural heritage systems, including water resources, and agricultural lands are usually permanently lost or at least severely degraded. Direct impacts can also extend beyond the highway ROW.

In terms of natural heritage, the impacts include noise and air pollution, interference with watercourses and recharge areas, destruction or fragmentation of terrestrial and aquatic habitats, and interference with migration routes. In terms of agriculture, they include the fragmentation of agricultural land and interference with agricultural practices, impacts on well water, and adverse impacts on plants and livestock related to noise and pollution from the highway. There are also downstream impacts on water quality that impact fisheries, flooding, and use of beaches.

The direct impacts of public transit projects on the Greenbelt, compared to planned highway projects, are likely to be less severe if they involve commuter train lines using existing rail ROWs. For new GO transit projects, existing tracks may need to be upgraded and twinned to accommodate increased rail traffic. This implies minimal direct impacts on natural heritage systems and agricultural lands in the Greenbelt, and many of these impacts will be reversible once construction is complete with minimal ongoing impacts.

Although railway line upgrades for transit services in or crossing the Greenbelt entail few direct impacts compared to highway projects, they can nevertheless have similar indirect impacts, i.e., they contribute to the expansion of urban areas adjacent to the Greenbelt and in the outer ring of the GGH. Seven GO train stations are planned to be built in the Greenbelt's Protected Countryside, many with large commuter parking lots. The specific impacts of these transit stations and amenities will vary by location.

The direct impacts of water and wastewater conveyance infrastructure[3] also depend on the construction technique that is used and the particular location. Due to Greenbelt policies, it is unlikely that a trenching method will be used to install watermains or sewers. It is important to note, however, that if trenches are dug from the surface for the construction of water and sewage infrastructure, there is a risk of damage to surface features. On the other hand, if underground tunneling is used, damage to surface features can be largely avoided. In both cases, impacts on groundwater systems are possible, especially if extensive dewatering (i.e., removal of groundwater that accumulates in the tunnel or trench) is required during construction. Due to the extensive underground water pressure in the Oak Ridges Moraine, underground sewer pipes have experienced infiltration of groundwater into the system long after the construction project is completed.

Indirect impacts on the Greenbelt are those that result from infrastructure's capacity to enable development. The provision of road, transit, and water and sewer infrastructure enables urban development in the areas served and changes (i.e., increases) the land valuation. New infrastructure servicing communities within the Greenbelt enables these communities to grow and creates pressure to encroach into areas under Greenbelt protection. Infrastructure that services communities outside the Greenbelt could encourage further sprawl, while infrastructure linking the inner and outer rings of the GGH encourages the development of bedroom communities. Sprawling development on farmland outside the Greenbelt affects the long-term viability of the economically critical agriculture system.

Water and wastewater infrastructure also has a strong potential for causing indirect impacts through its influence on urban development patterns. Where trunk water and sewer infrastructure are built in the coming years, and what capacity that infrastructure will have, will largely determine where greenfield development will go for decades to come. The location of urban development beyond the borders of the Greenbelt will in turn affect opportunities for its future expansion.

2.2 Methodology

This report combines research from primary and secondary sources. Interviews were conducted with provincial and regional staff, academics, and organizations with an interest in the protection of natural heritage and agricultural land and knowledge of infrastructure planning. Additionally, a variety of academic research papers, professional publications, municipal and provincial documents, and media reports were examined.

The highway, transit, and water and wastewater projects included in this study are all projects that directly impinge on the Greenbelt, being located entirely or partially within it. The highway and transit projects included in this study were those identified in the Growth Plan, as mapped,

[3] This report does not cover water and wastewater treatment facilities as the focus is on linear infrastructure that crosses or penetrates the Greenbelt. Linear infrastructure directly impacts the Greenbelt and has a decisive influence on the location and character of new development.

and confirmed by staff at the Ministry of Transportation (MTO) and Metrolinx, respectively. Water and wastewater projects were identified through review of Regional Water and Wastewater reports.

2.3 Existing Policies Affecting Infrastructure in the Greenbelt

The Greenbelt Plan contains policies pertaining to the construction of new infrastructure within the Greenbelt. The preamble in Section 4.2 acknowledges that new infrastructure will be needed to serve existing and permitted land uses in the Greenbelt. It also acknowledges that expansions of existing major infrastructure and new major infrastructure will be needed to serve the substantial growth projected for southern Ontario. The revised 2017 Greenbelt Plan recognizes the challenges posed by climate change in both planning and maintaining infrastructure. The general policies in Section 4.2.1 permit the expansion of existing infrastructure or construction of new infrastructure in the Protected Countryside provided that it:

- Supports agriculture, recreation and tourism, rural settlement areas, resource use or the rural economic activity that exists and is permitted within the Greenbelt; and,
- Serves the significant growth and economic development expected in Southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban centres and between these centres and Ontario's borders.

Infrastructure construction within the Protected Countryside is subject to a number of conditions, including:

- Planning, design and construction practices shall minimize, wherever possible, the amount of the Greenbelt, and particularly the Natural Heritage System and Water Resource System, traversed and/or occupied by such infrastructure;
- Planning, design and construction practices shall minimize, wherever possible, the negative impacts on and disturbance of the existing landscape, including, but not limited to, impacts caused by light intrusion, noise and road salt;
- Where practicable, existing capacity and co-ordination with different infrastructure services shall be optimized so that the rural and existing character of the Protected Countryside and the overall hierarchy of areas where growth will be accommodated in the GGH established by the Greenbelt Plan and the Growth Plan are supported and reinforced;
- New or expanding infrastructure shall avoid key natural heritage features, key hydrologic features or key hydrologic areas unless need has been demonstrated and it has been established that there is no reasonable alternative;
- Where infrastructure does cross the Natural Heritage System or intrude into or result in the loss of a key natural heritage feature, key hydrologic feature or key hydrologic areas, including related landform features, planning, design and construction practices shall minimize negative impacts on and disturbance of the features or their related functions and, where reasonable, maintain or improve connectivity;

- New or expanding infrastructure shall avoid specialty crop areas and other prime agricultural areas in that order of priority, unless need has been demonstrated and it has been established that there is no reasonable alternative;
- Where infrastructure crosses prime agricultural areas, including specialty crop areas, an agricultural impact assessment or equivalent analysis as part of an environmental assessment shall be undertaken; and,
- New waste disposal sites and facilities, and organic soil conditioning sites are prohibited in key natural heritage features, key hydrologic features, and their associated vegetation protection zones.

The above policies apply to all types of infrastructure in the Greenbelt.

The 2020 Growth Plan has some new elements to consider when planning transportation infrastructure, including: transit first planning, municipal asset management, and climate change policies. Transit first planning is set out in the Growth Plan under section 3.2.3, Moving People. Schedule 5 of the Plan illustrates the transit system connecting urban growth centres. The first priority of moving people will be public transit for transportation planning and major transportation investments. The 2017 municipal asset management regulation is to improve the way municipalities plan for their infrastructure to promote alignment of planning for land use and infrastructure as significant cost savings can be achieved by ensuring that existing infrastructure is optimized before new infrastructure is built. This principle is integrated into the policies of the Growth Plan and applies to all forms of infrastructure. The Growth Plan incorporates climate change policies under section 4.2.10. This section sets out requirements for Official Plan policies to identify actions to reduce GHGs by moving away from car dependent planning and incorporating policies that support existing and planned transit and active transportation options.

2.4 Changes to the Environmental Assessment Process

Ideally, the Environmental Assessment (EA) process would use the precautionary principle in reviewing the impacts and identify potential problems with an infrastructure project to enable informed decision-making and protect the public interest. Recent changes to the EA process streamline the steps to be undertaken and shorten the timeline from planning to construction.

Many of the projects in this report began under a Class EA or were individual EAs. The Class EA sets out simplified planning processes for groups of activities such as municipal works, and projects that do not require comprehensive individual EAs and Ministerial approval. In 2019, changes to the EA Act under Bill 108 exempt low risk projects entirely. In 2020, other changes to streamline the municipal Class EA and Individual EA process are included in Bill 197; however, the regulations have not yet been released. New individual EAs are commenced at the discretion of Cabinet, with the terms of reference determined by the appropriate Minister.

Further exemptions to some specific, ongoing individual EA projects were proposed in 2020. Until the regulations are released or the environmental individual EA studies for the GTA West

and Bradford Bypass are completed, it will be difficult to determine whether the studies completed are comparable to the EA requirements outlined in the Greenbelt Plan. Going forward, the Province will decide whether projects require an individual EA.

Greenbelt Plan Section 4.2.1 is clear that EAs are subject to Greenbelt policies that require avoidance of key natural heritage features unless there is no reasonable alternative. The Plan states: "Planning, design and construction practices shall minimize negative impacts and disturbance on features and functions and maintain and improve connectivity." Further, the EA process is not exempt from the Planning Act: under "Schedule 3.5 a decision of … a Ministry … shall conform with the provincial plans" that are in effect.

3. Highways

3.1 Existing Policies

The Greenbelt Plan does not contain any policies that explicitly address highway infrastructure. Rather, Section 4.2.1 provides general policies that cover all types of infrastructure, including highways. As described in Section 2 of this report, the general thrust of the relevant Greenbelt Plan policies is that highways (and other infrastructure) must support agriculture, recreation and tourism, rural settlement areas, resource use, and rural economic activity as well as serving growth and economic activity beyond the Greenbelt in Southern Ontario as a whole.

The Plan also includes some limitations to building infrastructure in the Greenbelt. As per policy 4.2.1.2.d, "New or expanding infrastructure shall avoid key natural heritage features, key hydrologic features or key hydrologic areas unless need has been demonstrated and it has been established that there is no reasonable alternative." When designing and building infrastructure, the footprint and negative impacts on natural heritage features and water resources are be minimized. In terms of agricultural lands, policy 4.2.1.2.f states that "new or expanding infrastructure shall avoid specialty crop areas and other prime agricultural areas…unless need has been demonstrated and it has been established that there is no reasonable alternative."

The Growth Plan explicitly addresses highway infrastructure in Section 3.2.4, entitled *Moving Goods*. Highways are tied to economic trade, with the first priority for highway investment being the facilitation of efficient goods movement by linking inter-modal facilities and corridors, international gateways, and employment areas via a goods movement network. Section 3.2.5.2 under *Infrastructure Corridors* stipulates that development along highway corridors is to be directed to settlement areas to limit highway-led sprawl.

3.2 Planning Process

At the highest planning level, the Province's intention to undertake a major highway project is usually signaled in a transportation plan for the region. The Growth Plan also provides a framework for integrated land use and transportation strategy for the region. In the past, Metrolinx created the Regional Transportation Plan, but the soon to be released Ministry of Transportation (MTO) 2051 GGH Transportation Plan will combine provincial transit and highway development.

MTO staff interviewed indicated that they utilize an integrated transportation network planning process for the GGH. The MTO process assesses proposed projects against metrics designed to prioritize transit over single occupancy vehicles, as well as efficient goods movement. Metrics include ratio of transit to auto travel time, average transit travel time per trip, and percentage of jobs accessible in less than a 45 min commute by transit. Goods

movement metrics include delay in travel time, and average travel time of trucks from border crossings to major freight generators and major distribution centres (ports and airports).

Transportation projects are required to comply with Greenbelt Plan and Growth Plan policies. Projects that were EA approved before the Greenbelt Plan was adopted have been limited to mitigation measures in the later detailed design stages. For projects planned after the adoption of the Greenbelt Plan, MTO officials suggest that the Plan's policies have been considered throughout the project planning process. For example, at the design stage, the GTA West EA process incorporated Greenbelt guideline recommendations for the design and construction of the sections through the Greenbelt to minimize impacts (Ministry of Transportation of Ontario, 2013). Subsequently, the GTA West expert panel, commissioned by the Minister of Transportation in 2016, found that the EA did not conform to the Greenbelt Plan and the need for the highway was not identified, and the government subsequently discontinued work on the EA.

Recent changes to the EA Act have replaced the Class EA system with a streamlined process. Larger and more complex highway projects with a potential for major impacts, especially major highway extensions that require the creation of a new ROW, may remain subject to an Individual EA which can take five or more years to complete. Additional changes made in the summer of 2020 have exempted the GTA West Highway, the Bradford Bypass, and smaller highway expansion projects from provisions of the EA process and limited future public participation and notification requirements.[4]

Interviewees agree that highway planning appears to be evolving in a negative way as provincial policies are changing to limit transparency and public involvement. One interviewee suggested that developer influence and a pro-greenfield mandate is a factor pushing the Province to move ahead with highway projects.

