Hamilton

CITY OF HAMILTON

AIRPORT EMPLOYMENT GROWTH DISTRICT

Transportation Master Plan Update

(AEGD TMP Update)

September 2023

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Executive Summary

By 2051, the Hamilton Airport Employment Growth District (AEGD) aims to accommodate more than 28,000 employees. This strategic employment growth area is supported by the Council approved AEGD Secondary Plan and Master Plans for Transportation (2011), Water and Wastewater (2016), and Stormwater (2017). Following a relatively minor implementation update to the Transportaton Master Plan (TMP) in 2016, the AEGD TMP has undergone a comprehensive review and update to: re-evaluate the approved transportation network; integrate the approved Complete Street Design Guidelines; reassess road alignments to address potential impacts to natural and cultural heritage elements; and ensure a sustainable, resilient network that is responsive to climate change, the movement of people and goods, and development industry needs.

The main drivers for the comprehensive review and update of the AEGD TMP was due to a number of new policy influences, land use development needs and pattern changes, and Transport Canada concerns related to a future collector road that was in alignment with the runway 24-06.

Specific objectives of this TMP update included:

- Continuing to implement a transportation strategy that supports growth in the AEGD consistent with vision and principles established in the Secondary Plan;
- Identifying barriers that hinder multimodal transportation network connections and addressing deficiencies through network modification, including: reviewing implementability from a known constraints perspective, e.g. natural & cultural heritage inventory, utility corridors, etc.;
- Protecting future transportation corridors and associated Right of Way widths required to accommodate Complete Streets Design elements as well as enhanced storm water management features;
- Integrating new city-wide policy directions and programs to inform the infrastructure needs assessment for the study area (e.g., Climate Change Action Plan, Vision Zero);
- Reviewing the collector and arterial road network relative to size and form of approved land uses and developments, and confirming the roadway's functional classification;
- Updating preliminary cost of road network improvement projects including phasing of implementation; and
- Validating the previously identified Municipal Class Environmental Assessment (EA) schedules for all road projects within the study area.

Consistent with the EA process, the proposed network links were evaluated both individually and holistically according to a number of criteria related to transportation

service and engineering, as well as cost, socio-economics, cultural environment, and natural environment factors. Through stakeholder engagement, the transportation network was further refined to address concerns and to meet the development industry needs.

To achieve the above study objectives the following improvements were evaluated and/or integrated:

- Elevating transit service quality and increasing its accessibility;
- Developing a Travel Demand Management (TDM) plan to promote alternatives to single-occupant vehicle travel;
- Improving pedestrian, cycling and recreational trails network to enhance connectivity, taking into account know constraints for feasibility;
- Incorporating outcomes from the city-wide Truck Route Master Plan (TRMP) to ensure direct routes within the study area, connecting it to major hubs for goods movement and the provincial highway system;
- Improving road network as follows:
    - Removing certain road projects entirely, or partially, from the network;
    - Redesigning road cross-sections across all functional classes to provide wider ditches for stormwater management, and relocating cycling infrastructure away from travel lanes for increased safety and comfort;
    - Updating the functional classification of all collector and arterial roads;
    - Updating cost estimates and laying out phased plans for all road projects'; and
- Conducting an inventory of built heritage and cultural landscape features within the study area to mitigiate or prevent potential impacts from the proposed road network changes.

Various road network scenarios were examined as part of this review utilizing the City's Travel Demand Forcasting Model to forecast traffic and transit volumes and associated transportation performance such as Level of Service and volume to capacity ratios. The analysis sought to identify the optimal road capacity needed to address growth, but not overbuilding roads at the expense of the natural and cultural environment.

The following network modifications are recommended as shown in Figure 11 (found in Chapter 4 of this report):

- Removal of Collector 7E west of Upper James Street from the network to avoid impacts to the Hamilton Street Railway (HSR) Mountain Transit Centre (MTC) and address the Hamilton International Airport's concerns related to runway 24-06 operation and safety;
- Re-alignment of Collector 6N which runs midblock between and parallel to Dickenson Road West and Twenty Road West to avoid impacts on the HSR MTC and its operations;

- Shortening of Twenty Road Extension west of from Southcote Road and reducing its capacity to one lane each direction to avoid impacts on Hydro One infrastructure;
- Change to functional classification of Collector 1N south and parallel to Dickenson Road to a Minor Arterial classification to improve connectivity and redundancy in the network of arterial roads in the study area;
- Removal of Collector 2E from the network south of Collector 1N due to changed land fabric;
- Increase of Collector 2W capacity between Garner Road East and Dickenson Road Extension, from two lanes to four lanes, to offset capacity reduction to Glancaster Road;
- Reduce Glancaster Road capacity between Garner Road East to Dickenson Road, from four lanes to two lanes, due to physical constraints in the corridor related to exiting hydro infrastructure and residential land uses; and
- Reinstate previously removed roads from “Whitebelt” lands in the study area to improve connectivity and provide land accessibility.

The recommended road network improvements, construction costs, and land requirements are subject to further refinement during subsequent phases of the EA process (Schedule 2-4, as applicable) and development application approvals.

The AEGD TMP Update & network modification is not just a vision for a more efficient transportation network for the study area, but a stepping stone towards sustainable, well coordinated infrastructure, that supports goods and people movement and employment growth within and surrounding the study area, while incorporating factors such as natural environment preservation, and climate change resiliency.

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Introduction

1.0 INTRODUCTION

1.1 Background

The Airport Employment Growth District (AEGD) is a Provincially significant employment zone, strategically located in the City of Hamilton to provide stable and reliable employment for the City and across the region.

The study area is located in the City's southwest, encircling the John C. Munro Hamilton International Airport as shown in Figure 3. Parts of the study area are within the existing urban boundary while lands located to the south and west of Highway 6 South are in the rural area in Figure 4. The study area is characterized as predominantly existing agricultural and rural residential lands although lands within the AEGD are primarily zoned industrial in accordance with the approved Secondary Plan for the area.

By 2031, planned growth for AEGD was forecasted to reach 28,000 employees in accordance with the 2006 Growth Related Integrated Development Strategy (GRIDS). The original AEGD Transportation Master Plan (TMP) was prepared in 2011 in support of the Secondary Plan to develop a transportation strategy to accommodate the projected employment and the City's long term vision for a vibrant employment district.

The overall Vision of the AEGD was identified in the AEGD Secondary Plan, section 8.2.1., as follows:

> *"The Hamilton Airport Employment Growth District is vibrant and visually appealing and the natural and cultural heritage resources in the area have been preserved and used to establish a distinct character for the area. It is a working community that attracts a range of airport related and other businesses providing both conventional and knowledge-based services. The environmental footprint of the district has been managed through a range of sustainable design techniques and the character of the surrounding land uses have been protected through appropriate land use transitions and transportation planning."*

A major goal of the Vision has been to attract technologically advanced industries into the AEGD, such as industries with a long-term vision in the carbon neutral and energy sectors.

Approved by Council in 2011, the Ontario Municipal Board (OMB), now the Ontario Land Tribunal (OLT), approved and amended AEGD Secondary Plan in 2015 following the execution of a Minutes of Settlement between the City and various land owners within the area that appealed the plan. This resulted in modifications to land use configurations in the plan which in turn affected the Council approved TMP.

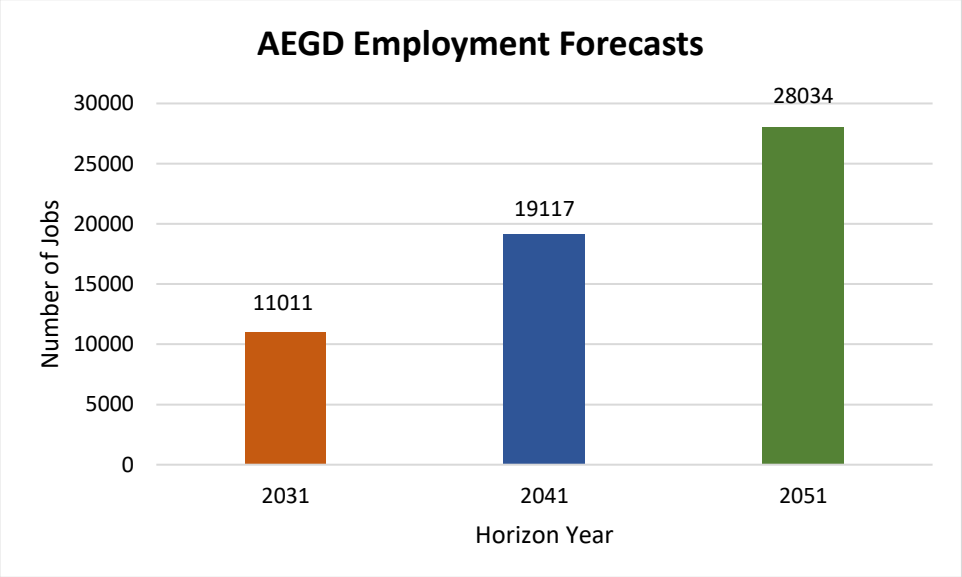
Therefore, in 2016, the AEGD TMP Implementation Update was undertaken and approved by Council which confirmed the ultimate network recommendations and the potential change in timing and priorities of improvements and service provisions required to accommodate the new land use configuration.

Since 2016, a number of new policy influences have emerged, land use development needs and patterns have changed, and Transport Canada has expressed concerns related to a future collector road that was in alignment with the runway 24-06 at Hamilton International Airport. As a result, a transportation analysis was undertaken as part of this study, to confirm the functional classification and Right-of-Way (ROW) widths of all roads, modify network to take into account recent development trends and confirm future transportation system needs in alignment with emerging policy influences.

Since the 2016 TMP Implementation Update, The Province of Ontario provided the City of Hamilton with new population and employment growth targets for the 2051 planning horizon. Between the years 2021 and 2051, Hamilton is forecast to grow by 236,000 people and 119,000 jobs, totally 820,000 people and 357,000 jobs.

Through the Growth Related Integrated Development Strategy (GRIDS 2) and Municipal Comprehensive Review (MCR) process, the City determined the AEGD total employment forecasts for 2031, 2041 and 2051 as 11,011 jobs, 19,117 jobs and 28,034 jobs, respectively, as shown in Figure 1.

Figure 1 - Employment forecast for 2031, 2041 and 2051 horizon years



1.1.1 Hamilton Airport Employment Growth District: Transportation Master Plan (2011) and Implementation Update (2016)

Hamilton AEGD TMP was approved by Council in 2011, followed by a TMP Implementation Update approved in 2016.

By 2051, planned growth of the AEGD is expected to exceed 28,000 employees. The AEGD TMP (2011 and 2016) provided a transportation strategy that supported employment projections for the AEGD and the City of Hamilton's long-term vision.