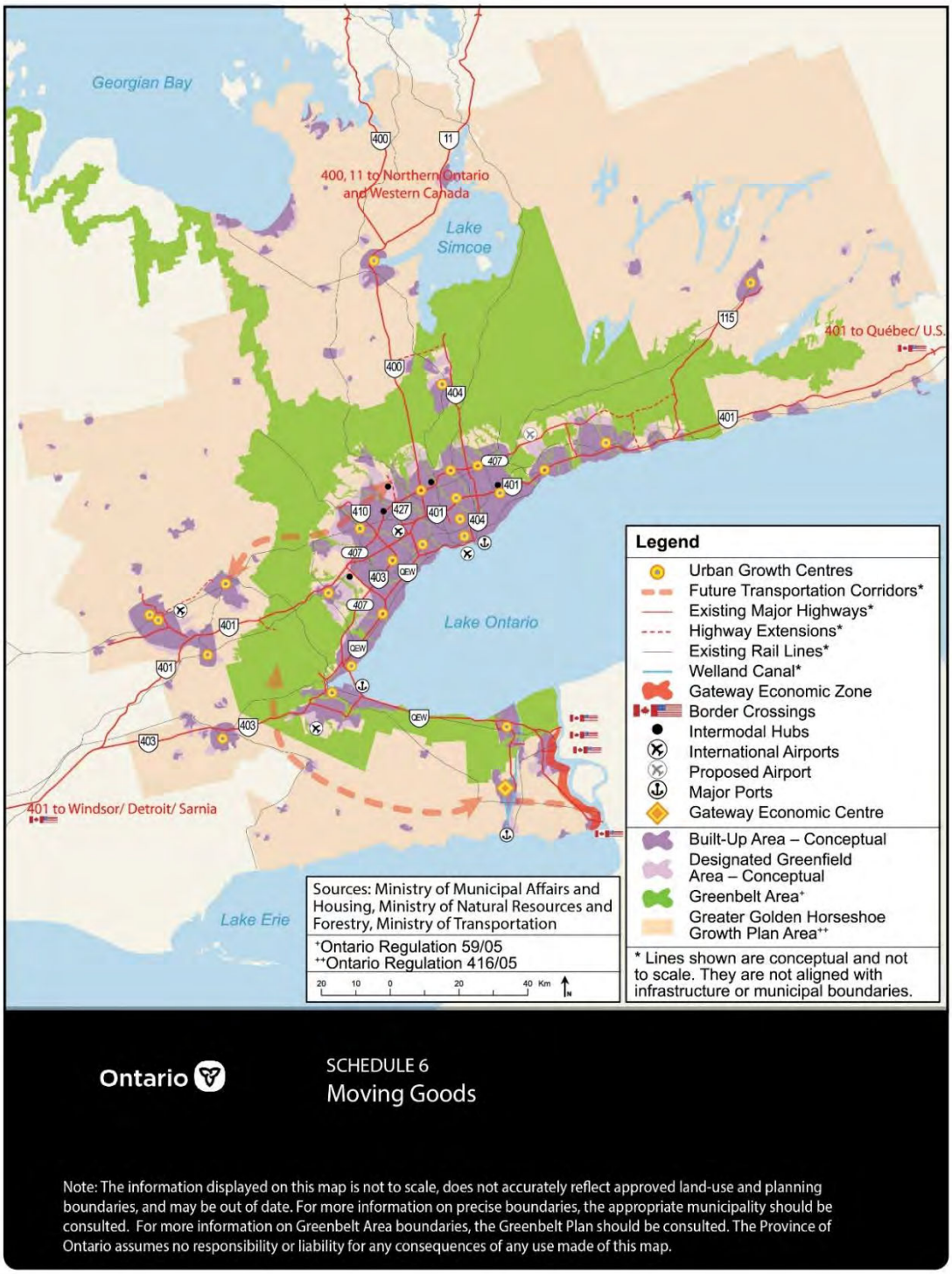
Three of the four highway projects with potential impacts on the Greenbelt identified in an earlier (2011) report remain unbuilt, and only one highway (407) is built out. The extension to the existing Highway 404, part of which is called the Bradford Bypass, and future transportation corridors, known as the GTA West and Niagara GTA corridors, remain unbuilt. These projects are identified in Schedule 6 of the Growth Plan, which provides a schematic map of the future transportation corridors envisioned to 2041 (Figure 1).

The three remaining projects have undergone or are presently undergoing a streamlined Individual EA. The Niagara GTA corridor EA was approved in 2006, but the project was withdrawn after completion of the EA. It appears no detailed design work on the highway has been completed recently, but MTO staff suggested this highway may reappear in the 2051 RTP. The EA for the highway extension through the Holland Marsh, known as the Bradford Bypass, and the GTA West EA are ongoing. In July 2020, the Ministry of Transportation posted a

[4] Proposed regulation for a streamlined environmental assessment process for the Ministry of Transportation's Greater Toronto Area West Transportation Corridor project (2020). https://ero.ontario.ca/notice/019-1882

proposal for an exemption regulation for the 404 extension and GTA West to speed up the design and construction of both highways. Phase 2 of the GTA-West EA is underway with design work ongoing.

Figure 1: A Place to Grow: Growth Plan for the Greater Golden Horseshoe, Schedule 6 – Moving Goods



A 45-kilometre extension to Highway 404, planned in the late 1990s, is to be built in stages to link northeastern York Region and northwestern Durham Region to the core of the GTA. Most of the planned extension runs through what is now the Greenbelt (Figure 1). An Individual EA was carried out by MTO and approved in 2002 by the Minister of the Environment and Energy. The remaining unbuilt areas of the 404 extension lie within the Greenbelt's Protected Countryside in York, Durham Region, and Township of Brock from Ravenshoe Road to Highway 12 near Beaverton on the east side of Lake Simcoe. Further extension of the 404 is not moving ahead at this time.

3.2.1 Bradford Bypass

The proposed Bradford Bypass route would connect the 404 to highway 400 near Bradford. It crosses one of the province's only two specialty crops areas in the Greenbelt, the Holland Marsh. As the EA was approved in 2002 prior to the Growth Plan and Greenbelt Plan, the policies of these provincial plans are technically not applicable. The following direct impacts are expected from the proposed 16.2 km, four lane highway: phosphorous pollution in fish spawning habitat and the destruction of 23 acres of provincially significant wetlands (PSW) in the Holland Marsh and 81 acres of significant wildlife habitat.[5]

According to staff at MTO interviewed for the 2011 report, the Bradford Bypass was unlikely to be built before 2031. At this time, however, highway planning is moving ahead rapidly. In 2020, MECP and MTO proposed an exemption for this EA to remove the requirement of preparing a Transportation Environmental Study Report (TESR) for the preliminary design and a design and construction report(s) (DCR) for the detailed design of the Bradford Bypass. MTO plans to use studies from 2002 to save up a year to complete new studies that were required under the conditions for the EA, including a "…Stage 3 archaeological assessment at the commencement of the design of the project; the stormwater management plan and groundwater protection plan as referenced in the individual Environmental Assessment; a detailed noise report prior to the start of construction of the project; and commitments from the environmental assessment related to further work such as consultation requirements with agencies, avoidance principles through sensitive areas, and other similar work." The exemption would also eliminate the requirement to distribute a Notice of Completion which would normally initiate a 30-day public consultation period.

The Region of York remains supportive of building the Bradford Bypass. According to York Region Chair and CEO Wayne Emmerson, "The project will ensure our communities continue to be places where people want to live, and businesses want to invest." (Dunn 2021)

In contrast, community groups and other stakeholders see urban growth in the Holland Marsh area of the Greenbelt as problematic. Many groups have been voicing concerns about

[5] Proposal to exempt various Ministry of Transportation projects from the requirements of the Environmental Assessment Act (2020). https://ero.ontario.ca/notice/019-1883

highway-led sprawl since 2006. It "would contradict the policies to control urban sprawl put in place by the provincial government over the past three years, including the Greenbelt Plan, amendments to the Planning Act, and the revised Provincial Policy Statement under the Planning Act," said Paula Boutis, Sierra Legal Defence Fund. In February 2021, a consortium of environmental organizations asked the federal government to undertake an environmental impact assessment for the Bradford Bypass, and it responded that it will review the request and make a decision in May 2021.

More recently, legislative changes such as the EA exemptions limit opportunities for public participation. Ecojustice notes that a number of public-sector infrastructure projects, pending a slew of additional proposals, may be exempted from EAs and consequently preclude the public from being informed and expressing their concerns, as public consultations are part of the EA process (Wang, 2020).

3.2.2 GTA West Transportation Corridor

The GTA West Transportation Corridor project was launched in 2008. The project proceeded as an Individual EA, which is currently in Phase 3, with design ongoing. The Corridor study area is 50km long north of Highway 407, spanning from Highway 400 in York Region westward through parts of the Greenbelt in Peel and Halton Regions, and terminating at the 401 and 407 interchange near Georgetown.

The purpose of the EA was to assess long term transportation problems and opportunities to the year 2031 and consider options to provide better linkages between the Urban Growth Centres identified in the 2006 Growth Plan and existing urban growth centres. A highway and transitway were initially part of the EA, similar to the 407ETR where a transitway was part of the initial planning. Transit planning in either ROW has not proceeded according to the Regional Transportation Plan (RTP).

The GTA West will go through the Greenbelt at different points, and cross 85 watercourses, 220 wetlands and significant forested areas and 1000 ha of wildlife habitat. In a 2020 letter to the province, the Toronto Region Conservation Authority (TRCA) suggests the truncated EA may not fulfill the objects of the EA Act.[6] The TRCA notes there is no mechanism in place for the protection of life and property or the management of natural resources at the design stage of the highway. The TRCA and CVC have offered to enter into a voluntary agreement to provide services in the design process.

[6]TRCA's Submission to MECP on ERO #019-1882 (2020).
https://pub-trca.escribemeetings.com/filestream.ashx?DocumentId=6249

Figure 2. Proposed route of the GTA West Highway[7]

[7] As the Crow Flies cARTography (2020). https://environmentaldefence.ca/2020/08/11/6-reasons-not-fast-track-construction-ontarios-new-mega-highway/

The GTA West was cancelled by the provincial government in 2018 after a report by an expert panel advised against proceeding with the project. The panel examined potential alternative approaches to meeting future transportation demand beyond those set out in the EA. Alternative scenarios delivered travel time savings in the same order of magnitude as the planned corridor. They included: congestion pricing (equal to up to 10 times greater time saved); reducing truck tolls on the 407 ETR; better land use management; and realizing the Regional Express Rail GO project (electrification). The importance of the integration of land use and transportation was highlighted in the report's findings: a slower-growth and more compact land use scenario resulted in shorter travel times than those delivered by the proposed highway. The panel report also noted that the highway will encourage development outside of settlement areas and in the Greenbelt.

In addition to examining alternatives to the GTA West corridor the expert panel explored whether the EA followed the Greenbelt Plan policy. The panel determined that the "…EA made the decision to propose a new corridor and to determine its location without conforming to the Greenbelt Plan (2005) policy requirements to avoid key natural heritage and key hydrological features unless need had been demonstrated and no reasonable alternative was available." In the end, the Panel recommended not continuing the protection of the corridor identified in the GTAW EA. In February 2018, the government of the day cancelled the EA, but it was revived later that year with the election of a new government.

Beyond the conformity issues with the Greenbelt Plan, there are inconsistencies with the planned highway and the Growth Plan, which directs growth to urban areas and prioritizes transit planning. In 2020 critics of the highway published a report arguing public transit investments in the western GTA could move four times as many people as the highway could, for a comparable cost (Environmental Defence 2020a). Although traffic volumes on area roads today is light and population allocations are largely directed to urban areas to the south, not the rural areas near the highway, the MTO estimates the highway will move 300,000 vehicle trips a day to provide connectivity between urban growth centres. The original corridor was to include a transitway, but it is not included in Metrolinx's 2041 Regional Transportation Plan.

The opposition to the highway has increased since the EA was reinstated. Despite the continued opposition, the Province is moving forward with the design of the highway in an expeditious manner, including publishing an exemption for the EA in the summer of 2020. The exemption allows a streamlined process for assessing potential environmental impacts of the project as well as changing the public consultation requirements.[8]

Municipal support of the GTA West has been changing. As of early April 2021, the City of Mississauga, the City of Vaughan, the Town of Halton Hills, the Town of Orangeville, and King Township have formally opposed it, while York Region continues to support it. Brampton Council endorsed an urban boulevard concept plan with transit supportive densities.

[8] Proposed regulation for a streamlined environmental assessment process for the Ministry of Transportation's Greater Toronto Area West Transportation Corridor project (2020). https://ero.ontario.ca/notice/019-1882

Brampton planning staff cited environmental protection, sprawl reduction, better sense of place, less land consumed and improved financials as impetus for moving away from a highway led subdivision model.

There are two big questions regarding the future of the highway: one is the Provincial 2051 growth projections, and the other is the cost. In 2012 the EA estimated a cost of $4-6 billion for construction alone. Updated cost estimates for construction, land expropriation and maintenance are expected in 2021 as the detailed design is completed.

3.2.3 Highway 404 Extension

The 404 extension from Davis Drive in Newmarket to Highway 12 in the Township of Brock was approved in 2002. At this time, the highway is built as far as Ravenshoe Road. According to MTO the 13km highway extension from Newmarket to Ravenshoe road completed in 2014 makes it faster to travel into and out of the Greater Toronto Area, reduces congestion, and creates jobs by getting people and goods moving. The increased mobility from the outer ring to the inner ring of the GTA encourages more traffic and results in longer commutes and higher transportation costs for commuters. It is likely the GGH long term transportation plan will indicate a completion date for the highway extension from Ravenshoe Road to Highway 12.

Impacts from highway sections through the Greenbelt to date include:

- Fragmentation of agricultural land and system
- Loss of land in the Protected Countryside in the Greenbelt
- Growth outside of settlement areas identified in the Growth Plan
- Increased GHG emissions
- Loss of habitat and wildlife

According to environmental organizations, the mitigation efforts do not compensate for the loss of natural habitat and farmland occasioned by the highway extension; many of the impacts simply cannot be mitigated. They argue that the highway extension should have been avoided altogether.

3.2.4 Other Projects

The projects described above were foreseen in the original Growth Plan within its 2031 planning horizon. These are the projects that are currently being built or planned by MTO. Other highway projects that could affect the Greenbelt had been proposed in other provincial documents in the years prior to the creation of the Growth Plan. The Toronto-Related Region Futures Study, conducted by the IBI Group and Dillon Consulting for the Neptis Foundation (2002), summarizes these highway projects in the context of its goal of predicting the long-term effects of different infrastructure development scenarios on growth patterns in the GGH. The study assumed that the GTA West, the 404 extension, 407 East, and Niagara GTA Corridor would be built before 2031 under a business-as-usual (BAU) scenario following growth projections that were not realized in the 905 region.

The Niagara-GTA Corridor, also known as the Mid-Peninsula Corridor, was planned through an Individual EA. The idea of creating a new highway on the Niagara Peninsula has been discussed since the1990s. The corridor study area consisted of much of the City of Hamilton and the central and south-eastern portions of Niagara Region. The stated purpose of the EA was to assess long-term transportation problems between the GTA and the US border. In 2013, the government shuttered the proposed highway and expanded Highway 406 to Welland (outside of the Greenbelt) to increase highway capacity. It is likely, however, that the Niagara-GTA Corridor will be included in the 2051 GGH Provincial Transportation Plan. Other projects underway or under consideration include:

- Currently underway, the widening of Highway 400 from Major Mackenzie Drive to Barrie to eight lanes, with a segment in the Greenbelt from just south of King Road to Newmarket.
- A major extension to Highway 427 through the Greenbelt going all the way to Simcoe County (currently a short extension to Major Mackenzie Drive is being constructed, which stops short of the Greenbelt)
- Highway 7 from Kitchener to Guelph
- Garden City Skyway Twinning Bridge in St. Catharines
- Highway 6 and Morriston Bypass

Although none of these projects appear in the Growth Plan, some have strong development industry and municipal lobbies in their favour and others are upgrades to manage traffic flow. At this time, there are no dedicated bus lanes on these widened corridors despite, the planning for transit and the transit first policies in the Growth Plan.

3.3 Direct Impacts

Highway projects that entail the creation of a new ROW in the Greenbelt can potentially have significant direct impacts on agricultural and natural areas (Forman and Alexander, 1998). Highway ROWs are very wide—sometimes in excess of 150 metres — and are likely to have extensive impacts on the landforms they cross. In agricultural areas, a new highway ROW can result in the permanent loss and fragmentation of productive land that cannot be replaced. At least 15 hectares of agricultural land would be taken out of production for every kilometre of highway built. Just as critical, a highway introduces a largely impermeable barrier, potentially severing farm properties and restricting connections between neighbouring properties. By restricting the movement of materials and equipment, the barrier created by a highway could have a negative impact on farming operations in a wide area on either side of the highway ROW.

In natural areas, a new highway ROW introduces stressors that can affect plant and animal habitats (EPA, 1994).[9] Some of the stressors are the direct result of highway construction, including:

- Alteration of topography
- Vegetation removal
- Erosion, sedimentation in adjacent watercourses, and soil compaction during groundwork before construction
- Dewatering and inundation due to penetration into the groundwater table and blockage of surface watercourses during construction.

Other stressors occur on an ongoing basis after the highway has been built and put into operation, including:

- Acidification and salinization of surface and groundwater due to pollutants in runoff from the highway, flooding and erosion
- Micro-climate alterations, especially warming, due to solar heat absorption by asphalt surfaces and heat dissipated by vehicles
- Contaminant toxicity (through runoff and air pollution)
- Noise and visual disturbance
- Introduction of non-indigenous species through the creation of new, artificial habitats
- Direct mortality from road kills
- Loss of resiliency

The cumulative impacts of highway development, resulting from the above stressors to plant and animal habitat, can be grouped into three general categories:

- Destruction of habitat, which results in the elimination of certain habitat types;
- Fragmentation of habitat, which results in the loss of habitat integrity and connectivity through the creation of barriers to species and ecological processes; and,
- Degradation of ecological integrity and habitat, which results in the loss of habitat integrity through ongoing disturbance of resident species through noise, contamination with pollutants, like road salt and alteration of natural processes.

The TRCA identified in a recent letter to the Province that the preferred route for the GTA West crosses multiple conservation areas as well as a number of significant natural heritage features (NHF). As a result, the highway will impact the NHF, habitats, species and wildlife connectivity, and likely create or exacerbate flood and erosion hazards that will increase chloride contamination in the NHF and reduce the ability of our natural areas to be resilient to the impacts of climate change.[10]

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[9] An NGO called the Ontario Road Ecology Group (OREG) has been studying the wildlife impacts of highway projects and is being consulted by the MTO with regard to the potential impacts of the current highway projects. More information is available on the OREG website. See http://www.torontozoo.com/conservation/RoadEcologyGroup.asp.

[10] TRCA's Submission to MECP on ERO #019-1882 (2020).
https://pub-trca.escribemeetings.com/filestream.ashx?DocumentId=6249

New highways also have potential impacts on tourism and recreational activities in the Greenbelt. On one hand, highways can facilitate access to the Greenbelt from the surrounding urbanized areas. On the other hand, highways can negatively impact the attractiveness of the Greenbelt as a destination for tourism and recreational activities through the destruction of natural heritage and introduction of visual blight as well as by generating ongoing noise and air pollution. Furthermore, highways can fragment recreational areas and interfere directly with certain recreational activities (such as hiking, ski or snowmobile trails) by introducing an impenetrable barrier.

The impacts of a highway widening project are less severe than those of new highway construction in the sense that widening occurs in previously disturbed corridors. Widening will augment the severity of some of the previous impacts. In particular, additional agricultural land and natural heritage is likely to be lost.

3.4 Indirect Impacts

The main indirect impact of highway development is that they have a strong tendency to stimulate land development. There is a body of empirical research from across North America that has shown that highways in urban regions induce suburban sprawl and fragment agricultural systems (e.g., Boarnet and Haughwout, 2000; Heavner, 2000; Hansen et al., 2001, Song, Ye, Zhu, Deng, 2016). Although the proponents of new highways often claim they are needed to address current travel demand or facilitate the movement of goods, the empirical evidence shows that the majority of properties in highway corridors tend to be built out after the highways have been put in place. Looking at urban regions as a whole, it has been shown that lands within highway corridors are more intensively developed than non-corridor areas (Heavner, 2000). In other words, highways have a powerful structuring effect on urban development.

Given the recurring pattern of highway construction inducing development, it is expected that development pressures will surge in areas surrounding the highway. Although the Growth Plan plans out development patterns at a macro-scale, municipalities still have room to plan at the meso- and micro-scales. They are, in principle, free to designate any land outside the Greenbelt for greenfield development as long as the Growth Plan policy requirements are met.

Greenbelt municipalities face pressures to designate areas as close as possible to the new highway corridors for greenfield residential development. Moreover, the Growth Plan obligates municipalities to reserve land immediately adjacent to highways for employment uses. In 2020, York Region requested provincial approval to open up land in the Greenbelt for employment uses along highway corridors in King Township, East Gwillimbury and Stouffville (Javed, 2020). The pressure to allow development on land along highways in the Greenbelt will only increase as more highways are developed through the Greenbelt.

Encroachment of development and highways beside the Greenbelt results in fragmentation of agricultural and natural heritage systems within the Greenbelt and extend beyond the current Greenbelt boundaries. For example, requests from municipalities have been processed by York Region to downgrade agricultural land in the Greenbelt from agriculture to rural due to fragmentation.[11]

The expected result of widening existing highways or constructing new highways through the Greenbelt is increased levels of car commuting in the GGH (induced demand). All the highway projects described in Section 3.3 have the potential to facilitate commuting between the core of the GTHA and parts of the outer ring: northern York Region and the southeast shore of Lake Simcoe in the case of the 404 extension; Brampton, Caledon and southern York Region in the case of the GTA-West; and Hamilton and Niagara Region in the case of the Niagara-GTA corridor. Modeling studies by Metrolinx show that new or increased highway capacity in the GTA-West and Niagara-GTA corridors combined would entail an increase in vehicle kilometres travelled (KT) and GHG emissions of roughly 10% (Metrolinx, 2008a).

In planning the GTA West and Niagara GTA corridors, MTO claims that it is considering their potential to facilitate increased commuting between the inner and outer rings of the GGH. For both projects, MTO modeled the effects of the proposed solutions on "regional self-containment"—i.e., how would commuting between the inner- and outer-rings increase under the proposed solution. According to MTO, the preferred solutions for the GTA West and the Niagara GTA corridors are not predicted to have a significant effect on rates of commuting by automobile between the outer-ring and the GTHA. However, the model assumes that changes in population and employment over time will be as projected in the Growth Plan. The model does not consider the dynamic feedback loop that invariably occurs between highways and surrounding land uses—i.e., that the presence of highways induces changes in land use, and changes in land use affect how highways are used. As noted above, modelling conducted by the GTA West expert panel showed that commuting across the GTA would be reduced by 30 seconds if the GTA West highway was built.

3.5 Alternatives

There are a number of potential alternatives to developing new highways or widening existing highways. These can be grouped into three broad options: (1) optimizing the use of existing roads and highways, especially shifting to alternatives to the single-occupancy vehicle; (2) shifting goods movement and travel demand to public transit or rail; and, (3) ensuring transit supported development with enough density to cover the costs of rapid transit (i.e. 150 pp/ha for GO transit).

[11] The Council of The Regional Municipality of York Minutes (January 30, 2020) https://yorkpublishing.escribemeetings.com/Meeting.aspx?Id=f1388637-b351-42be-947d-67a4dc2e990c&Agenda=PostMinutes&lang=English&Item=9

Optimization of existing roads and highways can be accomplished through a variety of means, including by utilizing intelligent transportation systems and increasing the capacity of regional roads through road widenings. For example, programming traffic lights along arterial roads to allow transit vehicles to travel in the peak direction without stopping ("green wave") can significantly increase capacity (Metrolinx, 2008b). As for highway capacity, in planning the GTA West and Niagara GTA corridors, MTO is considering practices such as tighter traffic speed controls, ramp metering systems to control the rate at which vehicles enter highways, provision of transit on high occupancy vehicle lanes, and better incident management and detection (i.e., detecting and removing broken down vehicles or collided vehicles), data sharing and improved collaboration between provincial and municipal agencies in charge of roads, signals and parking. Other measures proposed by Metrolinx (2008b) include implementation of reversible lanes (to maximize capacity in the peak directions), wider implementation of carpool parking and park-and-ride lots, and, to improve goods movement, reserved trucking lanes and new highway connections.

According to Transportation Action Ontario, MTO is overlooking certain types of more radical upgrades to existing roads before proceeding to plan new multilane, divided highways such as converting two-lane undivided highways to controlled access highways by grade separating all junctions with other roads, but without twinning—i.e., the highway remains a two-lane undivided road but has no intersections. The resulting capacity increase is considerable but most of the impacts that would result from twinning an existing highway or, worse, creating an entirely new divided highway corridor are avoided. Highways of this type do not currently exist in Ontario but are found in other Canadian jurisdictions. This type of intervention might have resolved traffic issues in Durham and obviated the need for the Highway 407 extension. Transportation Action Ontario contends that the expected demand in the area is not sufficient to merit a new highway corridor with a separate bus transitway. Grade separating the existing Highway 7 would have offered an intermediate capacity increase sufficient to meet the projected demand.

A study by The Pembina Institute on the reduction of GHG emissions from passenger transportation in the GGH (Burda et al., 2010) proposed a set of measures to limit highway development in the GGH. One measure proposed in the study is more aggressive investment in high-occupancy vehicle (HOV) lanes for buses. It suggests that some existing traffic lanes on the QEW and all 400-series highways be converted to HOV lanes, in contrast to MTO's plan to add HOV lanes as part of highway expansion programs. The implementation of a regional network of HOV lanes should be accompanied by more aggressive development of employer transportation demand management (TDM) programs to encourage carpooling and vanpooling and to maximize the use of the HOV lanes. The study also suggests that highway extensions into greenfield areas, such as the 404 and 407 extensions, be cancelled and that investment be redirected towards public transit, which would be consistent with the Growth Plan.[12]

[12] Growth Plan policy 3.2.3.1 states that investment in public transit is to be prioritized.