The following policy documents guided the development of the AEGD TMP 2011, the Implementation Update (2016) and this update:

- Airport Employment Growth District Secondary Plan (2011)
- Airport Employment Growth District Transportation Master Plan (2011),
- Airport Employment Growth District Transportation Implementation Strategy (2017),
- Airport Employment Growth District Water and Wastewater Servicing Master Plan Update (2016),
- Airport Employment Growth District Subwatershed Study and Stormwater Master Plan Implementation Document (2017)
- City in Motion - City-wide Transportation Master Plan (2018)
- Complete Street Design Guideline (2022)
- Cycling Master Plan – Shifting Gears 2009 and 2018 update
- AEGD Eco-industrial Design Guidelines (2010)
- Hamilton Biodiversity Action Plan (June 2023)
- Hamilton Strategic Road Safety Program and Vision Zero Action Plan (2019 – 2025)
- Rapid Ready (HSR) – Expanding Mobility Choices in Hamilton
- Recreational Trails Master Plan (2016)
- HSR Ten-Year Local Transit Strategy (2015 to 2024)
- Transit-Oriented Development Guideline for Hamilton (2010)
- Truck Route Master Plan 2022
- Urban Forestry Strategy (May 2023)
- Urban Hamilton Official Plan (2009)

1.2 Problem and Opportunity Statement

The update to the AEGD TMP was initiated to address the following problems and seize opportunities as follows:

- Market demand for lot size and changes in form of development has changed since the roadway network was last approved trending to larger parcels with a warehousing focus.
- Road functional classification definitions in the AEGD TMP related to arterial and collector roads are inconsistent with those in the Urban Hamilton Official Plan.
- The need to mitigate known and anticipated impacts of the future road network on natural and cultural heritage resources, existing land uses including utilities (e.g. the airport, Hydro One corridors, and HSR) at network level.

- Update the transportation blueprint for the study area to: improve opportunities for all transportation modes, emphasize the importance of natural heritage systems and existing residential communities through its implementation, and build in resiliency to address a changing climate.

1.3 Study Objectives

The AEGD TMP is a strategic policy document developed to provide the framework which guides future transportation-related studies and implementation of the recommended network within the AEGD. This study is to review and update the AEGD TMP through the achievement of objectives as listed below:

Objective 1: Develop a transportation strategy that supports development of the AEGD consistent with its Secondary Plan vision and principles.

Objective 2: Identify potential barriers that preclude road network connections and mitigate deficiencies through network modification for the planned transportation network anticipated for the 2051 horizon, including reviewing implementability from a known-constraints perspective, e.g. Natural & Cultural Heritage Inventory, utility corridors, etc.

Objective 3: Identify and protect future transportation corridors for the revised cross-section design.

Objective 4: Integrate new city-wide policy directions and programs to inform the AEGD TMP update infrastructure needs assessment.

Objective 5: Review the collector and arterial road network relative to size and form of approved land uses and developments, and confirm their functional classification.

Objective 6: Identify preliminary cost estimates for transportation infrastructure improvement projects and update the phasing of their implementation.

Objective 7: Confirm the previously identified Municipal Class EA schedules for all road projects within the AEGD.

Objective 8: Satisfy Phases 1 and 2 of the Municipal Class EA processes where network locations are unchanged and satisfy Phase 1 of the EA process where network connections are modified/added.

1.4 Scope of Work

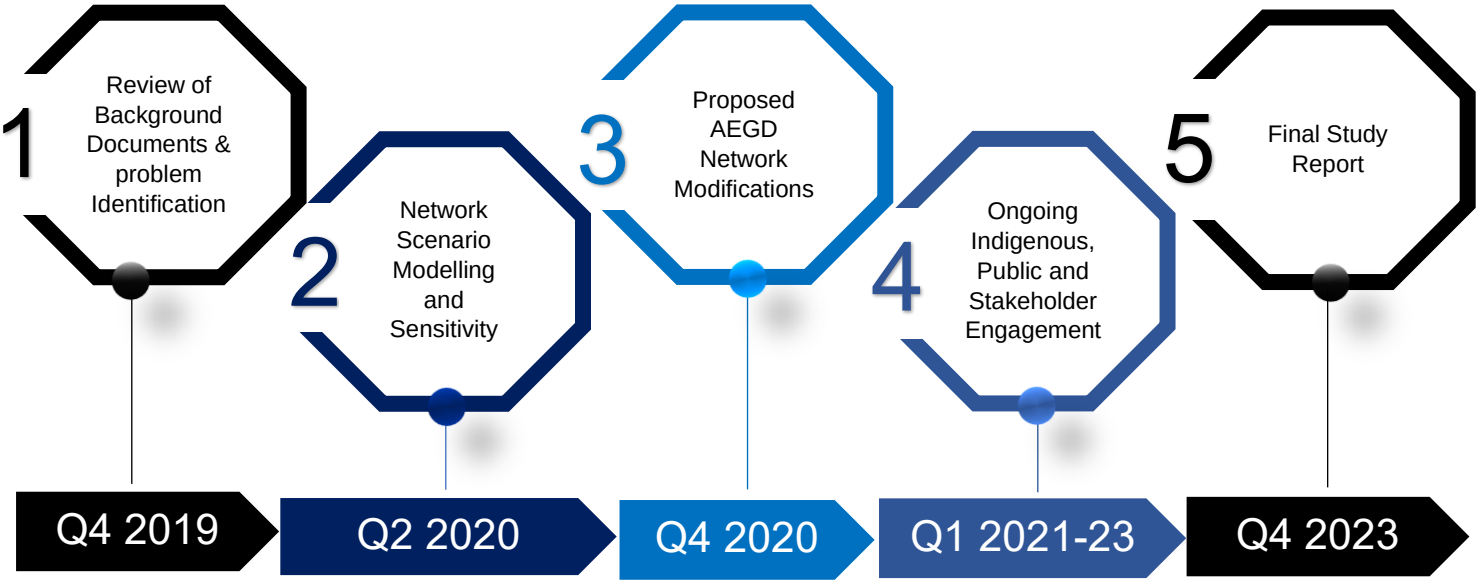
The study included the following major tasks:

- Review the previously approved transportation network and assess infrastructure needs in response to recent policy changes, employment projections and approved landuse development applications.
- Test the sensitivity of network changes in the travel demand model to ensure the future transportation network capacity will meet the projected demand.
- Confirm the ultimate multimodal network recommendations and potential change in timing and priorities of improvements to accommodate future demand as identified in the GRIDS 2 Study.
- Confirm functional classifications and alignments for the collector and arterial road network.
- Update roadway cross-section designs for various road typologies in accordance with the Complete Street Design Guideline, including corresponding ROW widths.
- Update cost estimates for road infrastructure projects.
- Fulfill requirements of the EA process via evaluation of road links individually and holistically, and engage with public, stakeholder and Indigenous Communities to ensure transparency of decision-making.
- Confirm the EA study classifications (e.g. Schedule B or Schedule C) for all identified collector and arterial roadways, and identify next phases of study and implementation.

1.5 Study Process

The study followed a step-wise process, with public, Indigenous Communities, agencies and stakeholder engagement, as presented in Figure 2, together with timelines.

Figure 2 - AEGD TMP Study Process.



The key points of public engagement were fulfilled as follows:

a. The Notice of Commencement and **Public Information Center (PIC) #1** was published in Hamilton Spectator one and two weeks prior to the PIC, as well as via City's social media channels (i.e. Twitter, LinkedIn, and Instagram), per Appendix 4.

b. A virtual public meeting took place on May 13, 2021. The meeting presentation was recorded and shared for public review. The comment period, initially two weeks after the meeting, was extended to three weeks (until May 27, 2021) to allow additional time to provide feedback.

The following Indigenous Communities were engaged with via direct mail, email, and by phone (where required) to solicit their participation and input in the project:

- **Mississaugas of the Credit First Nation -** Department of Consultation and Accommodation (DOCA) of the Mississaugas of the Credit First Nation
- **Six Nations of the Grand River (both elected Council and The Haudenosaunee Confederacy Chiefs Council) -** Six Nations Land and Resources Department, Land Use Unit for the Six Nations of the Grand River Elected Council (SNEC), and Haudenosaunee Development Institute (HDI) for the Haudenosaunee Confederacy of Chiefs Council (HCCC)
- **Huron Wendat First Nation at Wendake**

c. The following is a summary of key engagement events outside of the public forum:

- Six Nations - PIC #1 - (August 11, 2021)
- Six Nations - Cross-section re-design Meeting #1 (Jan 5, 2023),
- Six Nations - Cross-section Meeting #2 (March 8, 2023)
- The John C. Munro Hamilton International Airport Authority – (March 16, 2021)
- Ministry of Transportation Ontario - (March 3, 2021)
- Infrastructure Ontario (Hydro One) - (December 8, 2021)
- Land owners & Developers – Ongoing

For a complete list of engagement activities, refer to Appendix No. 4 (Engagement Compendium).

Based on feedback received from stakeholder groups, the project scope was expanded to include:

- Completion of a cultural heritage (built and landscape heritage) inventory of the study area.
- An assessment of the road cross-section design to ensure stormwater conveyance capacity and constructability and to conform with AEGD Stormwater Master Plan directions and Eco-Industrial Design Guidelines.
- Additional engagement efforts were undertaken in October 2022 to solicit stakeholder feedback (e.g. Indigenous Communities, Infrastructure Ontario and impacted landowners, etc.) on revised cross-section designs.
- A feasibility study to determine the alignment of Collector 6N and its intersection with Upper James Street. The study evaluated impacts of possible alignment alternatives on HSR MTC operations, cultural and natural heritage resources, and development of impacted lands.
- Additional engagement efforts were carried out to include impacted land owners and the Niagara Peninsula Conservation Authority, which resulted in the update of available natural heritage information.