Another strategy that has been considered by MTO and Metrolinx[13] is the use of road pricing.[14] While improving transit constitutes a carrot, helping to lure people away from road use, road pricing could act a stick, helping to push people out of automobiles and into other modes of transportation. Ideally by shifting trips to other modes, road pricing for commuter traffic could help free up highway capacity for commercial vehicles and diminish the justification for new highway projects. However, this has not always proven to the case, as tolls have driven trucks off the 407 and onto regional roads. High Occupancy Toll lanes were implemented in 2016 on the QEW to get traffic moving but these lanes are not available for truck traffic.

The main barrier to moving ahead with extensive road pricing in the GGH has been its presumed political unpopularity, but this may change as residents become increasingly frustrated with gridlocked highways and improvements are made to transit efficiency.[15] There are public safety and public interest issues that need to be considered when implementing road tolls. There appears to be a disconnect between empirical evidence and the value of road tolls in improving goods movement (Swan & Belzer, 2010). Research indicates that truck traffic on secondary roads increases when toll highways are implemented. In order to avoid tolls, trucks use slower regional roads, damaging roadways and introducing losses to the economy from delay of goods to loss of toll income. Tolls have been effective at reducing commuter traffic when there are fast, transit alternatives; however research shows there is an inverse relationship between road tolls and facilitating goods movement. Exemptions for truck traffic from tolls could improve goods movement as noted in a recent Toronto Star article (Webster, 2020).

Shifting travel demand from highways to transit is another strategy to reduce the need for highway improvements. Bus rapid transit and rail projects reduces the demand on highways from commuter traffic, freeing up capacity on existing highways and obviating the widening or construction of new highways. In defining alternative transportation infrastructure scenarios, MTO uses metrics to plan and prioritize the development of transit ahead of highways. However, the 407 does not include a transitway and the planned GTA West transitway has not been built. A number of groups have proposed solutions to improve public transit, such as revenue from carbon pricing for transit and redirecting investments from highway projects that service sprawl to transit (see Burda et al., 2010).

There is also the opportunity to shift goods movement by rail. Metrolinx and private rail companies are looking at separating freight rail and transit rail in order to move forward with Regional Express Rail plans, which will not only speed up GO trains but facilitate the efficient

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[13] Metrolinx is undertaking a study to explore different approaches to road pricing in the GTHA.

[14] Highway 407 ETR (Express Toll Route) and 407 East are the only toll highways in the GGH.

[15] As reported by Trent University economics professor Harry Kitchen (2008), newspaper articles and commentaries extolling the virtues of road pricing schemes to combat congestion and reduce environmental damages are appearing more and more frequently in the GGH and a recent Decima poll in GTAH indicated that 45% of respondents favour paying road tolls if the funds are dedicated to solving transportation gridlock.

movement of freight by rail. The MTO EA process did not assess this alternative for the GTA West.

3.6 Mitigation and Enhancement

If additional highway capacity is deemed necessary in a particular corridor, the ideal strategy to minimize adverse direct Greenbelt impacts is to select an alignment that avoids or minimizes Greenbelt crossings. In the GTA West project, the preferred option calls for the new corridor through the Greenbelt, but the preferred route avoids the widest area of the Greenbelt. In the Niagara GTA project, the preferred solution largely avoids the Greenbelt except for the portion of the corridor within the City of Hamilton, where a highway segment will go through the Niagara Escarpment.

When agricultural areas cannot be avoided, alignments that minimize the number of properties requiring expropriation and prevent fragmentation of existing properties can be chosen. Underpasses and overpasses can be built to provide connections across the highway, facilitating the movement of materials and machinery across the highway.

Where avoidance of natural heritage features is not possible, a variety of design features can be incorporated to minimize negative impacts. Key mitigation measures that are increasingly common on new highways are wildlife underpasses to mitigate the fragmentation of terrestrial animal habitats and stormwater management techniques and features to prevent runoff into adjacent watercourses. Compensation schemes or damage offsets to ensure no net loss or net gain of certain types of habitat are also an increasingly common requirement.

Further mitigation of impacts can be achieved through the choice of construction techniques and phasing. In terms of techniques, this means clearing as little vegetation as possible and containing construction materials and equipment within the ROW. Construction phasing can be particularly important for the construction of water crossings. These can be phased to avoid migration and spawning seasons, preventing damage to fish stocks. After construction, rehabilitation measures can be undertaken, such as replanting native vegetation along the ROW (EPA, 1994).

For mitigating the indirect impacts of highway construction, a key preoccupation should be minimizing the growth of private passenger vehicle traffic to keep capacity open for fluid goods movement—the supposed reason why highways need to be built in the first place—and to prevent increases in air pollution and GHG emissions. One possible measure to discourage personal automobile use on new highways is to limit the number of highway interchanges (Burda et al., 2010). Fewer interchanges, particularly interchanges near major residential areas, could render the new highways less convenient for personal automobile use for commuting or other purposes.

4. Transit

4.1 Existing Policies

The Greenbelt Plan contains general infrastructure policies. The introduction to the Greenbelt Plan speaks to how the "Greenbelt and Growth Plan work in concert to support…. the achievement of complete communities that are transit supportive." Policies in the Growth Plan require intensification around transit stations. The Greenbelt policies refer to transit as it relates to Settlement Area policies only, otherwise specific policies related to transit may be found in the Growth Plan.

The vision for the Growth Plan states: "implementation of A Place to Grow is supported by Metrolinx (an agency of the Government of Ontario created to improve coordination and integration of all modes of transportation in the GTHA) and The Regional Transportation Plan (RTP) formerly called The Big Move (the GGH's regional transportation plan)." In Section 2.2.4. of the Growth Plan specific direction is provided on planning for priority transit corridors and major transit station areas.

Section 3.2.3.1 states that "public transit will be the first priority for transportation infrastructure planning and major transportation investments." The Plan goes on to provide guidelines for municipalities regarding how transit investments and growth management are to be integrated. None of the policies are specific to the Greenbelt but apply to the GGH as a whole. Metrolinx staff note that they are required to ensure conformity with the Growth Plan and its relationship to the Greenbelt Plan.

While the Greenbelt Plan allows infrastructure that supports existing towns and villages or infrastructure that serves growth in urban areas and economic development beyond the Greenbelt, Metrolinx has concluded, "the development of land for transit infrastructure projects is encouraged in the Greenbelt Plan." In Settlement Areas policy 3.4.2, the Greenbelt Plan states: "Municipalities shall incorporate policies in their official plans to facilitate the development of community hubs that… facilitate access through locations served by a range of transportation options, including active transportation and, where available, transit." It is likely that this policy is being loosely interpreted as there is no specific policy that encourages the development of land for transit infrastructure in the Protected Countryside.

4.2 Planning Process

This section focuses on the planning and impacts of interregional transit services that cross the Greenbelt to connect inner- and outer-ring communities. It does not cover bus transit ways and dedicated bus lanes that are being developed as part of highway extension and expansion projects; these are planned under the auspices of the highway planning process described in Section 3.2 above. Otherwise, planning for interregional transit falls under the

mandate of Metrolinx. GO Transit, which is part of Metrolinx, operates interregional transit services in the GGH.[16]

Other than bus transit ways and dedicated bus lanes on highways, commuter trains are the main type of public transit infrastructure that will link the inner and outer rings of the GGH. Commuter railway projects and transit station must follow a specific type of environmental assessment, the Transit Project Assessment process (TPAP).

Along with the TPAP process, projects must be supported by a business case. If such a study shows that there is strong demand for the new service and that existing railways could, with some upgrades accommodate the additional traffic, the project is likely to proceed to detailed planning. In the past, the GO Transit EA process proceeded in steps similar to those in a highway Class EA. In 2020 the EA process was streamlined for a number of transit projects under the *Build Transit Faster Act*, to work more effectively with the public-private partnership delivery model. The new process shortens timelines for public consultation and introduces an issue resolution process, rather than a bump up process.

This process is outlined in the Guide to Environmental Assessment requirements for transit projects (Ministry of Environment, Conservation, and Parks).[17] It is only applicable to public sector proponents, such as municipalities. In the case of private sector proponents, the EA process and the TPAP does not apply. The TPAP process differs significantly from the EA process: it is proponent driven. Rather than the province or Metrolinx creating a long list of stations and vetting them through selection criteria, new stations are now proposed by the municipality or developer.

There is no requirement for a project rationale or planning alternatives. Minister of Environment approval is not required unless there is a potential for a negative impact on a matter of provincial interest, such as if the property is within a key natural feature or key hydrological feature in the Protected Countryside. Agricultural features and Specialty Crop Areas in the Greenbelt are not noted as areas of provincial interest. The streamlined assessment process is to be completed in 6 months. Projects may proceed through an "individual" environmental assessment (Part II of the Environmental Assessment Act) or an approved class environmental assessment process rather than follow the streamlined process. Although transit station projects may impact landowners within an 800 m radius, only property owners within 30 metres are given notice.

At this time, it is unclear if this new process to determine environmental impacts would satisfy the test in the Greenbelt Plan that subjects all infrastructure projects to an EA or similar environmental study. According to Metrolinx staff, mitigation is limited to an assessment of

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[16] It is worth noting that Via Rail operates train services linking inner- and outer-ring communities. Although not intended as a commuter service, Via trains are most likely used for commuting purposes by a certain number of people. There are currently plans to build new tracks from Toronto to Peterborough, which may impact the Greenbelt.https://corpo.viarail.ca/en/projects-infrastructure/high-frequency-rail

measures to mitigate negative impacts. It is not clear what that entails for design and construction of a transit project.

Metrolinx's Regional Transportation Plan (RTP) goes beyond the Growth Plan to provide detailed strategies for the regional transportation system. One of those strategies is to integrate land use with transit planning. While Metrolinx plans the transit system, municipalities directly influence the projects chosen as evident by the number of stations located in greenfield areas or in areas constrained by the Greenbelt Plan. These decisions may be improved or made more transparent if the maps and criteria for station locations in the RTP and EA process identified the Greenbelt Plan boundary, agricultural land, and natural features.

Metrolinx used demand modelling to create the RTP, which includes three scenarios (a boom, market, and decline scenario). The boom scenario assumed considerable growth in the outer ring beyond the Greenbelt. Some of the key data sources used in the RTP are from 2011 as the 2016 Census data was not available when the RTP was being developed. As of late 2020/early 2021, the province and Metrolinx were updating the RTP. Some staff in regional governments are concerned that the RTP may result in infrastructure leading growth rather than using a coordinated approach to integrate growth with existing urban infrastructure to maximize efficiencies in existing urban areas.

4.3 Projects

The next section identifies public transit projects that entail construction of infrastructure including stations within the Greenbelt.

4.3.1 GO Stations in or near the Greenbelt

The Growth Plan is clear that areas around GO transit Stations are to be planned and designed to support a density of 150 people/hectare. While the Minister can approve a lower target if there is conflict with provincial policy, the intent is that transit stations will be central nodes for urban growth.

In conflict with this policy, four new stations have been approved or planned by Metrolinx within the Greenbelt, specifically Gormley, Bloomington, Grimsby and Kirby. There are also a number of stations in the planning stages in or adjacent to the Greenbelt: Bolton, Gore (Mayfield West), and Agerton. Generally, these new GO stations are located on the edge of towns rather than servicing the existing developed areas. Proximity to the Greenbelt was considered in site consideration and through municipal and public feedback according to Metrolinx staff.

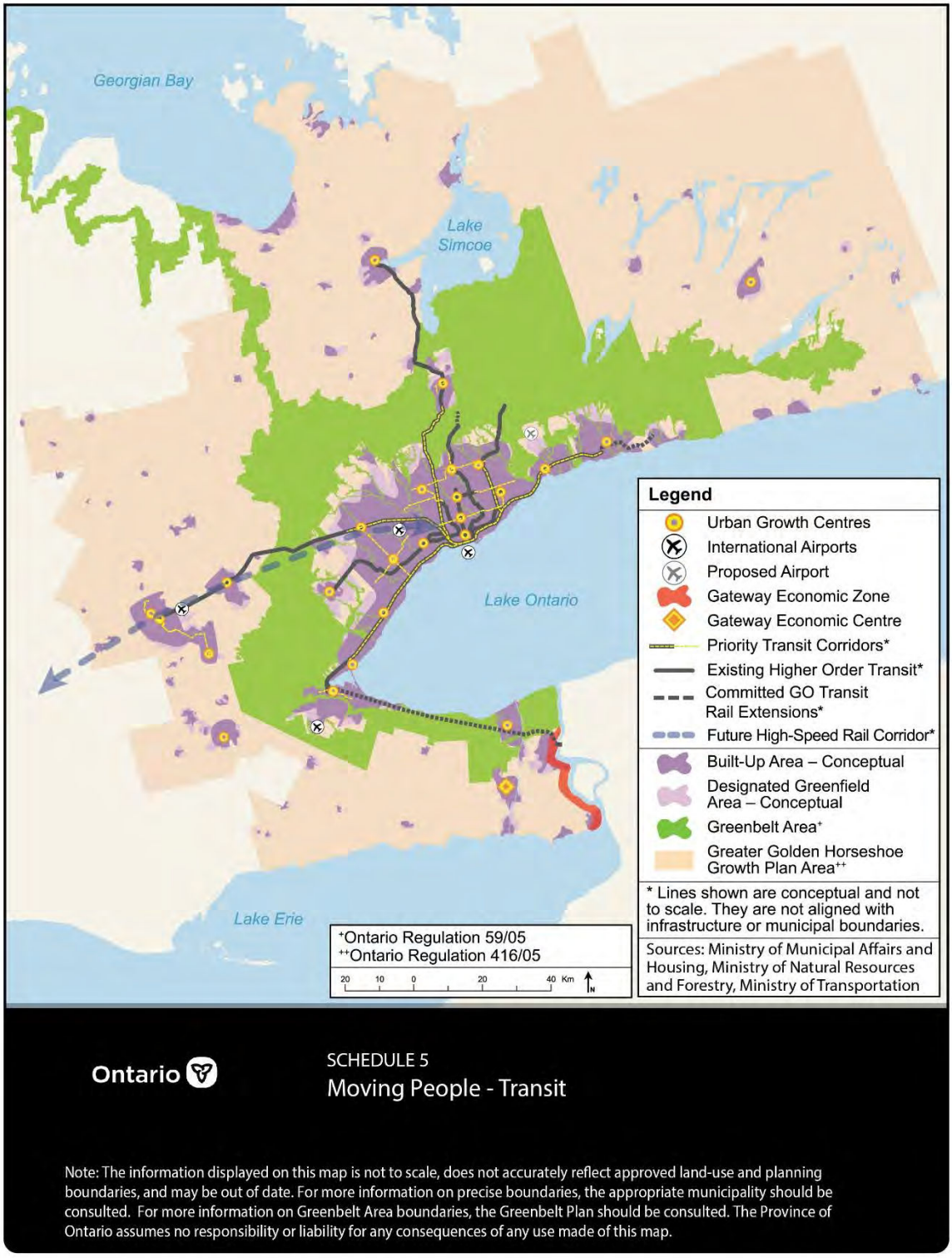
According to the RTP, there are impacts from the placement of transit stations including: increased travel times, delays and potential loss of upstream riders, increase in capital, energy, operating and, maintenance costs, and facilitating urban sprawl in remote locations (Metrolinx, 2015). In York Region, draft MTSA delineations and density targets were developed by regional

staff with input from local municipal staff (with the exception of the Kirby and Gormley stations). In the past, RTP criteria for identifying major transit station areas (MTSA) reinforced locating stations within the planned urban structure. The new TOC process adopted by Metrolinx appears to be a more market driven approach to the location of transit infrastructure.

The selection of two stations located adjacent to the Greenbelt in York Region were not recommended by staff. The Kirby station was put forward by a former Minister of Transportation and the Gormley station was recommended by members of York Region Council. The locations of both of these stations constrains the achievement of density targets and puts pressure on land in the Greenbelt. It may also create transit supported sprawl since Growth Plan Policy 2.2.4 allows density targets to be reduced for the lands surrounding a transit station if there is a conflict with provincial policy. Reducing density targets around these stations may reduce ridership, encourage people to drive to transit stations, and overlooks the objective of optimizing provincial investment in transit and building transit supportive density.

Critics argue that these GO stations "in a cornfield" are designed to serve cars and perpetuate low density sprawl rather than maximize transit supportive densities (Marshall, 2017). Perhaps the most controversial example is the Kirby GO station as the initial business case study conducted by Metrolinx identified the station would increase car traffic, reduce the number of people taking transit (more stations on a line slow down service), and create more greenhouse gases (Spurr, 2017). The land around the station is generally rural and agriculture, with the Oak Ridges Moraine to the north and east reducing the development potential around the station. The intersection of the proposed GTA West and Highway 400 is nearby with the potential for picking up exurban commuter traffic. The station is expected to cost $100 million.

Figure 3: A Place to Grow: Growth Plan for the Greater Golden Horseshoe, Schedule 5 – Moving People – Transit



4.2.1 Other Projects

Another transit project that touches on the Greenbelt is identified in the VIA Rail high frequency rail plans. There are preliminary plans for a VIA high frequency rail service from Toronto, Ottawa, Montreal to Quebec City.[18] A new rail line would be added to the corridor between Toronto and Smith Falls, which would cross the Greenbelt on the east side of the GTA with a stop in Peterborough. The current plan is to use existing rail infrastructure where possible but separate freight and passenger lines.

Another large-scale interregional project is the Regional Express Rail, known as RER. This electrification project affects all GO lines. The EA mentions the Oak Ridges Moraine and Greenbelt but does not appear to consider policy conformity issues, and direct or indirect impacts to the Greenbelt. The direct impacts are likely to be related to the placement of electrical infrastructure, but these impacts may be offset by the reduction in diesel exhaust.

4.3 Direct Impacts

Direct impacts are expected from the placement of transit stations within or near the Greenbelt. Most of the projects use existing rail corridors and therefore avoid the types of impacts associated with the creation of a new transportation ROW.

For stations in or adjacent to the Greenbelt the following direct impacts are expected:

- Loss of prime agricultural land and disruptions to the agricultural system
- Potential groundwater impacts related to dewatering
- Increased runoff and chloride contamination
- Erosion, sedimentation in adjacent watercourses, and soil compaction during groundwork before construction

For new rails lines direct impacts are predicted (R.J. Burnside and Associates, 2009) to include:

- Minor loss of vegetation and habitat during construction
- Potential for sediments and other pollutants to enter watercourses as a result of construction activities
- Potential groundwater impacts due to spills and dewatering during construction
- Noise and vibrations impacts during construction and operation

The loss of vegetation and habitat is expected to be minor because this is a previously disturbed corridor—i.e., vegetation and habitat were permanently lost long ago, when the original tracks were laid. Some vegetation directly adjacent to the existing tracks will be disturbed while they are being upgraded due to the presence of heavy machinery and

[18] VIA Rail. Proposal for High Frequency Rail in the Quebec City-Toronto Corridor. https://corpo.viarail.ca/en/projects-infrastructure/dedicated-tracks

construction materials next to the track. This type of disturbance is temporary and should be easily reversed upon completion of construction.

Permanent impacts will occur along stretches of the railway where tracks are being doubled like the Barrie line. In this case, the rail bed will be widened by a few metres, encroaching on adjacent vegetation.

4.4 Indirect Impacts

A possible indirect impact of all interregional train services is that they could facilitate sprawl and leapfrog development. As noted in a study on the indirect impacts of transportation investments (Jonsson and Johansson, 2006), both highway and rail projects have a structuring effect on urban development. The Growth Plan further reinforces transit stations as nodes of compact development. New interregional train lines in the GGH facilitate commuting from the outer ring to the inner ring and stimulate the development of bedroom communities in the outer ring for people who commute to jobs in the inner ring. Moreover, if train stations in the outer ring are predominantly located on the edge of the community as in the Kirby and Gormley stations and accessed by automobile, the GO train lines may be bolstering dispersed, auto-oriented development.

New stations within the boundaries of small settlements in the Greenbelt such as Acton and King City can have a positive, indirect impact on the Greenbelt, provided that they do not facilitate the expansion of these settlements beyond their existing boundaries. The train supports a broader range of development types and can offer residents of Greenbelt settlements an alternative to the automobile, especially for trips to the central GTHA. This can help to reduce commuter traffic on 400 series highways and associated noise and air pollution along roads within the Greenbelt. Stations on the edge of the Greenbelt have resulted in requests from municipal Councils to remove lands from the Greenbelt as we have seen in Richmond Hill and Whitchurch-Stouffville (Wang, 2021).

4.5 Alternatives

GO Rail projects, typically rail extensions, examine three alternatives. These alternatives include (R.J. Burnside and Associates, 2009):

- Increased transportation demand management (TDM), which would entail programs to encourage commuters to use various alternatives to travelling alone in an automobile, such as creating high-occupancy vehicle (HOV) lanes, reserved bus lanes, transit priority at traffic signals, parking management, congestion pricing, and telecommuting
- New or expanded express bus service on arterial roads and highways
- Expanded road capacity, either through the better management of existing road capacity or through the widening of existing roads or construction of new roads, or a combination of these measures

The vision of the Growth Plan aims to provide a balanced approach to support the achievement of complete communities serviced by transit supportive densities. Recent policy changes focusing on creating new employment zones along highways may encourage more commuting and highway development. Developing a new interconnected regional zone around the airport may provide a more sustainable approach to economic development than dispersed zones (Blais, 2018). Increasing work from home options may change commuting patterns and reduce traffic congestion from commuting.

4.6 Mitigation and Enhancement

In response to the direct adverse impacts expected to occur as a result of track work for the proposed train projects, the mitigation measures proposed for GO Transit in the context of past EAs include:

Vegetation and habitat:

- Keeping construction equipment and materials on one side of the ROW, the side on which tracks will be added if track doubling is taking place
- Stabilizing and re-vegetating areas disturbed during construction
- Stockpiling removed topsoil and using it to backfill disturbed areas to facilitate natural restoration of native vegetation

Surface water impacts:

- Leaving vegetated buffers in place around watercourses
- Implementing erosion and sediment control measures near watercourses
- Storing stockpiled material a safe distance from watercourses

Groundwater impacts:

- Refueling construction equipment and storing fuel at designated locations with spill protection
- Measures to limit dewatering (established on a case-by-case basis, based on a geotechnical investigation of the construction area)

Noise and vibrations impacts:

- Restricted hours of operation for noisy construction equipment
- Appropriate mufflers for machinery during construction
- Acoustical fences or landscaping measures, such as vegetative fences or berms, to minimize sound levels emanating from the railway (mostly in settlement areas, as these measures could have adverse impacts on vegetation and wildlife)

To this list should be added measures to ensure community safety during construction—i.e., to reduce accidents due to increased road traffic from construction equipment. It is recommended that this suite of measures be incorporated into the mitigation strategy for all train projects being planned by GO Transit. An independent environmental inspector should

also be appointed to ensure that mitigation commitments are met during construction and subsequent operation of the train lines. Mitigation to address loss of land from the Greenbelt from the construction and placement of GO stations is unknown. A net gain approach to address any features lost should be considered.

In terms of adverse indirect impacts, a key strategy for limiting the potential of new services to stimulate dispersed, leapfrog development would be to limit automobile dependent development patterns and set densities for new growth to maximize the use of alternative modes of transportation for access to train stations. Providing frequent and convenient transit access is likely to be the strongest means for discouraging automobile access. A key measure to maximize the use of commuter rail is the creation of convenient inter-regional feeder bus services that are coordinated with train departure and arrival schedules. To maximize access by active modes of transportation, appropriate infrastructure will need to be provided—safe, attractive pedestrian and bicycle paths and secure long-term parking for bicycles. The Growth Plan's zoning provisions in support of mixed-use, compact development in station catchment areas is another measure that should help maximize access by active modes of transportation. Raising parking fees at urban park and ride lots should be explored as another strategy to encourage non-automobile modes of access to commuter train stations. Parking fees should be set carefully so as not discourage commuter train travel especially for transit stations in bedroom communities where local transit may not exist. Parking at transit stations located in the Greenbelt should be discouraged, with access limited to bus connections only in an effort to limit the creation of bedroom communities.

5. Water and Wastewater

5.1 Existing Policies

Water and wastewater policies have changed since the 2011 report. In addition to the general policies applying to all types of infrastructure in Section 4.2. of the Greenbelt Plan, two specific policies on water and wastewater infrastructure appear in Section 4.2.2. with the balance of the policies in the revised Growth Plan.

Policies in the 2005 Greenbelt Plan did not permit the expansion or extension of Great Lakes servicing or Lake Simcoe based servicing to settlement areas that did not already have such servicing. The extension of water and wastewater services from a Great Lakes source was only permitted if a number of conditions were met, including: a requirement to limit negative impacts ecological features and functions; applicable recommendations, standards or targets within watershed plans and water budgets are reflected; any sewage and water servicing installation is planned, designed and constructed to minimize surface and groundwater disruption. The Greenbelt Plan required the need for the servicing to be established. This policy seemed to be effective at limiting the expansion of water and wastewater systems crossing the Greenbelt to service existing settlement areas and limiting pipe led growth.

These policies were removed from the Greenbelt Plan in 2017 and moved to the Growth Plan. In the 2019 Growth Plan the policies became increasingly permissive as outlined below. Under the new Growth Plan policy regime, and with the loss of the Conservation Authorities' role in commenting on impacts of infrastructure, there may be negative impacts on ecological features and functions, surface and groundwater from infrastructure projects.

Greenbelt Plan 4.2.2 states that:

- Planning, design and construction of sewage and water infrastructure shall be carried out in accordance with the policies in subsection 3.2.6 of the Growth Plan as noted below.
- The extension of municipal or private communal sewage or water services outside of a settlement area boundary shall only be permitted in the case of health issues or to service existing uses and the expansion thereof adjacent to the settlement area. Notwithstanding the above, where municipal water services exist outside of settlement areas, existing uses within the service area boundary as defined by the environmental assessment may be connected to such a service.