Figure 3 - Airport Employment Growth District in Context

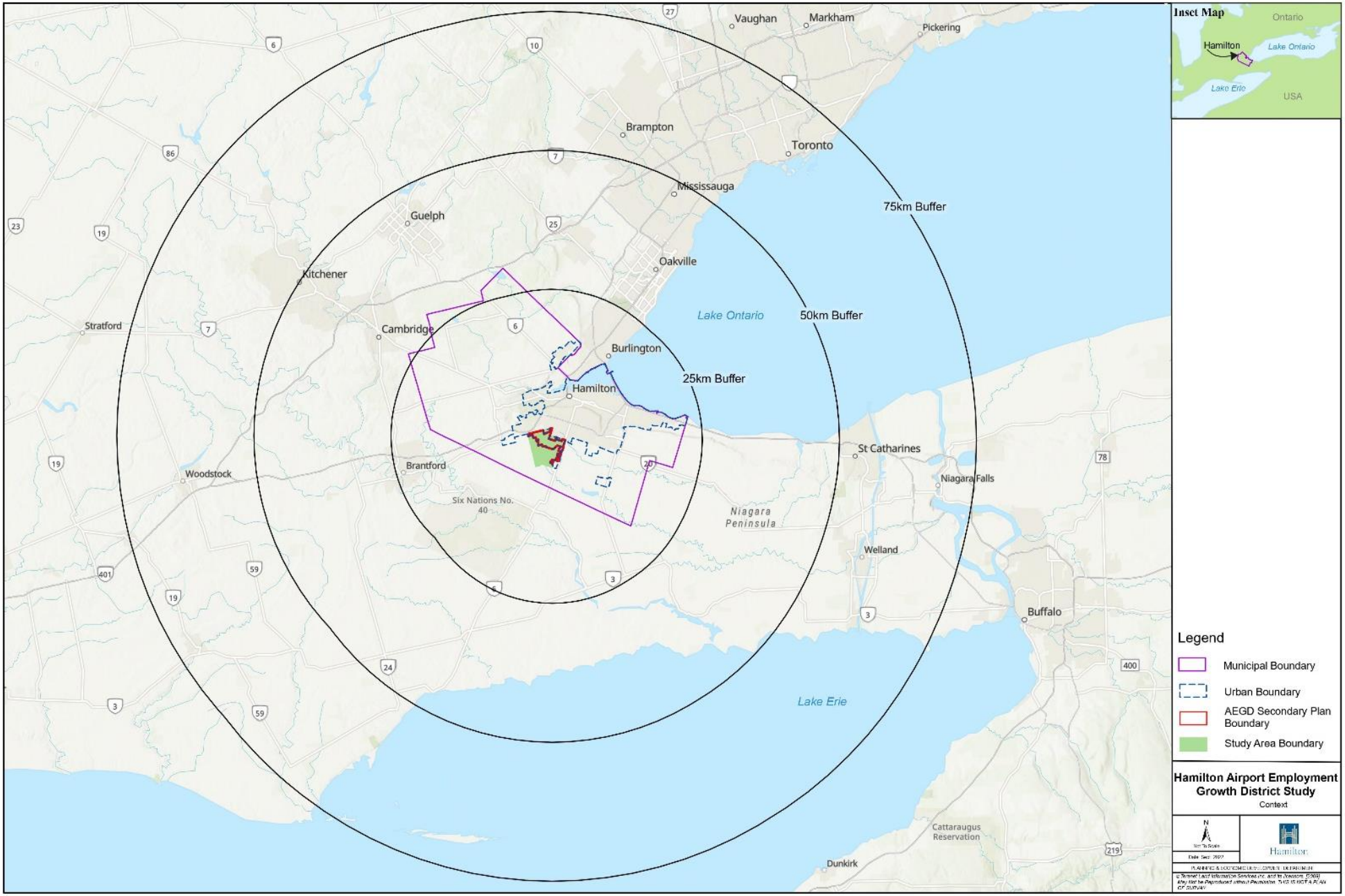
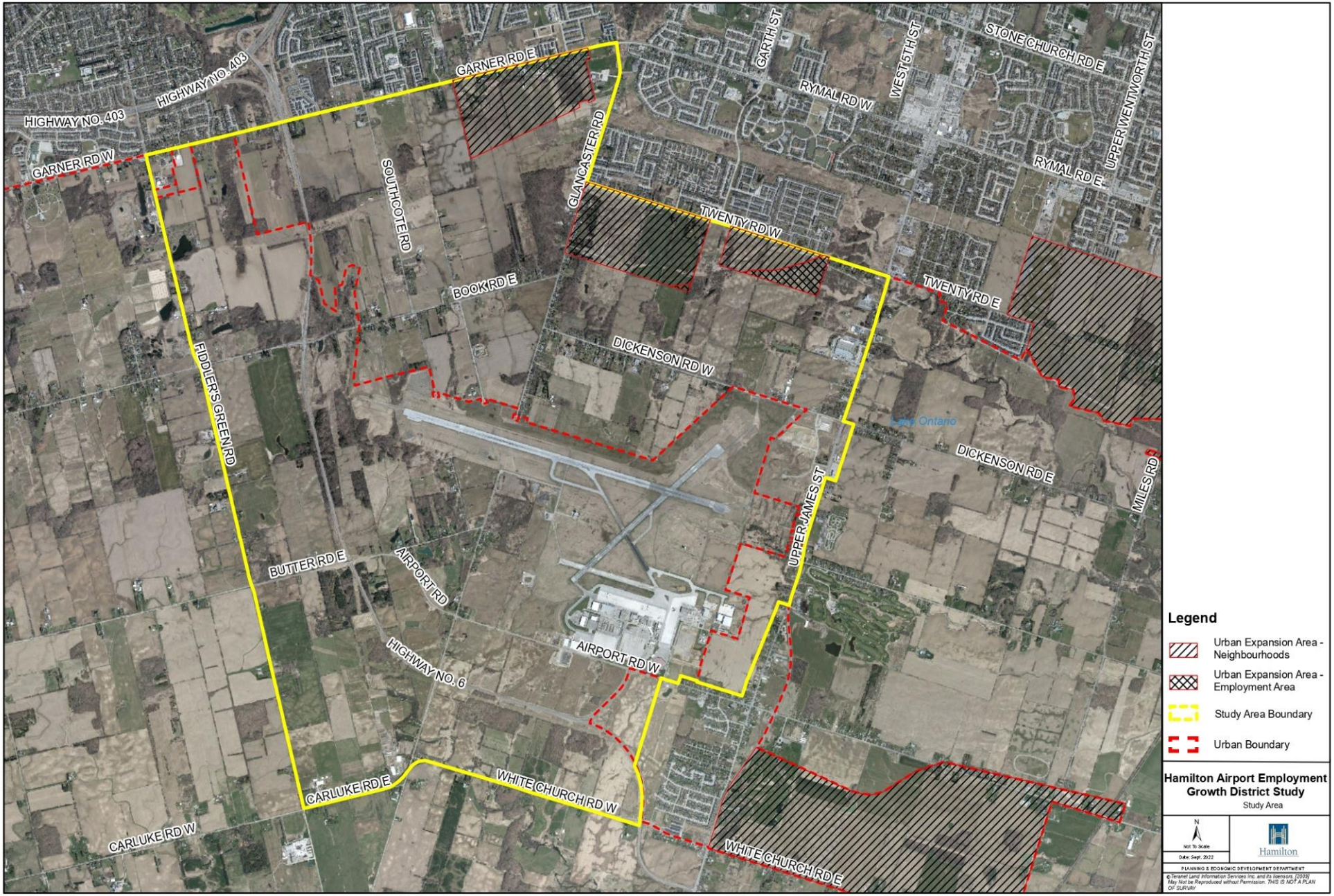


Figure 4 - Study Area



1.6 Municipal Class Environmental Assessment Process and Schedules

The EA process includes the evaluation of possible solutions or design concepts and recommends the best approach based on an evaluation of impacts and mitigation measures for potential risks. A summary of the five phases of the EA process is:

Phase 1 – Identify the problem or opportunity.

Phase 2 – Identify and evaluate alternative solutions to address the problem and establish the preferred solution.

Phase 3 – Examine alternative methods of implementing the preferred solution and establish a preferred design concept. Identify measures to minimize adverse effects and maximize positive effects.

Phase 4 – Prepare an Environmental Study Report which summarizes the rationale, planning, design and consultation process for the project.

Phase 5 – Implement the Project. Master Plans address Phases 1 and 2 of the EA process.

Typically, the Master Plan is done at a broad level of assessment thereby requiring more detailed investigations at the project-specific level in order to fulfil the requirements for specific Schedule B and C projects identified within the Master Plan. Certain projects (Schedule A+ and A) can be implemented upon approval of the TMP. All Schedule C projects previously approved as part of the AEGD TMP 2011 and this TMP Update will require completion of the subsequent phases of the EA process.

Approach 1 for Master Plans involves the preparation of a Master Plan document at the conclusion of the first phase of the EA process, whereas, Approach 2 for Master Plans involves the preparation of the Master Plan at the conclusion of first two phases of the EA process. This project process has fulfilled the requirements of the EA process for Phases 1 & 2 for reconfirmed roadways, and Phase 1 for roadways in new locations.

Table 1.1 shows examples of the types of road projects in each EA Schedule.

Table 1 - Examples of projects associated with EA Schedules.

EA Schedule	Types of Projects
Schedule A	Normal and/or emergency operational and maintenance activities (e.g., re-surfacing, re-designation of an existing General Purpose lane). The environmental impact of these projects is minimal.
Schedule A+	Pre-approved minor capital projects with minimal environmental impact (e.g., construction of sidewalks or bike paths or lanes within the ROW). Public is to be advised prior to project implementation.
Schedule B	Improvement and minor expansion of existing road infrastructure which has adverse environmental impact. Therefore, an environmental screening and consultation with those who may be affected. (capital cost of less than $3.3 million).
Schedule C	Construction of new facilities and major expansions of existing infrastructure requiring completion of all five phases of the EA process with public, Indigenous Communities and stakeholder consultation.

1.7 Existing Conditions

This Section describes the existing land use, transportation infrastructure and services in place in the AEGD.

1.7.1 Land Use

The study area comprises 1,204 hectares of land that is bounded by Upper James Street in the east, White Church Road and Carluke Road in the south, Fiddlers Green Road in the west and Garner Road East and Twenty Road West in the north.

The study area is characterized primarily by agricultural and rural residential lands. Major defining features of the study area are John C. Munro Hamilton International Airport (The Airport) and the existing supporting airside businesses. Figure 5 illustrates some of the existing residential and industrial uses in the study area.

Figure 5 - Residential and Industrial Uses in the Study Area.

DHL Facility

Kelowna Flightcraft (KF) Aerospace

Residential

A total of 86 Built Heritage Resources and 73 Cultural Heritage Landscapes are confirmed within and adjacent to the business park. The study area contains two churches along the

south side of Garner Road East, a secondary school at Garner Road East and Glancaster Road. Eight (8) cemeteries as well as the Ancaster Pet Cemetery are in the study area.

The AEGD Secondary Plan categorizes the employment area land use designations into four types as briefly described below:

Airport Prestige Business – Lands designated as Airport Prestige Business, for the most part, have frontage on the major roads in the AEGD. These areas will house a broad range of industries, including manufacturing, warehousing, transportation terminals, office, power generation, high technology industry, hotels, and halls.

Airport Light Industrial – Lands planned for employment uses that don't require frontage on major roadways. A broad range of uses are permitted on Airport Light Industrial lands, including manufacturing, warehousing, communication and high technology activities, conference centres, and commercial rental establishments.

Airside Industrial – These employment lands are located adjacent to the Airport due to their need for direct access to the airport. Permitted uses are warehousing, transportation terminals, airport transportation and cargo services, airport waste processing, research and developments, office, communication and high technology activities, and utility activities benefiting from proximity to airport services.

Airport-Related Business – These lands are planned for employment uses that benefit from proximity to the airport or services for travellers. Permitted uses are commercial rental establishments, commercial motor vehicle and equipment rental, military museums, catering services, taxi terminals, motor vehicle service stations and washing, and convenience stores.

1.7.2 Travel Patterns and Infrastructure

In order to inform the evaluation of network alternatives, it is useful to understand how and where people and goods currently travel. Travel patterns presented here are primarily based on the Transportation Tomorrow Survey (TTS) from 2016. Although dated, the data is still considered representative of current travel patterns today, given the less significant changes in land use type. The data is presented at the traffic analysis zone (TAZ) level and compared with City-wide travel patterns.

Traffic zones that represent the AEGD are labelled as 5020, 5027, 5038, 5048, as depicted in Figure 6.

Figure 6 - Study Area Traffic Zones

For the travel forecast analysis, these zones are split to increase the travel pattern visibility in the study area. The Airport is located in zone 5020, and all Airport trip activities are captured in this data set. Based on 2016 TTS data, trips to and from the study area are presented in Table 6. The trip data is for all modes and for AM peak hour.

Origin \ Destination	Study Area	City of Hamilton	Outside of Hamilton
Study Area	162	624	398
City of Hamilton	1583	198138	59434
Outside of Hamilton	461	44206	

Existing infrastructure capacity supports the travel demand for current land use and community needs; however, additional multimodal capacity in the network will be required to accommodate growth in the study area and surrounding communities.