The Growth Plan contains specific policies on water and wastewater in Section 3.2.6, notably:

- Municipalities should generate sufficient revenue to recover the full cost of providing and maintaining municipal water and wastewater systems.
- Municipal water and wastewater systems and private communal water and wastewater systems will be planned, designed, constructed, or expanded in accordance with the following:

- opportunities for optimization and improved efficiency within existing systems will be prioritized and supported by strategies for energy and water conservation and water demand management;
- the system will serve growth in a manner that supports achievement of the minimum intensification and density targets in this Plan;
- a comprehensive water or wastewater master plan or equivalent, informed by watershed planning or equivalent has been prepared to:
  - demonstrate that the effluent discharges and water takings associated with the system will not negatively impact the quality and quantity of water;
  - identify the preferred option for servicing growth and development, subject to the hierarchy of services provided in policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5 of the PPS, 2020, which must not exceed the assimilative capacity of the effluent receivers and sustainable water supply for servicing, ecological, and other needs; and,
  - identify the full life cycle costs of the system and develop options to pay for these costs over the long-term.
- in the case of large subsurface sewage disposal systems, the proponent has demonstrated attenuation capacity; and,
- plans have been considered in the context of applicable inter-provincial, national, bi-national, or state-provincial Great Lakes Basin agreements or provincial legislation or strategies.

- For settlement areas that are serviced by rivers, inland lakes, or groundwater, municipalities will not be permitted to extend water or wastewater services from a Great Lakes source except under certain conditions and can only service the planned development within the approved settlement area boundary:
  - the municipality has completed the applicable environmental assessment process in accordance with the Ontario Environmental Assessment Act; or,
  - the extension had all necessary approvals as of July 1, 2017 and is only to service growth within the settlement area boundary delineated in the official plan that is approved and in effect as of that date. This provision applies to the Upper York Sewage Solution.
- Municipalities that share an inland water source or receiving water body will co-ordinate their planning for potable water, stormwater, and wastewater systems based on watershed planning or equivalent to ensure that the quality and quantity of water is protected, improved, or restored.

5.2 Planning Process

The responsibility for planning water and wastewater projects resides entirely with regional or upper tier and single-tier municipalities. The planning process includes master planning, fiscal planning, and project planning.

Municipalities prepare a water and wastewater master plan that identifies their needs, their priorities, and the timeframes for implementing upgrades to existing infrastructure and constructing new infrastructure as part of a Regional Official Plan process. The plans require asset management plans and coordination with land use plans. Existing infrastructure is to be optimized before building new infrastructure. Although most master plans are updated about every ten years, they tend to have a more distant planning horizon—i.e., 20 years or more to coincide with Official Plans. The master planning exercise must proceed according to the Ontario Municipal Engineers' Association Class EA for water and wastewater master plans.

Where new infrastructure is being proposed, the master plan class EA process requires that the municipality establish the need for the new infrastructure, established by referencing the municipality's Official Plan. Each Region allocates growth across the Region taking into consideration the capacity of water and wastewater infrastructure. The EA identifies a problem with water and/or wastewater, and identifies, evaluates, and selects the preferred way to address the problem. Then the region develops and evaluates several alternative scenarios, including upgrades to optimize existing infrastructure and construction of new infrastructure. The scenarios are also screened for their conformity with all applicable provincial policies, including the Greenbelt and Growth Plan, municipal asset management plans and other applicable policies listed above if infrastructure is to be built within the Greenbelt. A number of different alignments are evaluated in terms of their technical feasibility and impacts. Once a preferred alignment is selected, a detailed design is completed, and capital funding obtained. As projects proceed in the EA process, there are requirements to hold public information centres in the affected community. Once all necessary permits and capital funding are obtained, project construction can begin.

In 2020 changes were made to the Environmental Assessment Act in Ontario to eliminate what was seen as duplication and to reduce delays under the Class EA process.[19] Class A projects are now exempt. A screening process may change some processes from schedule B to A and vice versa. The notice of project completion is no longer published in the newspaper and the bump up process has been eliminated (Rodney, 2020). Interested parties will have to make inquires to determine if an EA process is completed. In the past upon completing the class EA, the municipality was required to submit a detailed EA report for a minimum 30-day public review on the Environmental Registry of Ontario. It remains to be determined if these changes to the EA Act undermine environmental protection.

5.3 Water and Wastewater Master Plans

This section describes water and wastewater master plans as well as individual projects that are currently planned and may impact the Greenbelt. Most of the master plans and projects are

[19] Table of Proposed Class EA Amendments – Water/Wastewater (Version 4, December 23, 2019) https://prod-environmental-registry.s3.amazonaws.com/2020-07/3B.%20Municipal%20Class%20EA%20Amendment%20Table%202%20Proposed%20Changes%20to%20WaterWastewater%20Schedules.pdf

currently undergoing environmental assessments, although a few projects already have approved environmental assessments and are in the final design or construction stages. Most of the master plans, once approved, will be gradually implemented over the next two decades as supported by growth and capital budgets. Individual projects will be implemented more immediately over the next decade in most cases.

Unlike the RTP, there is no regional agency or source of information for water and wastewater projects. Each upper-tier municipality creates a Master Plan to identify servicing projects in coordination with Official Plan updates.

5.3.1 Major Trunk Water and Wastewater Projects

Major trunk projects are those that are intended to provide water and/or wastewater service to a relatively large geographic area. They entail the laying of large diameter pipes to convey very large amounts of water or wastewater to or from the Great Lakes. Their purpose is to significantly expand water and wastewater servicing capacity to enable growth at various locations. These projects can be relevant to the Greenbelt in three ways: (1) the pipes can cross the Greenbelt, resulting in direct impacts; (2) they can enable greenfield development, which can consume land outside the Greenbelt, limiting opportunities for future Greenbelt expansion; and, (3) they can put pressure to open up the Greenbelt to development. The latter can also imperil agricultural and natural heritage systems that extend from within the Greenbelt beyond its boundaries.

5.3.1.1 Upper York Sewage Solutions

The Upper York Sewage Solutions project aims to construct a new trunk sewer to serve the Towns of Aurora, Newmarket and East Gwillimbury in the northern part of York Region. The project, initiated in 2004, is a trunk sewer required to support planned growth, as projected in the Regional Official Plan to 2031 in conformity with the Growth Plan. In 2009, York Region undertook an individual EA to determine the optimal solution for providing the required sewage capacity to the area in question. Three general alternatives were on the table: (1) do nothing; (2) convey and discharge sewage to Lake Ontario (southern solution); or (3) convey and discharge sewage to the Lake Simcoe watershed (northern solution) (Region of York, 2009). The second solution is problematic because it involves an inter-basin water transfer. The third solution is problematic because the Lake Simcoe watershed has limited assimilative capacity. Moreover, the second and third alternatives both entail the construction of a trunk sewer crossing the Greenbelt, as Aurora and East Gwillimbury are encircled by Greenbelt lands.

In 2014, York Region identified the preferred option as a water reclamation site, state of the art microfiltration and reverse-osmosis wastewater treatment technology and a total phosphorous offsetting program to limit the impacts on the sensitive Lake Simcoe watershed. Given the challenges and complexity of this project, it took 5 years to complete. The EA was submitted to the Ministry of the Environment, Conservation and Parks (MECP) for approval in July 2014.

In 2016 the Province reviewed the EA but made no decision except to undertake further consultation with the Chippewas of Georgina Island. Subsequently, the Chippewas obtained funding for and completed a peer review of the project. Since 2015, the Chippewas have lived with a boil water advisory due to issues with their water treatment (Javed, 2017). They remain unconvinced that the water reclamation centre will improve the water quality of Lake Simcoe. The Chippewas of Georgina Island, Rescue Lake Simcoe Coalition, and other Lake Simcoe organizations continue to oppose the development of the UYSS treatment system.

Policies in the Growth Plan refer to the Upper York Sewage Solution: specifically, section 3.2.6.3 states that settlement areas serviced by inland lakes, rivers can only be connected to a Great Lakes source if the project had "…all necessary approvals as of July 1, 2017 and is only to service growth within the settlement area boundary delineated in the official plan that is approved and in effect as of that date. This provision applies to the Upper York Sewage Solution." This provision in the Growth Plan provides flexibility for York Region to obtain sewage servicing from either the southern or northern option.

The northern Lake Simcoe solution is deemed by York Region to meet the tests of the Greenbelt Plan as it followed an EA process, and serves significant growth and economic development beyond the Greenbelt. It also provides wastewater servicing to accommodate significant growth and economic development in the communities of East Gwillimbury, Newmarket and Aurora.

In determining the location of the project, York Region considered alternatives to avoid the Greenbelt. The Water Reclamation Center outfall (approx. 1km) along Queensville Sideroad is within the Greenbelt but the plant itself lies outside of the Greenbelt. Impacts noted in the EA include loss of 28 ha of prime agricultural land, changes to surface water quality and quantity during construction. In the long-term the EA findings indicate improved oxygen levels and lower phosphorous and water levels will benefit the aquatic habitat.[20]

Environmental groups disagree with the Region's assessment, arguing that the program to offset 292 kg of phosphorous from the plant are unproven. Further, the groups contend chemical waste from the reverse osmosis process would be trucked to the Duffins Creek plant to be discharged into the treatment plant there. At this time, the treatment plant does not have the capability to process chemical waste or pharmaceuticals. Environmental groups sent a joint letter to the province noting the significant problems with either solution.

If the Minister declines to move forward with the preferred solution it is expected that the second (southern) option, convey and discharge sewage to the Duffins Creek Water Pollution Control plant via a new southern trunk collector, would be selected. Regional staff would not comment on whether the southern servicing option could trigger a Regional Review under the Great Lakes-St Lawrence River Basin Sustainable Water Resources Agreement until the 2051 WWW master plan is complete, in 2022. If a Regional review is required to decide on whether

[20] Upper York Sewage Solutions http://www.uyssolutions.ca/en/index.asp

to increase the transfer of water between the Great Lakes, it could take years and may even be declined by the majority of U.S. states who vote on exemptions to the Agreement.

Although the Regions of York and Durham own the Duffins Sewage plant, the decision remains with the Province. The Region is awaiting a decision from the Province on whether the northern or the southern solution will be implemented. According to sources at the Region of York, over $100 million in development charge revenue has been spent to date on the design of the $715 million northern solution. As the southern solution was not selected as the preferred solution, no design work has been completed, nor has the project been costed. In the approximate 10 years it will take to build a southern solution the municipalities of Aurora, Newmarket and East Gwillimbury, all surrounded by Greenbelt, may run out of sewage capacity.

This project is an example of infrastructure driving growth. This project underpins the importance of data driven decision making, knowing the servicing options, the capacity and feasibility prior to allocating population to an area as noted in a Neptis study (Neptis Foundation, 2018).

5.3.1.2 Halton Region

An update of the WWW Master Plan is expected in 2021 to address infrastructure planning to 2041. Two Halton region projects may impact the Greenbelt: the extension of Lake-based servicing from Milton to Georgetown, and the build-out of the Trafalgar Secondary Plan in the Town of Milton. A greenfield community is planned for a peninsula of land located between the Greenbelt and the existing Milton urban area. An estimated 16,000 people will be located in this greenfield area. Expected impacts are encroachment and degradation due to the lack of buffers and the extension of a minor arterial road through the Greenbelt.[21]

5.3.1.3 Peel Region – Caledon

The Peel Region WWW Master Plan to 2041 extends the south Peel trunk water and sewer lines and increases transmission and pumping capacity into whitebelt areas to service future greenfield growth. The Master Plan notes that it expects future iterations of the plan will extend servicing further north. The extension of servicing is directed to the GTA West Corridor area to facilitate greenfield growth.

Two new water supply projects are planned in Caledon to 2041. An elevated water tank storage facility with the tank sitting in the Greenbelt due to elevation siting issues. According to staff an extension of water lines will not be permitted in extend into the Greenbelt. The environmental assessment will begin in 2021 with construction anticipated to begin in 2025.

[21] Town of Milton (2019). Trafalgar Secondary Plan https://www.milton.ca/en/business-and-development/resources/FINAL-Trafalgar-Secondary-Plan.pdf

Another planned project is a water reservoir in the hamlet of Victoria near King Street and Hurontario.

5.3.2 Community Water and Wastewater Projects

This category includes specific projects that are intended to provide new water and/or wastewater service to a particular community in a specific geographic location within or near the Greenbelt. They entail laying small or moderately sized trunk pipes to convey wastewater generally to a local communal wastewater treatment plan and rely on groundwater. Policies in the Greenbelt support servicing these Greenbelt settlement areas with communal system and limit the provision of lake-based servicing.