1.7.2.1 Roads

The AEGD road network is mainly comprised of two-lane and four-lane rural collector and arterial roads. The main access to the area is via Highway 6 South, Upper James Street and Garner/Rymal Road.

1.7.2.2 Transit

Existing transit service is limited in the area. Routes 20 and 27 provide north-south service along Upper James Street. At the time of this study update, HSR modified Routes 20 and 27 to increase transit service and accessibility to new workplaces along Aeropark Boulevard,

including the Amazon Fulfillment Centre. Route 44 (Rymal) provides east-west service with 15-minute service frequencies on weekdays peak periods and 30-minute frequencies in the off-peaks.

1.7.2.3 Walking and Cycling

The area provides connection to other parts of the City through a partial network of “Cautionary Bike Routes” and no protected or signed cycling facilities exist within the study area. Narrow gravel shoulders and lack of active transportation facilities add to the challenges and safety concerns of pedestrians and cyclists sharing the ROW with vehicular traffic.

1.7.2.4 Recreational Trails

Recreational trails are currently limited within and in the proximity of the AEGD. Chippewa Trail is the only multi-use path that runs in a north-east direction and is located to the south east of Airport Road. The Hamilton Recreational Trails Master Plan identifies a well-connected and comprehensive trail system that connects rural and natural areas to Hamilton's urban communities. The trail network increases network redundancy and interconnectivity for cyclists and pedestrians.

1.7.2.5 Truck Routes

The study area boundary roads are designated full-time truck routes, including Upper James Street, Rymal/Garner Road East, Fiddlers Green Road, Carluke Road and White Church Road. Highway 6 South is a provincial highway traversing the study area and is a key goods movement corridor providing truck accessibility to Highway 403.

Trucks may also use existing non-designtated routes if the roadway is on the shortest path to the destination/origin.

1.8 Background Document Review

1.8.1 A Place to Grow Growth Plan

The Growth Plan informs decision making regarding growth management and environmental protection in the Greater Golden Horseshoe area. The Plan provides that the applicable time horizon for land use planning is to 2051 and establishes population and employment growth targets as presented in Schedule 3 of the document.

1.8.2 Provincial Policy Statement

The Provincial Policy Statement (PPS) provides overall policy directions on matters of provincial interest related to land use planning and development in Ontario, and applies province-wide, except where this policy statement or another provincial plan provides otherwise. The PPS provides direction for municipalities on urban and rural land use plans, building strength and healthy communities (e.g. energy, transportation systems and corridors, climate change, etc.), wise use and management of resources (e.g. natural and cultural heritage, agriculture, etc.) and protecting public health and safety (e.g. natural and human made hazards).

1.8.3 Growth Related Integrated Development Strategy (GRIDS2) and Municipal Comprehensive Review (MCR).

Following the completion of an integrated process for GRIDS2 and the City's Municipal Comprehensive Review, the Provincial Government approved Urban Hamilton Official Plan Amendment 167, and Rural Hamilton Official Plan Amendment 34, which resulted in the expansion of Hamilton's Urban Boundary by 2,200 hectares. As a result, three areas of land directly adjacent to the AEGD were added to the Urban Area and identified as "Urban Expansion Area - Neighbourhoods" and "Urban Expansion Area - Employment". Further land use planning for these areas is required through the development of secondary plans to determine detailed land use designations. See Figure 8 for the extent of these lands and their designations.

1.8.4 Complete Street Design Guidelines and Climate Change Impact Adaptation Plan (CCIAP)

In 2019, the City of Hamilton declared a Climate Emergency and instructed staff to develop a Climate Change Action Strategy, encompassing both Adaptation and Mitigation plans. As part of this strategy, the Climate Change Impact Assessment Plan (CCIAP) played a pivotal role in emphasising the importance of and integrating Low Impact Development features within the built environment.

This plan served as a catalyst for this study aimed at enhancing the adoption of active and low-emission transportation methods by improving network connectivity, efficiency, and redundancies. Furthermore, this study had a dual focus on preserving and enhancing the natural environment, particularly Provincially Significant Wetlands and woodlots, aligning with the objectives outlined in the CCIAP.

This study's alignment with the CCIAP objectives also resonated with the goals and principles set forth in the Complete Street Design Guidelines, guiding the redesign of road cross-sections for a more sustainable and climate-resilient urban environment.

2

Study Methodology

2.0 RATIONALE FOR ROAD NETWORK MODIFICATION

This chapter delves into the intricate factors that necessitate a re-evaluation and modification of the previously approved transportation network.

2.1 Network Review and Evaluation Approach

2.1.1 Rationale for Changes

The study area's transportation network underwent a review and modification process for various reasons:

- Inconsistent Functional Road Classifications: The previously approved road classifications did not align with the functional classification specified in the Urban and Rural Hamilton Official Plans.
- Changing Parcel Sizes and Traffic Impacts: The growth and development patterns within the study area indicate a trend to larger parcel sizes. As larger parcels are subdivided or consolidated, the transportation needs and the capacity of surrounding roads are invariably affected. The updated Master Plan takes these changing parcel dynamics into account to ensure that the multimodal transportation network remains resilient and adaptable.
- Implementability and Constraints: While envisioning a robust transportation framework, this network review and evaluation recognizes and addresses known constraints that could limit the feasibility of certain projects. Whether these constraints arise from land use challenges (Hydro-One corridors), existing residential communities, natural or cultural heritage concerns, this update provides a pragmatic and implementable roadmap for transportation network development.
- Phasing and Timing of Projects: The review included confirmation of the order in which road projects should be implemented and the anticipated timing for each phase.
- Addressing Concerns from Authorities: Transport Canada expressed concerns regarding the proposed Collector 7E road related to runway 24-06 safety and operational issues at the Aiport. Similarly, the HSR raised concerns about the proposed Collector 6N due to potential impacts on MTC operations and infrastructure. In turn, Natural Heritage concerns for alignment of Collector 6N were raised by staff and the Niagara Peninsula Conservation Authority.

2.2 Public, Agency, Stakeholder and Indigenous Communities Engagement

An inclusive, transparent, and holistic engagement process involving the public, agencies, stakeholders, and Indigenous Communities was undertaken as part of this study.

Modified network and revised typical cross-sections were presented to all involved. Members of the public and property owners offered unique insights, local knowledge, and perspectives

on the transportation challenges and opportunities in the area. Indigenous Communities voiced their concerns and interests related to protection of natural environment, wildlife habitat and crossings, and areas of archaeological significance.

Agencies, developers, and stakeholders showed interest in the network modifications. Their concerns were addressed through collaboration that benefits both the district and the wider community. An additional requirement for inventory of cultural heritage features for the study area was requested by the Ministry of Citizenship and Multiculturalism Ontario (MCM).

2.3 Cultural Heritage, Archaeological and Natural Heritage Considerations

2.3.1 Cultural Heritage

Archeology Stage 1, as provided in Appendix 1, was completed as part of the AEGD Secondary Plan process and was not updated for this study. Details within the report informed the evaluation of network modifications.

A Built Heritage Resources and Cultural Heritage Landscape report was completed for this study, as provided in Appendix 2. The report findings informed the evaluation and modification of the network and individual road alignment alternatives, e.g. Collector 6N.

2.3.2 Natural Heritage and Source Water Protection

Original natural heritage inventories were carried out as part of the 2011 Secondary Plan process and incorporated into the Urban Hamilton Official Plan mapping, and was used to inform the transportation network review and modifications.

As part of the Collector 6N alignment review (Appendix 3) an updated natural heritage inventory was undertaken in the area adjacent to the HSR MTC in 2022.

2.3.3 Eco-Industrial Guidelines (2010) and Complete Streets Design Guidelines (2022)

The AEGD Eco-Industrial Design Guidelines' principles informed the 2011 AEGD TMP network and also this study's reconfiguration and redesign of typical cross-sections.

The Complete Streets Design Guidelines were approved by Council in 2022 and were used to inform the redesign of typical cross-sections, focusing on improving safety and accessibility for all road users, including pedestrians, cyclists, public transit, goods movement and other vehicular traffic within the public realm.

2.4 Equity and Climate Change

2.4.1 Equity

In February 2019, City Council passed a resolution to develop an action plan aimed at incorporating an equity-diversity-and-inclusion lens framework into various aspects of the city's operations, including policy and program development, practices, service delivery, budgeting, business planning, and prioritization. Consequently, the integration of an equity lens into the AEGD TMP Update has been a priority. Equity in the context of network planning refers to the

equitable distribution of benefits or impacts across the population. Of particular concern are the adverse effects associated with network modification, including property impacts, safety concerns, traffic congestion, and overall quality of life for current residents within the study area.

Transportation impacts on equity can be measured horizontally and vertically.

> **Horizontal equity** concerns the distribution of impacts between people with similar needs and abilities.
>
> **Vertical equity** is concerned with the distribution of impacts between people with varied needs and abilities as well as income levels.

Equity informed the evaluation of the AEGD transportation network modifications, which resulted in the formation of an integrated and connected multi-modal transportation network that meets the needs of road users of all ages and abilities. Additionally, the criteria for equity, along with the provisions of the AEGD Secondary Plan, guided the recommended modifications and phased implementation of the AEGD road network. This was done to reduce the impact on existing homes and businesses within and near the study area.

2.4.2 Climate Change

Council declared a climate emergency in March 2019. The impacts associated with transportation and related stormwater management can be mitigated by applying innovative design strategies which can add resiliency to the system. Opportunities to provide direct and reliable connections to the provincial highway system help minimize emissions associated with traffic, in particular commercial vehicles.

Aligned with the AEGD Eco-industrial Design Guidelines, incorporating low-impact development features into public infrastructure designs can enhance stormwater management, consistent with Hamilton's Climate Change Action Strategy guidelines. Paired with green infrastructure, these elements can increase rainwater absorption into the soil, minimizing runoff and mitigating the urban heat island effect. Moreover, they offer added social, health and economic advantages.

The evaluation criteria mentioned earlier, combined with input from the public and Indigenous Communities, guided the modification of specific road links and the overall network.

3

Transportation Assessment

3.0 TRANSPORTATION ASSESSMENT

This Section outlines the travel demand forecasting methodology which included the evaluation of individual link modifications and their impact on the overall road network.

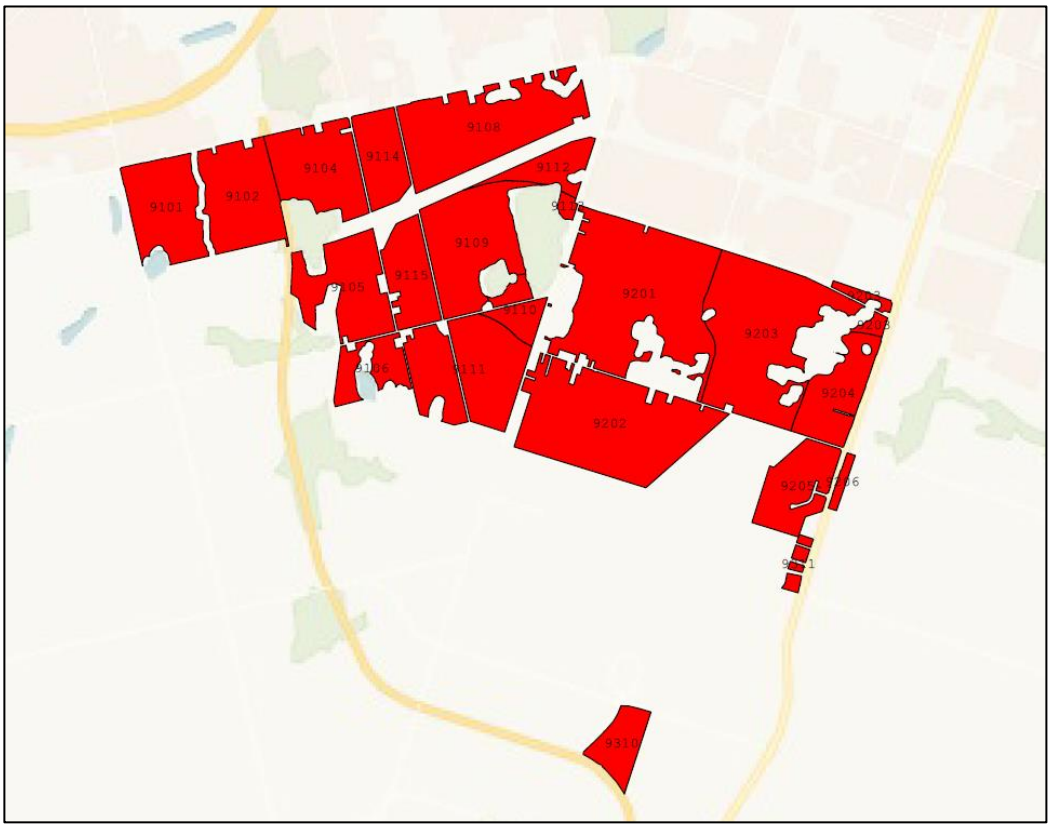
3.1 Forecasting Model

To effectively plan for the transportation needs of the AEGD a transportation demand modelling process was conducted using the City's AM peak hour strategic demand forecasting tool (EMME v4.7). This modelling process builds upon the previous efforts completed for the study area, including the sub-area model development as part of the AEGD TMP 2011 and the subsequent network modifications as part of the AEGD TMP Implementation Update 2016. The trip generation, distribution and mode choice assumptions were carried forward from the sub-area model.

A series of network modification and sensitivity analyses were run to evaluate the impact of network changes on overall transportation network and road segment capacity constraints as a result. Network modifications were made in the model aiming to reduce environmental impacts of the network by removing or revising links where applicable. Additionally, links in the network were modified in response to changing development parcel sizing and concerns from Transport Canada and the Airport with respect to potential conflicts with airport operations.

The study area is represented by four traffic analysis zones in the City-wide transportation model. These four traffic analysis zones were divided into sub-zones to enhance the visibility of trip patterns and improve the understanding of how people and goods move within the study area and beyond.

Figure 7 - Traffic zone structure of the study area.



In November 2022, Urban Hamilton Official Plan Amendment 167 was approved, which added lands abutting Garner Road East the Twenty Road West to the urban area. The land use designation for these lands is identified as “Urban Expansion Area – Neighbourhoods” and “Urban Expansion Area – Employment”, and is subject to a secondary planning process.

Due to the absence of land use densities for the urban boundary expansion areas at the time of preparing this report, trips generated from the urban boundary expansion areas are not reflected in the model for this TMP update.

Figure 8 identifies the secondary plan area land use designation reflecting the 2015 OMB settlement and OPA 167 urban boundary expansion.

Employment densities and assumptions from the previously completed AEGD analysis were carried forward, including:

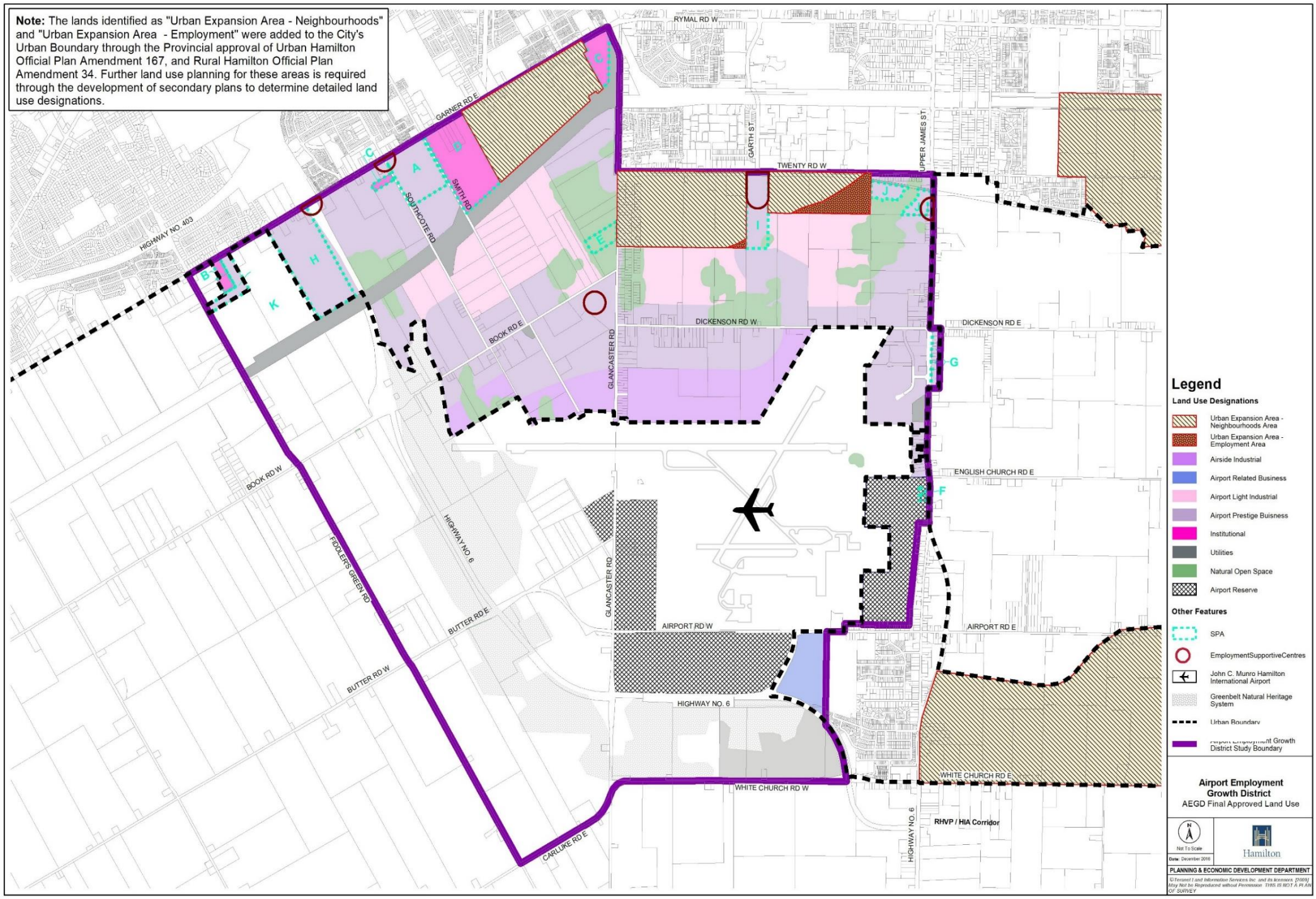
- Net land use area represents 80% of the identified gross land use area;
- Employment densities ranging from 23–81 job/ha, and institutional densities of 11 persons per hectare as summarized in Table 2; and
- Network modification that represents the anticipated study area road network.

Table 2 - Land Use Area and Employee Forecasts

	Area of Land		Employment Density		Total Employment
	Net Ha	Net Acre	Emp / Net Ha	Emp / Net Acre	
Airside Industrial	87	215	36	15	3,132
Airport Related Business	16	40	81	33	1,299
Airport Light Industrial	150	371	23	9	3,451
Airport Prestige Business	398	983	39	16	15,509
Institutional (Church)	8	20	11	4	91
Institutional (College)	25	61	11	4	270
Institutional (Secondary School)	8	20	11	4	90
Total	**692**	**1,709**	**-**	**-**	**23,843**

Note: The total employment projections presented in Table 2 do not include the Airport reserve lands, the Airport and the three previously removed whitebelt lands.

Figure 8 - Study Area Land Use Designation Map



In the development of the sub-area model the following assumptions were made in the adjustment of trip generation calculations to account for mode choice targets:

- Assumed base conditions to be 96% auto person trips, 3% transit trips, 1% active mode trips, and 1.21 vehicle occupancy. These values were chosen to be consistent with other Hamilton industrial developments and the specific location of the AEGD.
- Reduction in auto vehicle trips was assumed in the model. In conjunction with transit and TDM, 20% vehicle kilometres travelled were reduced.
- Assumed 12% transit mode split as a goal, which is consistent with overall City targets and the vision for the AEGD.
- Assumed 6% mode split for walking and cycling.
- Assumed modest effects from TDM, primarily based on peak-hour spreading (e.g. encouraging flexible work hours) and carpooling.
    - Peak-hour spreading was considered by reducing the total number of trips during the peak hour by 2%.
    - To further reach the vehicle trip reduction goal, vehicle occupancy rate was increased by 3% (from 1.21 to 1.25) to account for carpooling.

Finally, the trip generation rates were derived and used for modelling purposes in the study area, reflecting the noted trip reductions and mode choice assumptions. The noted target mode choice assumptions are in concert with the City-wide Transportation Master Plan 2018. Table 3 lists the AM and PM Peak Hour trip generation rates used in the model and Table 4 provides an overview of the AM Peak trips and employment density per traffic zone for the study area.

Table 3 - Auto Trip Generation Rates for AM and PM peaks

Land Use Type	Trip Generation Rates			
	AM Peak		PM Peak	
	#In	#Out	#In	#Out
Airside Industrial	0.90	0.54	0.53	1.09
Airport Related Business	0.48	0.09	0.12	0.48
Light Industrial	0.37	0.15	0.13	0.37
Prestige Business Park	0.33	0.04	0.07	0.29

Table 4 - AM Peak House Trip Generation by Traffic Analysis Zone

Zone Number	Area Description	Net Area (Ha)	Employment	AM Peak Hour Trips	
				IN	OUT
101	Garner Fiddlers Green	7.25	80	6	5
102	Garner Highway 6	32.78	1,279	428	56
104	Southcote Garner	41.86	1,605	535	71
105	Southcote at Book	41.37	1,438	490	89
106	Airport Book West	17	636	399	189
108	Garner Glancaster	32.78	361	411	276
109	Airport Smith West	56.63	1,484	532	173
110	Book Glancaster	13.59	461	158	31
111	Airport Glancaster West	63.39	2,416	1,195	441
112	Glancaster Twenty	16.40	621	209	30
113	Glancaster Greenbelt	2.42	94	32	4
114	Smith North	25.25	985	330	43
115	Smith South	26.82	756	267	76
201	Twenty Glancaster East	58.40	1,808	628	149
202	Dickenson Glancaster East	98.21	3,653	2,434	1,209
203	Dickenson Garth East	72.30	2,166	757	192
204	Upper James Dickenson	30.87	1,204	403	53
205	Dickenson South Upper James	30.94	1,207	404	53
206	Upper James East	3.22	125	42	6
310	Airport Terminal	16.03	1,299	621	114
311	Airport East	4.03	168	56	7
901	Existing Airport			1,056	1,190
Total		**691.80**	**23,843**	**11,392**	**4.458**

3.3 Model Adjustments and Network Scenario Analyses.

Adjustments have been made to the network within the model to ensure a reasonable representation of all arterial and collector roads within the study area. Unlike previous models where arterials were coded as links and most of collectors were coded as connectors to zone centroids, the revised model now better reflects the proposed road infrastructure by assigning capacities to the collector road and coding them as links. Table 5 lists these adjustments to the future base network attributes for the purposes of the updated study area analysis.