5.3.2.1 Fraserville Water Supply Master Plan (Peterborough County)

The Fraserville Water and Wastewater Plan EA, approved by the MOE in 2007, called for an interconnected series of four wells, two water treatment plants, and two reservoirs and a wastewater treatment facility to service developments in Fraserville and in Springville. During the detailed design of the proposed municipal well facilities, it was discovered that the selected site was not suitable due to possible contamination. The Township of Cavan Monaghan therefore initiated the Fraserville Water Supply Master Plan Review. The 2010 Review concluded that the existing wells and treatment facility in Millbrook should be used for both existing and new growth in Millbrook and Fraserville (Township of Cavan Monaghan, 2010). The Millbrook wells draw water from the Oak Ridges Moraine and would require watermains through land under Greenbelt protection to be linked to the water distribution system in Fraserville.

The plan to connect the Fraserville water and wastewater system to that of Millbrook was defeated by Cavan Monaghan Council in August 2010. The issue of how water and sewer service will be provided in Fraserville was unresolved at the time of writing. Given the Fraserville's proximity to the Oak Ridges Moraine, further developments in this file should be monitored.

5.3.2.2 Peel Region

A Class EA was undertaken in 2013 to explore water servicing options in the towns of Alton and the Village of Caledon currently serviced by communal water. After studying six sites the Class EA chose the do-nothing solution at this time. As Alton Village is in the Greenbelt, the future implementation of the water and wastewater infrastructure will entail impacts on the Protected Countryside and on natural heritage features, including the Credit River. Lake-based wastewater servicing was extended to Caledon East in the 1980s due to health and safety concerns with onsite systems. As lake-based servicing is limited in the Greenbelt Plan, the Town of Caledon has explored communal systems in the villages of Alton, Cheltenham, Palgrave, and Inglewood in the past, but it has proven cost prohibitive.

5.3.2.3 Nobleton Water and Wastewater

In 2019, the Region of York initiated the Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment Study to accommodate future long-term growth. The EA study is in Phase 2 with a preferred option expected in 2021. The Phase 1 report made it clear that optimizing use of the existing infrastructure has the lowest impact (i.e., by upgrading the existing water wells, sewage pumping station, and treatment plant capacity). The existing treatment plant is located on the Humber River. Due to its proximity to the GTA West highway and the South Peel system, this project should be followed up in 2022, upon completion of the MCR process.

5.3.2.3 Wellington County

The communities of Erin and Hillsburgh located in the Greenbelt are currently serviced by private septic systems. A Class EA for water and wastewater was completed and approved in 2019 to service expected growth of 6,000 people to 2041. A communal system will service both communities with wastewater discharging into the Credit River. The communities will continue to be serviced by groundwater. According to staff at Wellington County the EA considered the policies of the Greenbelt Plan. Despite that, concerns about downstream impacts and fisheries have been raised by the community of Belfountain. MNRF raised concerns about the temperature of the effluent entering the river. The West Credit River is one of a few pristine cold-water fisheries in the Greater Golden Horseshoe, home to native brook trout.

5.4 Direct Greenbelt Impacts

The water and wastewater projects listed above primarily entail constructing underground pipes or shafts to convey water or wastewater. As with all linear infrastructure, the nature of the impacts depends on the biophysical characteristics of the chosen corridor and the construction practices. Watermains and sewers can be installed either by open cut (i.e., digging trenches) or by tunneling. Tunneling is more expensive and is used mostly for installing large diameter conduits much deeper below the surface (10 m deep or more). An important advantage of tunneling is that it avoids impacts on surface features. While open cutting inevitably has surface impacts, many of them are reversible; when the trench is backfilled after conduit installation, many surface features, especially vegetation, can be restored.

Typical agricultural and natural heritage impacts related to the installation of water and wastewater infrastructure by open cut method include:

- Loss of agricultural land
- Destruction of vegetation
- Destruction of terrestrial animal and bird habitats
- Diversion of surface watercourses
- Destruction of aquatic vegetation

- Destruction of aquatic animal habitats
- Interference with aquatic migration routes and spawning grounds

Most of the above impacts can be avoided by using tunneling to build the infrastructure. However, both open cut and tunnel constructed infrastructure have impacts on groundwater resources. The impacts are likely to be more severe for tunneled pipes, as they are likely to be much deeper underground, potentially lying within aquifer beds. The safe construction of a very large diameter pipe, such as the YDSS Southeast Collector pipe, requires the removal very large amounts of groundwater (Macaraig and Sandberg, 2009). Dewatering during construction can affect nearby streams fed by groundwater baseflows as well as water wells. Moreover, the large amounts of water removed may end up diverting water destined for a particular watershed into a different watershed. For example, construction of trunk sewage infrastructure in northern York Region may result in water being destined for the Lake Simcoe watershed being diverted to Lake Ontario (Great Lakes United, 2004).

After the pipe has been built, there can be further impacts. Sewer pipes, in particular, may have additional impacts if they develop leaks over their lifespans, and leaks in deep gravity fed pipes may be difficult or even impossible to detect. Surrounding groundwater may leak into the sewer, causing ongoing losses from the adjacent aquifer system, with impacts on local watersheds and on rural wells within the same aquifer system (Macaraig and Sandberg, 2009). Another risk is that sewage may seep from the pipe into the surrounding groundwater. Contamination of groundwater can be harmful to aquatic flora and fauna as well as to humans relying on well water. Further, sewage systems are generally located alongside streams and rivers as in the event of pump failure the wastewater can be diverted to the stream.

The majority of the impacts related to the construction and operation of water and wastewater conveyance infrastructure described above are considered during the EA process. Critics assert that the downstream impacts of dewatering—the effects on the relevant hydrological system as a whole—are not given sufficient consideration and that water-taking allowances granted to water and wastewater projects are too generous (Gorrie, 2004). Critics also charge that risks to groundwater systems during the operational lifetime of the infrastructure, due to infiltration from rain and groundwater leaks, are not properly addressed (Macaraig and Sandberg, 2009). Regional governments are increasingly applying the best available technology to identify leaks and maintain the systems to reduce infiltration as it is costly to process clean water and it reduces the capacity of the system to manage wastewater.[22] It is unclear whether small municipalities are able to manage wastewater to the same extent (e.g., in Simcoe County, wastewater management is a local municipal responsibility).

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[22] See, for instance, York Region's *Inflow and Infiltration Reduction Strategy* https://www.york.ca/wps/wcm/connect/yorkpublic/7311896a-b49e-41e7-9927-86d3ddb6fdc1/Inflow_and_Infiltration_Reduction_Strategy.pdf?MOD=AJPERES&CVID=mu8H.Hl

5.5 Indirect Greenbelt Impacts

Although not considered in the framework of a typical EA, the provision of water and wastewater infrastructure can also have indirect impacts on the Greenbelt if they enable additional development in or around it.

In the postwar decades, the federal and provincial governments invested massively in helping local authorities pay for the infrastructure needed to finance rapid suburbanization. This was sometimes done in the absence of strong local planning and the new infrastructure inevitably created strong growth pressures that resulted in poorly planned sprawl (Burchfield et al., 2005). How this process worked in suburban areas outside Metro Toronto is described in some detail in John Sewell's book *The Shape of the Suburbs* (Sewell, 2009). Further research has identified patterns between low density growth and perverse subsidies, like inaccurate pricing of water and wastewater services that support low density development rather than supporting a sustainable urban form.

The provision of municipal water and sewer services to towns within the Greenbelt that previously relied on private wells and septic systems for sewage was allowed in the 2005 Greenbelt Plan, so long as it was not Great Lake- or Lake Simcoe-based. The 2017 Greenbelt Plan allows existing uses within the service area boundary as defined by the environmental assessment to be connected to such a service allowing for outward expansion of servicing. Municipal servicing, even if based on local hydrological systems, could pave the way for outward expansion of Greenbelt settlements.

In the past, exaggerated claims about safety problems associated with septic systems in rural areas were used to justify the provision of high-capacity trunk sewage systems, such as the York Durham Sewer System (YDSS), which eventually led to intensive suburbanization of previously rural areas on the Oak Ridges Moraine (Barber, 2003). Ultimately, the alignment and capacity of water and wastewater conveyance infrastructure outside the Greenbelt will largely determine where future opportunities for settlement boundary expansions into the Greenbelt will occur. From the perspective of expanding the Greenbelt in a contiguous manner, it would be preferable that significant new water and wastewater infrastructure is not developed near the Greenbelt's current boundaries, especially in ecologically significant areas, sensitive headwater areas or valuable agricultural areas adjacent to the Greenbelt as is occurring in Caledon and Whitchurch-Stouffville.

5.6 Alternatives

As described earlier in the section on water and wastewater (Section 3.2.6), the Growth Plan requires that municipalities undertake water conservation efforts and optimize existing infrastructure before beginning to plan capacity expansions.

When existing infrastructure is being used at capacity, there are two realistic alternatives for the construction of new water and wastewater infrastructure. The need for infrastructure

expansion can be at least temporarily offset by system optimization and improved efficiency and strategies for water conservation and water demand management. Eventually, however, new infrastructure will be needed if significant growth is to occur. The second alternative is to avoid development in areas with limited water or wastewater capacity. In such a scenario, development could be redirected to areas with available capacity, but this scenario would only be possible if water or wastewater capacity were known before growth was allocated.

Regional governments coordinate planning for growth with infrastructure via Master Plans, but there is no provincial source of data that can be used to identify and map capacity of water and wastewater. The lack of data on the capacity and constraints on water and wastewater systems in the GGH was the focus of research by the Neptis Foundation. It led to a report in June 2018, in what was to be a three-part study leading to a decision assessment tool for municipalities. The further work did not happen, and without such an assessment tool it is difficult to assess whether areas where growth has been allocated have adequate infrastructure to service it.

In past Growth Plan iterations, growth was assigned and then it was determined how best to service it. Growth allocation would be easier and servicing more efficient if it were known whether the drinking water supply is adequate, and whether receiving water bodies have sufficient assimilative capacity to process the increased effluent loads caused by growth, in addition to understanding the environmental issues related to servicing.

5.7 Mitigation and Enhancement

The principal means of mitigating the direct adverse impacts of new water and wastewater infrastructure on the Greenbelt is avoidance. Ideally, during the EA processes for the projects examined in Section 5.3 that entail laying pipes, alternative alignments which avoid or minimize Greenbelt crossings have been considered, whenever possible. To further minimize impacts on agricultural land or natural heritage, pipe alignments are proposed within existing infrastructure corridors, especially in or directly adjacent to road corridors. There is also at least one example of a high voltage power transmission corridor being used for part of an alignment—i.e., the York Durham Southeast Collector Trunk.

Where impacts cannot be avoided by changing the alignment, the main avenue for mitigation is through construction practices. Tunneling can be used instead of open cutting at locations where surface features cannot be disturbed. Where surface features are disturbed, rehabilitation measures can be taken after construction to help restore the environment to its previous state. Where loss of vegetation and habitat occurs, this means taking measures to restore soils to their previous state and replanting with the species that were removed. Where the construction occurs on degraded lands, infrastructure works should take advantage of the potential for improving soil and broader habitat conditions.

To avoid or at least limit adverse impacts on groundwater resources during construction and throughout the operational lifetime of the infrastructure, a possible mitigation measure is to bury pipes less deeply and to use a network of pumping stations to circulate water or

wastewater, whichever may be the case (Macaraig and Sandberg, 2009). This implies a trade-off: there would be fewer impacts on groundwater systems but potentially greater impacts on surface features. Also, shallower pipes would be easier to fix in case of leakages but, due to the need for pumping systems, would be more costly to build and operate than gravity fed systems.

Understanding the impacts on groundwater at a regional scale is needed as we mitigate and adapt to climate change. The Oak Ridges Moraine Groundwater Program database tracks the quality and quantity of well water and groundwater, and it would be helpful if there was a similar tool available across the GGH.

6. State of Infrastructure Planning and its Impact on the Greenbelt

This report has examined a number of planned major infrastructure projects to be implemented between 2021 and 2041 that are likely to have direct and indirect impacts on the Greenbelt.

Generally, the Greenbelt Plan permits infrastructure if is serves growth and economic development beyond the Greenbelt. This policy permission is used to justify new and expansion of highways, transit stations and water and wastewater infrastructure. While the Greenbelt Plan aims to protect the countryside, infrastructure policies in the Greenbelt and Growth Plan undermine these goals by permitting expansion into the Greenbelt, which fragments the agricultural system and natural heritage system. The current infrastructure policies will not protect the integrity of the Greenbelt's systems in the long-term.

There also appears to be contradictions and a lack of clarity with infrastructure policies in the Growth Plan 4.2.1 a) and b) as infrastructure that serves urban growth centres and economic development is allowed to interfere with supporting agriculture and the rural economy. Proposed highways like the GTA West and the Bradford bypass do not avoid the Greenbelt—they cross through it, and in crossing through it they undermine goals of agricultural protection, environmental protection, culture, recreation and tourism and rural economy as laid out in the Greenbelt Plan. While economic activities beyond the Greenbelt are important, expansion and the extension of infrastructure into and through the Greenbelt is problematic and unsustainable.