Additional adjustments that are identified as "Network Housekeeping" were made in order to ensure that the model reflected the appropriate future base condition. These modifications included updating road attributes such as capacity, number of lanes, and Volume Delay Function (VDF). VDFs are equations used within the model to express the travel time on the roadway as a function of the volume and capacity on that portion of the roadway - meaning that as congestion increases, so does travel time.

Table 5 - Model Network Adjustments

Link	From	To	Modification
Rymal Road West	West 5th Street	Upper Paradise Street	- Increase capacity to 2000 (vph/dir)
Upper James Street	Lincoln Alexander Parkway	Alderlea Avenue	- Increase capacity to 2000 (vph/dir)
Book Road East	Highway 6 South	Smith Road	- Reduce capacity to 1600 (vph/dir) from 2400 (vph/dir) - Decrease number of lanes to four lanes from six lanes
Arterial 1N	Dickenson Road West	Collector 2N	- Increase capacity to 1400 (vph/dir) to match Southcote and Garth Street Extension - Modify Vdf to 34
Glancaster Road	Dickenson Road West	Arterial 1N	- Increase capacity to 1400 (vph/dir) - Modify Vdf to 34
Glancaster Road	Garner Road East	Dickenson Road West	- Decrease capacity to 600 - Modify Vdf to 22 - Decrease number of lanes to Two lanes - Reduce speed to 50 kph
Collector 6N	Upper James Street	Glancaster Road	- Modify road alignment as per the feasibility study - Modify capacity to 1000 (vph/dir) - Modify number of lanes to Four lanes - Modify speed to 60 kph - Modify Vdf to 31
Collector 1E	Twenty Road West	Dickenson Road West	- Re-introduce in the network - Add capacity of 500 (vph/dir)

Link	From	To	Modification
			- Add Vdf of 21 - Assign 50 kph speed limit - Add 1 lane each direction
Collector 6E	Twenty Road West	Dickenson Road West	- Re-introduce in the network - Assign capacity of 500 (vph/dir) - Assign speed limit 50 kph - Assign Vdf 21 - Add 1 lanes each direction
Twenty Road Extension	Southcote Road	Collector 2W	- Remove from the network to avoid Hydro Corridor property impact.
Collector 2W	Garner Road East	Dickenson Road Extension	- Increase capacity to 1400 (vph/dir) - Increase number of lanes to Two lanes each direction - Modify Vdf to 24 - Modify Type to 643
Smith Road	Book Road East	Arterial 1N	- Reduce capacity to 500 (vph/dir) - Modify Vdf to 21 - Reduce number of lanes to 1 lane each direction
Collector 1W	Garner Road East	Collector 10 N	- Re-introduce to the network - Add 1 lane each direction - Assign capacity of 500 (vph/dir)
Garth Street	Twenty Road West	Stone Church Road	- Increase capacity to 1400 (vph/dir) - Increase number of lanes to 2 lanes each direction
Highway 6 South	Highway 403	Upper James Street	- Increase capacity to 2000 (vph/dir) - Increase number of lanes to 2 lanes each direction
Airport to Red Hill Valley Parkway Corridor	Highway 6 South/ Upper James Street	Upper Red Hill Valley Parkway	- Relocate to the intersection of Highway 6 South and Upper James Street - Assign capacity of 1400 (vph/dir) - Assign Type 644 - Assign one lane each direction

3.3.1 Network Scenario Analyses

The sensitivity analysis for the study area transportation network served as a critical tool, ensuring that the network retains its connectivity and functionality when parts of it is modified. By simulating the removal or modification of specific links in the previously approved network, their impacts on the traffic flow, screenline capacity, and overall network performance was assessed. This iterative approach was vital in reaching the optimal network solution, ensuring the study area remains accessible, efficient, and resilient, supporting the City and region's economic and mobility needs.

The changes common to all network scnarios are outlined below. Distinct changes specific to each scenario are described in their respective sections. A detailed list of all network modifications and reasons for modification is provided in Table 6

- Collector 7N removed from network in response to concerns raised by Transport Canada and Hamilton International Airport;
- Collector 6N realigned to minimize impacts on HSR Mountain Transit Centre, as well as cultural and natural heritage resources;
- Twenty Road Extension shortened to minimize impacts on the Hydro One infrastructure and avert single-sided development and number of lanes reduced to 2 lanes from previously proposed 4 lanes; and
- Reduced the proposed number of Book Road East lanes from six to four lanes between Highway 6 South and Smith Road.

Three primary network scenarios are described in detail below; however, additional sensitivity runs were conducted for individual links to assess their impact both independently and in combination with other modifications in the road network.

Scenario 1: Light and Sparse Network

Modification Details

- Collector 6N - Removed between Upper James Street and Collector 6E.
- Collector 1N - Shortened up to Collector 1E with one lane capacity in each direction.
- Collector 2W - One lane capacity in each direction.

Implications and Observations

While committed to minimizing the impact of road infrastructure improvements on the natural environment and existing residences, this scenario would reduce land accessibility and creates greater gaps in the network. Removing the above-listed collector roads would reduce network redundancy and diverts traffic to nearby arterial roads that are projected to operate over capacity. Notably, this network configuration would have negative impacts on the level of service and operations performance of Garner Road East and Twenty Road West. The model output illustrating the modified network and operational performance under this scenario is provided in Appendix 5.

Scenario 2: Modified Dickenson Road

Modification Details

- Dickenson Road – Realigned to prioritize Collector 1N as the primary east-west corridor.
- Collector 1N – Realigned and prioritized as the primary east west corridor
- Collector 2W – Capacity increased to two lanes in each direction.
- Smith Road – Re-aligned the southerly part for intersection spacing reasons

Implications and Observations

The objective of this scenario was to enhance efficiency, considering known environmental and geographical constraints and preserving screenline capacity; however, a by-product of these network changes was the emergence of small, irregular parcels not suited for airport-related industrial development. This would also diminish the screenline capacity for east-west traffic, intensifying pressures on already strained roads. This would significantly impact the traffic flow and service quality on Garner Road East, Collector 2W, Glancaster Road, and Collector 6N. The model output for this scenario can be found in Appendix 5.

Scenario 3: Optimized Network

Modification Details

- Glancaster Road – Capacity reduced to one lane in each direction to avoid Hydro One infrastructure and impacting existing residential development.
- Collector1N – Realigned and upgraded to minor arterial road functional class to form a network of ring roads in the study area; reclassified named Arterial 1N.
- Collector 2W – Capacity increased to two lanes in each direction.

Implications and Observations

The objective of this scenario was to identify the optimal network solution that is well connected, offers reliable traffic flows and has minimal impact on natural environment and culturally sensitive lands. This network configuration would address network capacity, connectivity, and redundancy needs. All network links would perform optimally and better than the Level of Service E (minimal acceptable target). The network configuration and link level auto demand with the level of service are shown in Figure 9.

From people and goods movement efficiency perspective, Scanrio 3 demonstrated optimal network performance compared to the other two scenarios. As a result, it was chosen as the preferred network solution, and further evaluated.

3.4 Rationale for Road Network Modifications and Evaluation

The iterative modelling process assessed the overall network performance and connectivity for the preferred network solution. All roadway modfications were evaluated individually and holistically against evaluation criteria described in Section 2 of this report as presented in Table 6 below:

Figure 9 - AM Peak Hour Traffic Volumes – 2051 Planning Horizon, Optimized Network

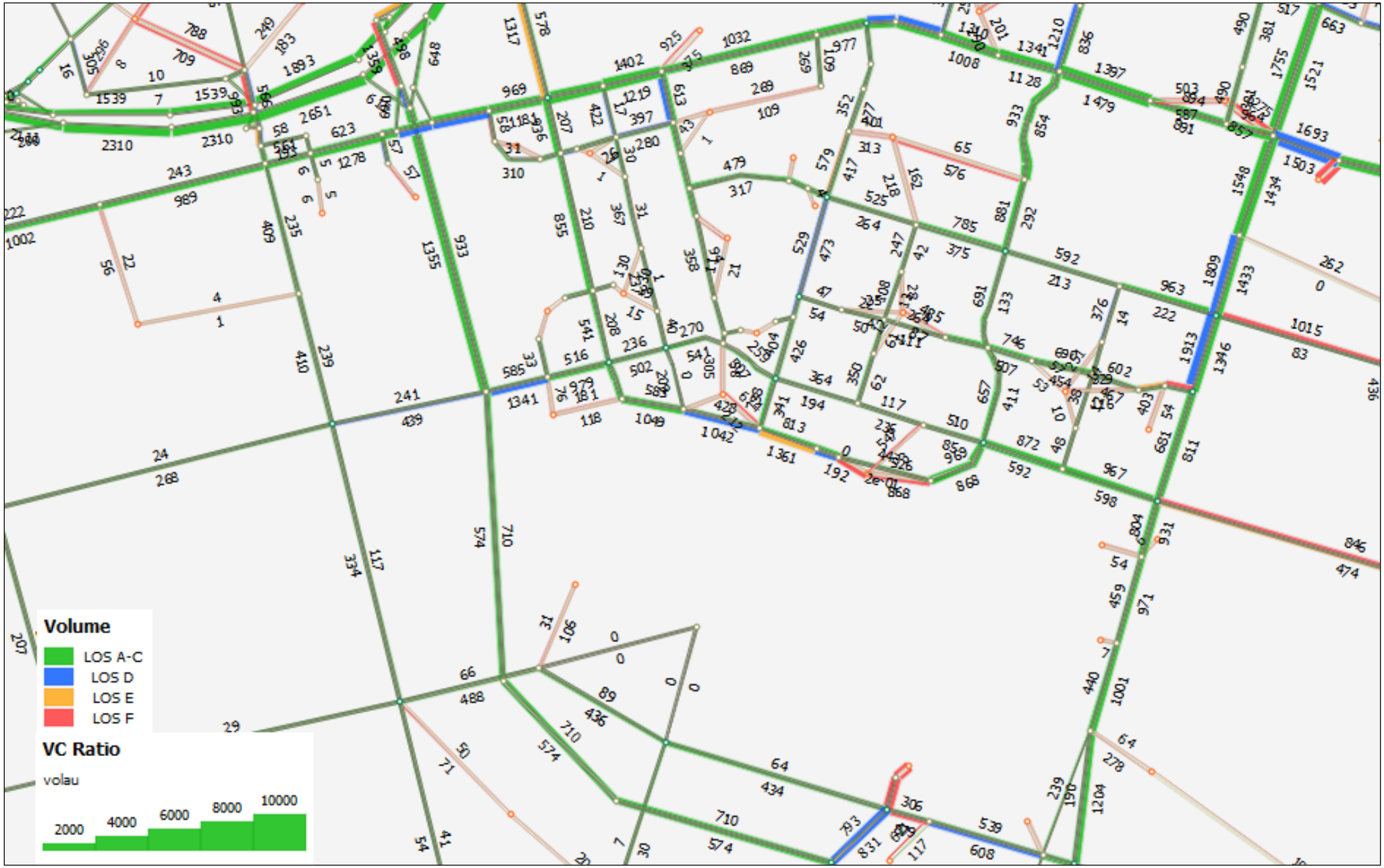


Table 6 - Rationale for Road Network Modification and Network Evaluation

Road Name	Recommended Change	Evaluation Criteria							
		Transportation & Engineering			Socio - Economic		Capital Cost	Natural Environment	Cultural Environment
		Connectivity & Redundancy	Efficient Movement of People and Goods	Conformity with Strategic Planning Documents	Impact on Existing Residences& Businesses	Consistency with Planned Land uses	Cost Implications	Impact on Terrestrial, Aquatic and Sensitive Natural Areas	Impact on Cultural Environment
Removals and Shortenings									
Collector 7E	Remove from network	Discontinuous 2-lanes collector road between Upper James - Collector 6N - Dickenson Road	Minimal impact on people and goods movement efficiency. Local roads could fill the accessibility gaps	Removal eliminates potential approach-and-landing hazard for airplanes after dark hours.	Removal of roadway eliminates the conflict with existing HSR facility (building/use and operations)	Original alignment did not follow property easement boundaries i.e. split parcels into irregular shapes	Removal minimizes infrastructure investment	Impact on the natural environment reduced by removal of the roadway from network	Impacts on the cultural and built heritage will be eliminated by removal of the link from the network
Collector 2E	Remove from network	No impact on network connectivity	Dangling link providing land access. airport maintenance and emergency vehicle access will be provided via local/private road	Yes	No Impact	Yes	Reduced infrastructure investment	Potentially minimized impact on natural heritage features	As above, eliminated impact on cultural environment
Twenty Road Extension	Shorten Twenty Road Extension up to the limits of Collector 2W and modified from four lanes to two lanes	Optimize use of the remaining capacity in the network while preserving redundancy	Shortening of the road minimizes impact on travel reliability. Offset capacity will be provided on Collector 2W	Yes	Minimize conflict with Hydro One property easement and natural environment	Avoid single-sided development along Twenty Road Extension, between Southcote Road and Collector 2W	Will reduce capital investment through shortening of proposed road extension	Remove possible negative impacts to natural environment	Reduced area of Archeological Stage 2 required based on Stage 1 report.
Extensions and Reinstatements									
Collector 1W	Reinstatement of section of the roadway into the network.	Connects Collector 10N to Garner Road East and increases redundancy in network	Provides land access and mobility option for lands recently added to urban boundary	N/A	Provides access to future residential land uses	Subject to future Secondary Planning process	Reduction of length from 2011proposed network minimizes infrastructure investment	Natural environmental impacts to be determined in subsequent studies	Arch Stage 2 need based on Stage 1 Report. No Built Heritage Impact.
Collector 6E	Reinstate Collector 6E between Collector 6N and Twenty Road West	Fill transportation network gaps to support development phasing.	Provides efficient and reliable multimodal infrastructure/options for people and goods movement	Yes, and subject to subsequent Secondary Planning process	Provides a connection that will service land uses between proposed Collector 6N and Twenty Road	Follows original intent of the AEGD TMP 2011, to accommodate potential future development as supported by OPA 167	Capital investment is required to build the road way	Will require field re-evaluation at next phase of the EA/Planning - development application process	Archaeology Stage 2 required, based on Archaeology Stage 1 Report.
Collector 10N	Reinstate Collector 10N, from Collector 2W up to the limits of Collector 1W.	Address network gaps and introduce redundancy and connectivity to the network.	Support efficient movement of people and goods in the lands recently added to the urban boundary	Yes	Limit changes avoid impact on existing institutional land uses and conflict with Hydro One infrastructure ROW.	Subject to subsequent studies	Capital cost required to build the roadway	Will require field investigation at subsequent studies and/or development application process	Archaeology Stage 2 required, based on Archaeology Stage 1 report; Cultural Heritage impacts to be determined at subsequent studies
Functional Classification, Capacity and Alignment Changes									
Collector 6N	Realign and extend to connect to Upper James Street	Realign the road east of Collector 6E. Maintain cross-sectional continuity along the corridor. Provide network redundancy and connectivity for east-west movements	Maintains network efficiency for people and goods movement. Minimizes impact of goods movement vehicles on residential communities along Twenty Road West	Yes	New alignment minimizes conflict with HSR facility infrastructure and operations. Provides opportunities for expansion of parking and bus storage capacity	Will impact property located at 2130 Upper James Street, North of HSR Mountain Transit Centre	Increased cost for capital investment and land acquisition for road ROW	Inventory of natural heritage features identified that north alignment impose lesser impact on environment. Mitigation measures such as wildlife crossings will be considered in detailed design	Archeology Stage 2 based on Archeology Stage 1 report. Cultural heritage impacts are avoided.

Road Name	Recommended Change	Evaluation Criteria							
		Transportation & Engineering			Socio - Economic		Capital Cost	Natural Environment	Cultural Environment
		Connectivity & Redundancy	Efficient Movement of People and Goods	Conformity with Strategic Planning Documents	Impact on Existing Residences& Businesses	Consistency with Planned Land uses	Cost Implications	Impact on Terrestrial, Aquatic and Sensitive Natural Areas	Impact on Cultural Environment
Collector 2W	Increase the ROW width to accommodate 4-lanes capacity at full build out. Change the alignment to minimize conflict with Hydro infrastructure	Increased capacity will offset capacity constraints on Glancaster Road for reliable north-south movements	Provides efficient and reliable options for people and goods movement.	Realignment of a section of the road avoids conflict with Hydro infrastructure on east-west mainline corridor	Potential impact on legally non-conforming land uses along Garner Road East	Follows the intent of the AEGD TMP 2011 with increased capacity, to accommodate future development	Increased ROW width will result in increased cost of implementation	Requires field investigation at subsequent studies and/or development application process	Archaeology Stage 2 required, based on Archaeology Stage 1 report.
Garth Street Extension (Dickenson Road to Collector 2E)	Terminate Garth Street Extension at Dickenson Road. Merge the section of road, south of Dickenson Road, with Arterial 1N.	Enhances network connectivity & redundancy and forms a ring road system in the Study Area	Improves reliability for movement of people and goods by providing route continuity and robust network connectivity	N/A	Impacts on existing residences is being managed as part of the development planning process	Single-sided development along Garth Street extension immediately north of Dickenson Road	Upgrade to arterial classification. increased the ROW width which increased capital cost	Field investigation is required at subsequent studies and/or development application process	Archaeology Stage 2 Required, based on Archaeology Stage 1 Report
Arterial 1N (Formerly Collector 1N)	Change alignment (West of Glancaster Road) to provide direct access to provincial highways. Upgraded functional classification to Minor Arterial to create a ring-road system within the study area.	Improved multimodal network redundancy, travel reliability and route quality	Provides direct access and connectivity between prestige employment lands and provincial freeway system. Reduces travel time and distance travelled	Yes	Distributes the negative transportation impacts away from legally non-conforming residences in the area as per the Secondary Plan policies	Provide travel reliability and direct access to prestige employment lands. Does not follow property easement boundaries west of Glancaster Road	Capital investment will increase due to change of functional classification and increase ROW widths	Will require field investigation at subsequent studies and/or development application process.	Archaeology Stage 2 Required, based on Archaeology Stage 1 Report; Cultural environment impacts to be determined during subsequent studies
Collector 2N	Shorten the corridor relative to the proposed alignment change of Arterial 1N	Maintains network redundancy and provides land accessibility	Provide multimodal transportation access to airside industrial and prestige employment lands bounded by Book Road East, Southcote Road and Airport boundary	Yes	No impact on existing area business and residences	Consistent with planned land use - follows property easement boundaries	Reduced due to removal of roadway section between Southcote and Smith Road	Will require detailed field investigation as part of subsequent studies	Archaeology Stage 2 Required, based on Archaeology Stage 1 Report
Book Road East	Reduce number of proposed lanes from six lanes to four lanes.	Maintains direct connectivity to provincial highway system	Does not cause operational deficiency and capacity constraint in the network	Yes	Reduces impact on existing residences and businesses	Consistent with the vision and objectives of the AEGD employment lands	Reduced capital investment due to narrower ROW width and lesser number of travel lanes	Potential for minimizing negative impacts on natural heritage features	Archaeology Stage 2 Required, based on Archaeology Stage 1 Report; potential reduction of impacts on cultural heritage features
Glancaster Road	Reduce capacity from Four lanes to Two lanes	Maintains network connectivity and redundancy but decreases capacity at north-south screenline	Due to residential fronting land use, the road will be restricted for truck movement. Provides multimodal capacity for movement of people	Yes	Minimizes negative impacts of transportation on existing non-conforming and adjacent residential communities	Minimizes impact on Hydro One infrastructure and utility corridor	Reduced capital investment requirement due to reduced number of lanes and narrower ROW width	Reduced impact on natural environment due to narrower ROW width	Need for Archaeology State 2 will be determined at subsequent studies. Impacts on Cultural Environment to be evaluated at subsequent studies
Airport Road (Airport Terminal Access to Glancaster Road)	Urbanize Airport Road (Glancaster Road - Airport Terminal Access) until implementation of planned Runway (06-24) extension.	Maintains network connectivity and support employment growth in the Airport Lands	Enhances multimodal connectivity and efficiency and supports active modes	Yes	Maintain access to businesses currently operating within the JC Munro Airport	Yes	Capital investment will reduce due to change of improvement type from widening to 4 lanes to urbanization	Impact on natural environment is subject to road alignment change due to Runway 24-06 extension	Archaeology Stage 2 required, based on Archaeology Stage 1 report. Cultural environment impacts to be determined at subsequent studies

4

Transport System Policies

4.0 TRANSPORTATION NETWORK AND POLICY IMPROVEMENTS

This Section outlines the guiding principles, proposed multimodal network and policy improvements, updated cross-section designs and enhanced travel demand management strategies for the study area

4.1 Guiding Principles

The AEGD is a key economic driver for the City of Hamilton and the surrounding region and will support thousands of jobs and contribute significantly to the City's economic growth and development. The development of a transportation network for the district is crucial to its continued success and growth. The following guiding principles informed the review and modification of the future multimodal transportation network:

- **Connectivity:** The district transportation network be integrated and connected to the existing transportation infrastructure, including roads, public transit, and active transportation networks. It should provide easy access to the airport, businesses, and amenities within the district, as well as connections to the wider region.
- **Accessibility:** The district transportation network should be accessible to all users, including employees, visitors, and residents of the surrounding communities. It should provide a range of transportation options, including public transit, cycling, walking, carpooling, and ride-sharing, to accommodate different needs and preferences.
- **Sustainability**: The development of the transportation network prioritizes sustainability, including reducing greenhouse gas emissions, minimizing environmental impacts by means of building with nature, and promoting active transportation. It should also consider the long-term sustainability of the network, including its capacity to accommodate future growth and changes in transportation demand.
- **Safety:** The safety of all users of the transportation network should be a top priority. This includes the design of the network, as well as its operation and maintenance.
- **Efficiency:** The transportation network should be designed and operated to maximize efficiency and reliability, including minimizing travel times and optimizing the use of existing infrastructure with minimal impact on existing built forms and legally non-conforming residential areas.
- **Flexibility and adaptability**: The transportation network should be adaptable to changing needs and future conditions. This includes accommodating changes in transportation demand, technology, land use, and the natural environment.
- **Equity and Climate Change**: The transportation network should be developed and operated in a manner that is equitable for all users, regardless of their mode of transportation, location, or socio-economic status. This includes providing affordable transportation options and ensuring that the network is accessible to all users.