The revised Growth Plan and related policies may be creating other indirect impacts for the Greenbelt: that is, municipalities could once again over designate land as occurred in the first generation of the Growth Plan, depending on how land budgeting occurs and the reliability of 30-year growth forecasts. The lack of a robust provincial land needs assessment methodology, the lower density and intensification targets in the 2019 Growth Plan, higher growth projections, and a longer forecast are expected to lead to an over-designation of land for growth and higher land costs due to increased land speculation. If the projected growth does not occur, development charges and other revenues will be lower than projected.

When farmland becomes developable land, we not only lose near urban agricultural land: land speculation drives up the cost of land, too. Higher land costs make it difficult to build ground related housing that is affordable, and more ground-related housing stock makes it difficult to ensure sufficient ridership to maintain transit services. While provincial highway costs have not occurred ahead of projected growth, large watermains and sanitary sewer projects and regional transit systems were built, and the debt incurred is being carried by regional governments and funded by taxpayers. Over time, debt related to the expansion of

infrastructure and the over designation of land may threaten the economic viability of municipalities and put the Greenbelt at risk (Eby, 2020).

Planning for forecasted growth can drive the need for new or expanded highways, new water and wastewater infrastructure, and GO stations in / across the Greenbelt.

Highways: Although widening existing highways in the Greenbelt is obviously preferable to the creation of new ROWs, it is fair to question whether new highways or added highway capacity is even necessary, or at least whether they are the most appropriate means of assuring the fluid circulation of goods throughout the GGH. It appears that MTO is not giving serious consideration to the full range of demand management measures, such as road pricing. The extent to which MTO is considering the impacts of new highways on land use and development patterns is unclear. MTO claims to be measuring the new highways' impacts on "regional self-containment"—i.e., commuting across the GGH—yet the model it uses to project future travel patterns does not incorporate the dynamic interrelationship between land use, growth patterns, and the use of highways. Overall, the Ministry does not appear to see the Greenbelt as a constraint. When asked about whether MTO considered alternatives to going through the Greenbelt, MTO staff initially responded "...that alternatives are considered and assessed against a number of policy and environmental criteria to ensure consistency with the Greenbelt Plan." When questioned whether consistency or conformity is required, only then did staff recognize the need to conform.[23]

The goal of the EAs for GTA West and Bradford Bypass was to minimize impacts on the Greenbelt, but there is a question of whether the new streamlined environmental process meets the environmental study requirements in the Greenbelt Plan. At this time, the regulations for the streamlined process are not available, so it is not possible to know how the two processes compare. Going forward, it may be helpful to provide technical guidelines on requirements for EAs within the Greenbelt Plan area.

Transit: Planned transit projects with potential impacts on the Greenbelt consist of extensions of existing commuter train services and stations across the Greenbelt. While the Growth Plan requires transit supportive densities along transit corridors, the GO train lines that cross the Greenbelt have the potential for facilitating leapfrog development that in turn negatively affect its agricultural and natural systems. These potential indirect impacts are not being considered in the EAs and therefore mitigation measures are not being considered.

Growth Plan policies support intensification around transit stations and along transit lines. New stations that are on municipal land are being re-classified as settlement area to support new density targets. Municipal reports on Gormley and Kirby stations, however, recommend development at lower densities around these stations, which undermines the policies in the Growth Plan, while also essentially removing land from the Greenbelt and potentially

[23] MTO email correspondence (February 10, 2021).

increasing future development pressure in the Greenbelt. Metrolinx staff suggest that the development of land for transit infrastructure projects is encouraged in the Greenbelt Plan, but the only reference to transit in the Greenbelt policies relates to settlement areas. According to Metrolinx the placement of transit stations is driven by the municipality or developer. Staff at the Region of York suggest that Metrolinx is responsible for making decisions about the location of transit stations. Whether it is Metrolinx and/or municipalities, it seems the policies of the Greenbelt Plan are being ignored.

Similar to highway EAs, transit EAs have been weakened, and proponent driven public sector projects are not required to complete the EA process. It appears that the new EA processes for transit projects may not meet the requirements of the Greenbelt Plan. Future amendments to the Growth Plan and changes to the RTP should discourage the placement of transit stations outside of urban areas in the Greenbelt and clarify decision making roles.

Water and Wastewater: Due to the high cost of providing water and wastewater infrastructure, growth tends to follow these pipes. Water and wastewater infrastructure upgrades in settlements within the Greenbelt are of particular concern, as these upgrades will enable towns to grow, including beyond their current settlement area boundaries, possibly at the expense of the Greenbelt's agriculture and natural systems. Better coordination of growth by regional governments, a focus on cost recovery, and intensification has slowed pipe-led growth. There seems to be a good understanding by staff in York, Peel, and Halton regarding the need to conform to the Greenbelt Plan policies that restrict lake-based servicing.

Major expansions of water and wastewater infrastructure outside the Greenbelt is also of concern due to its structuring effect on growth. The enormous capital costs of large wastewater systems tend to lead to approving expansion of areas to be developed in order to pay for the infrastructure. These expansions can ultimately put pressure on the Greenbelt.

Indirect impacts from infrastructure on the Greenbelt are not adequately addressed in the existing EA process for water and wastewater infrastructure and will likely remain unanswered in the new streamlined environmental regulations. Regional planning staff noted sharing inter-regional data on water and wastewater capacity may provide insights for integrated planning while monitoring and measuring the effectiveness of existing infrastructure.

Infrastructure polices in the Growth Plan require integration of transportation system planning with land use planning. Interviewees at the regional level suggest that they are not well coordinated in the GGH. For instance, regional governments are planning compact communities to 2051 without an updated Regional Transportation Plan from Metrolinx or the GGH Transportation Plan from MTO. Many regions are facing a transit deficit and have been unable to obtain provincial funding to facilitate transit supportive growth. While it is up to the municipality to finance infrastructure, decisions on infrastructure placement are increasingly being made by the Province, which is seen by municipalities as problematic.

For all three types of infrastructure considered in this report, the EA process focuses overwhelmingly on mitigating the direct and immediate impacts of the infrastructure, especially on the surrounding physical environment. However, the indirect impacts that are likely to develop over longer periods of time, especially in terms of how infrastructure affects growth and overall regional structure. No formal consideration is given to how projects may affect the long-term opportunities for Greenbelt expansion, or undermine the Greenbelt Plan over time.

Policies in the Greenbelt Plan for all new or expanding infrastructure are subject to and approved under an EA. Over the years many criticisms have been made about the EA process. For example, EAs do not measure externalities, and the criteria rarely assess climate change impacts or consider the full lifecycle costs of the infrastructure. Another criticism of the EA process is the weighting of competing goals in making decisions about alternatives for a given undertaking (The Pembina Institute, 2005). This is especially clear in the case of new highways, which are justified as contributing to the free flow of goods over long distances. This ignores the simple fact that when highways are built to move goods in an urbanized region, they are quickly clogged with commuters making local trips, following the principal of induced demand. As argued above, there is also ample evidence that new highways or highway extensions in urban areas trigger development pressures outside the urban boundary, which may in turn give rise to more and longer-distance commuting on those highways. Thus, a proposed alternative may support trade and economic development but undermine provincial and municipal growth management plans. The EA process does not provide a means to prioritize and arbitrate among these competing goals. Recent changes to a streamlined environmental process for evaluating infrastructure impacts to inform decision-making may result in poor decision-making, environmental harm, and a lack of compliance with Greenbelt policies.

It is vital that infrastructure be coordinated with land use planning. A lack of coordination has financial, social, and environmental implications. A market-based framework supported by government policy has perpetuated highway systems that are free to use. Many of the costs of highways are externalized as accidents, delays from congestion, road maintenance, climate change and air pollution, and injuries from collisions remain unaccounted for. The provision of highways subsidizes the market for housing. Low-density ground-related housing is expensive, hastens the uptake of the greenfield land base, and is contrary to the original goals of the Growth Plan. Growth and infrastructure are co-dependent: it is the way that growth is managed that changes everything. More efficient use of land and infrastructure can be made by directing growth to existing urban areas and protecting lands that are valuable for food, nature, clean air, and water.

When experts were asked about whether additional data was needed to improve infrastructure planning to protect the Greenbelt, the answer was mixed. The need for a water and wastewater capacity and constraint matrix, as suggested by the Neptis Foundation, was welcomed, while others suggested they had all the necessary data to support good decision making and protect the Greenbelt. The type and level of provincial involvement was considered problematic by a

number of interviewees. Most recognize the importance of the Greenbelt and agree on the need to prioritize infrastructure investments and patterns of urbanization that preserves this critical resource.

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8. Appendices

8.1 Appendix A – Planned or Conceptual Infrastructure Projects with Greenbelt Impacts

Project	Location	Timeframe	EA	Project details/Greenbelt Impacts
Highways				
404 extension East	Region of Durham Region of York Township of Brock	2011-2041	Individual, approved 2010	• Destruction of significant woodlots • Destruction of wetlands • Pressures on Maskinonge PSW
GTA-West	Region of York Region of Peel Region of Halton	2011-2031	Individual, ongoing, EA exemption	• Loss of natural heritage and agricultural land in Protected Countryside, Credit and Humber River crossings and multiple streams, facilitates growth in Greenbelt settlements
Niagara-GTA	Halton Region City of Hamilton Region of Niagara	2011-2031	Individual, completed	• Niagara escarpment crossing small loss of agricultural land in Protected Countryside due to QEW widening
County Road 9-Oak Ridges Road	Northumberland County	2017-2041		• Conceptual – goods movement corridor to be discussed with MTO • Possible impacts to the Oak Ridges Moraine -south of Rice Lake
Niagara Transportation Master Plan	Region of Niagara	2017 -2041	In process	• Goods movement strategy to tie into Niagara GTA- no discussion of freight strategy or GB policy context
Bradford Bypass aka 404 Extension to Bradford	County of Simcoe Region of York	2002- 2031	Individual completed, EA Exemption	• Impact on Provincially Specialty Crop area of the Holland Marsh • Probable Holland River, specialty crop area impact from construction, stormwater runoff and road salt
Redhill Expressway extension	City of Hamilton	TMP 2041	Proposed extension beyond 2031, No EA to date	• Conceptual connection to airport mapped in Transportation Master Plan • Crosses through protected countryside
Transit				
VIA High Speed train		Possibly after 2021	Planning underway	• Minor loss of land in Protected Countryside due track twinning

				• Temporary, highly localized impacts on vegetation and watercourses during construction • Potential facilitator of leapfrog development in Peterborough County
Major Transit Station areas (MTSAs) in or adjacent to the Greenbelt	Gormley GO Station Town of Whitchurch-Stouffville, York Region Agerton, Trafalgar Secondary Plan Town of Milton Halton Region Kirby Station City of Vaughan York Region The Gore GO Station Mayfield West II Town of Caledon, Peel Region Bolton GO Station Town of Caledon Peel Region Casablanca GO Station Town of Grimsby Niagara Region	RTP 2041		• Potential to encroach on Greenbelt or degrade natural ecosystem services • Loss of agricultural land • Adjacent urban development puts pressure on the Greenbelt
Water and Wastewater				
Cavan Monaghan Water Supply Master Plan for Millbrook area	County of Peterborough	Suspended - included in updated 2041 WWW Master plan	class, approved 2007, updated 2010, 2020	• Transfer of water from Millbrook in Oak Ridges Moraine to support development in Fraserville, Millbrook
Lake based Servicing extension from	Region of Halton	to 2031	Class	• Potential impacts on the NEP

Milton to Georgetown				
Pressure Zone7-Caledon water main extensions	Region of Peel	2021-2031	Class C EA	• Proposed • May be built in the Greenbelt area • Potential loss of agriculture land
Upper York Sewage Solutions	Region of York	2021-2031	Individual, ongoing- Province hasn't approved northern option – may choose to twin YDSS to Lake Ontario	• Possible inter-basin water transfer • Impacts on Lake Ontario beaches, Oak Ridges Moraine

8.2 Appendix B - Sources

8.2.1 Interviews

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8.2.3 Documents

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https://www.connectcw.ca/water-supply

York Region WWW Master Plan
https://www.york.ca/wps/portal/yorkhome/environment/yr/waterandwastewater/waterandwastewatermasterplan/!ut/p/z0/fY3LDolwEEW_xYVLM41Pto0xAoa4xW7IqBUqMlU6ivy92JWJxt09J3fuglIUFOHD5MjGElYDH9Qyi-Q2CsOdiPfzYC2k2Mt4ugrEZjGDGNT_wrBgrm2rJKiTJdZPhrR3mc_EY9FbVw5wY8N3Lwpb67HQ9DDOUu1Vh6wd0rnDG2sPv1z9Tq6pkN5Ppy5ZJzmoBrmYGLpYSL9PfrmPmaZUx76ToxcDr1Mm/#.YCxBf2hKj6Y

8.2.4 Websites

Highways

GTA-West Corridor
http://www.gtawest.com/

Niagara-GTA Corridor
http://www.niagara-gta.com/

Bradford Bypass
https://www.bradfordbypass.ca/

Transit

GO Transit
http://www.gotransit.com

Regional Transportation Plan

http://www.metrolinx.com/en/regionalplanning/rtp/

Water and Wastewater

Upper York Sewage Solutions
http://www.uyssolutions.ca/