4.2 Travel Targets (Integration of 2018 City-wide TMP)

The vision of the Hamilton Transportation Master Plan 2018 is "*to provide a comprehensive and attainable transportation blueprint for Hamilton as a whole that*

balances all modes of transportation to become a healthier city. The success of the plan will be based on specific, measurable, achievable, relevant and programmed results".

The 2018 City-Wide TMP focuses on several transportation policy themes and goals for both the short and long term. The following is a breakdown of the main themes and their components:

1. Planning for a Sustainable and Balanced Transportation System: This theme is centered around creating an environmentally sustainable transportation system that promotes a balanced mix of transportation modes.

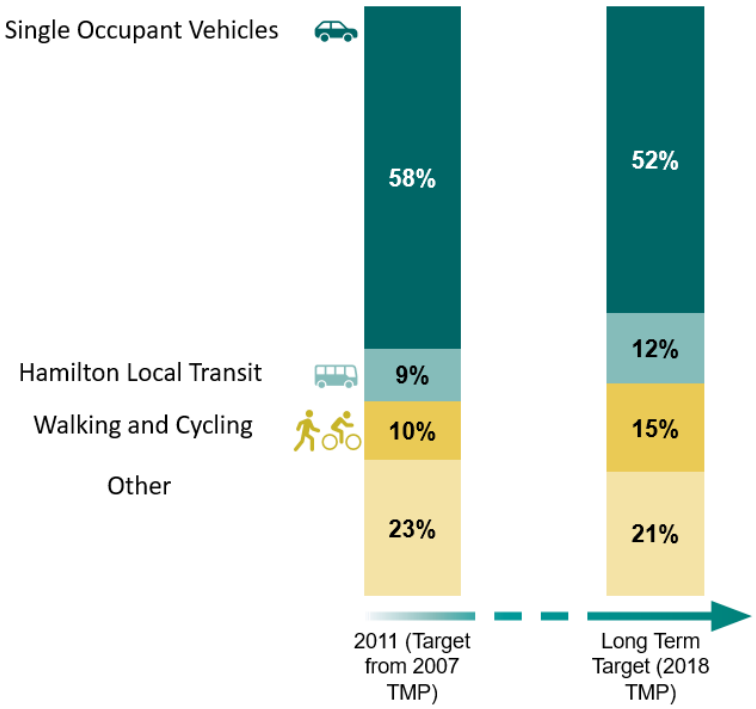
2. New Directions and Policy Links: Under this theme, the City-Wide TMP addresses various aspects of transportation policies and their links to other policies and goals. Some of the key components include:

- **Transportation Demand Management and Sustainable Mobility:** This involves strategies to manage and reduce transportation demand while promoting sustainable mobility options such as carpooling, cycling, walking, and using public transit.
- **Active Transportation:** Encouraging walking and cycling as viable transportation options by providing safe and convenient infrastructure and network connectivity.
- **Transit:** Improving public transit services to make them more attractive and efficient for commuters.
- **Roads:** Balancing road network expansion and maintenance with sustainable transportation goals.
- **Complete Streets:** Designing streets to accommodate all users, including pedestrians, cyclists, and public transit users.
- **Street Conversion:** Transforming streets to support sustainable transportation modes and enhance livability.
- **Climate Change:** Addressing transportation-related contributions to climate change through various strategies.
- **Connectivity:** Enhancing transportation connectivity within the city to improve accessibility.

3. Mode Split Aspiration: This refers to the desired distribution of trips among different modes, focusing on reducing the dependence on private vehicles. The City-Wide TMP mode split targets are shown in Figure 10, which aligns with targets used for the AEGD TMP Update.

One of the overarching long-term targets of the TMP is to reduce overall vehicle use. This aligns with the broader goals of promoting sustainable mobility, reducing environmental impact, and creating a more balanced transportation system.

Figure 10 - Target share of daily trips made by different modes of travel



4.3 Updated Multimodal Network Components

4.3.1 Road Network

The arterial and collector road network for the study area was evaluated independently and in harmony with the broader transportation network to ensure that modifications did not compromise the network integrity and connectivity for goods movement. Current development trends were analyzed, leading to network modifications. These modifications were made to accommodate larger land parcels and to handle anticipated increased vehicle, pedestrian and cylist traffic. Crucial elements of the road network modification considered natural and cultural heritage constraints, impact on future development, existing residential areas, and utilities (e.g. Hydro One corridors). Capacity in the network was assessed at the screenline level, and where widening of a specific road was deemed impractical, offset capacity was provided on parallel corridors.

The recommended Revised Road Network, including the roadway classification and number of lanes, is shown in Figure 11.

4.3.1.1 Functional Classification

The roadway functional classification established for the study area road network was largely kept in place with minor adjustments as needed. The primary function and policies relating to arterial and collector roads in the study area are based on City policies consistent with Schedule C of the Urban and Rural Hamilton Official Plans.

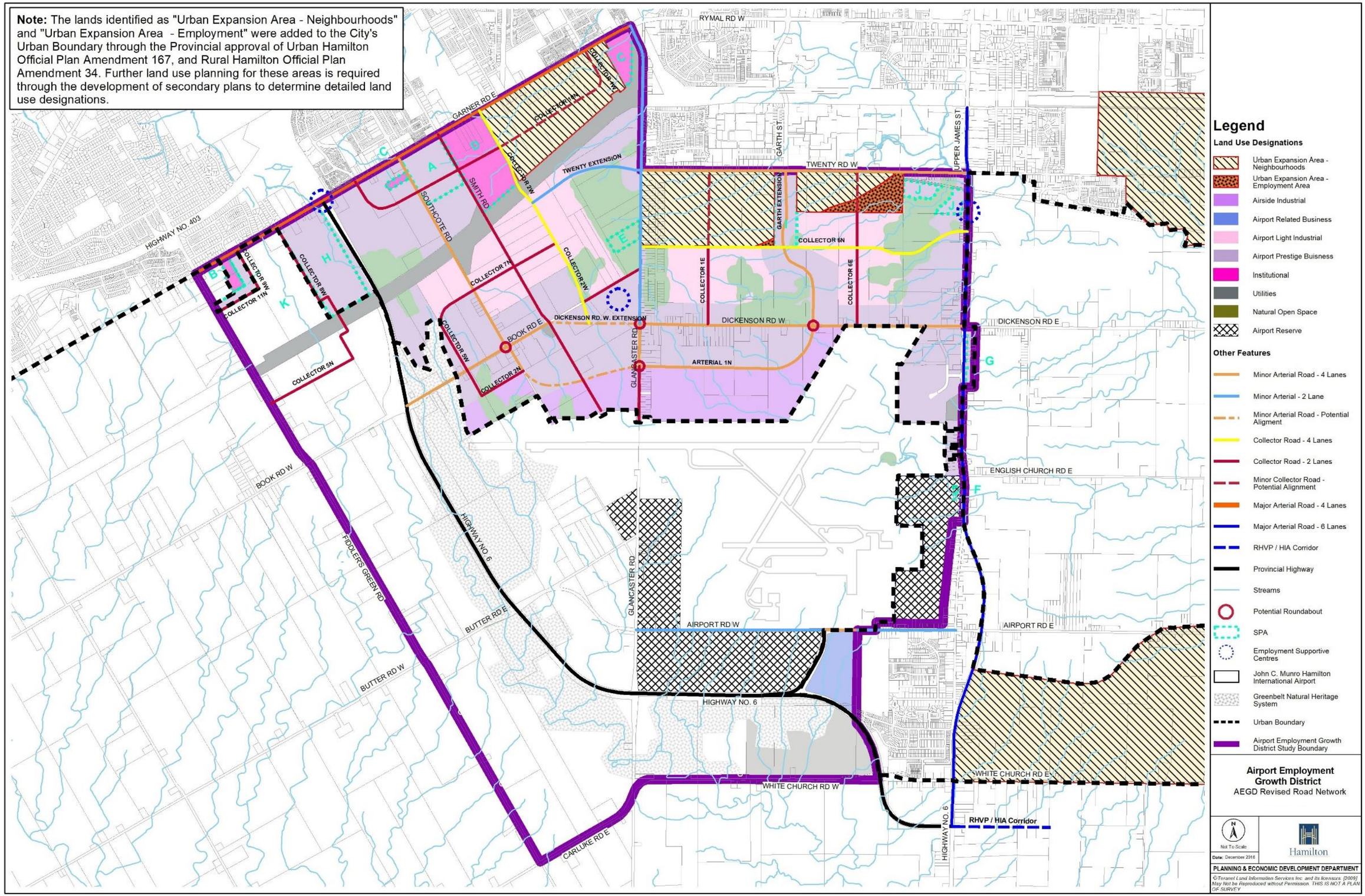
The road ROW widths within the study area are unique and wider than ROW widths of other arterial and collector roads in the City, as specified in the Cross-sections (Section 4.4) below.

Generally, the study area road network is comprised of the following roadway classifications:

- Provincial Highways - any improvements to provincial highways are within the jurisdiction of the Ministry of Transportation Ontario (MTO). The province is planning on twinning Highway 6 South to increase capacity and efficiency. Coordination of the Highway 6 South improvement and access to the AEGD area with the MTO should be implemented to determine the appropriate design and timing of implementation and its impact on City roads.
- Major Arterial – A high capacity roadway type carrying a high volume of inter-regional and intra-municipal multimodal traffic throughout the study area and the City. Vehicular traffic movement is the primary consideration of this type of roadway.
- Minor Arterial - A high capacity roadway type carrying a moderate volume of intra-municipal multimodal traffic throughout the study area the City. Vehicular traffic movement is the primary consideration of this facility type.
- Collector Roads will serve the function of moving moderate amounts of vehicular traffic as well as providing access to development parcels.

It is important to note that the AEGD TMP delineates only the arterial and collector roads, not local roads. A network of local roads will be indispensable for augmentation of the recommended road network to support mobility and land accessibility and will be established through the development approval process governed by the Planning Act. The development of local roads shall follow the requirements set out in the Comprehensive Development Guidelines and Financial Policies.

Figure 11 - AEGD Revised Road Network



4.3.2 Conceptual Transit Network

Discussions with HSR, the Hamilton International Airport and municipal staff resulted in the update to the Transit Network recommendations, including rerouting the previously approved transit network to match the modified road network, consistent with Hamilton Transit Bus Stop Accessibility Criteria and Guidelines:

- Good transit accessibility will be ensured by locating transit stops within a walking distance of development as well as the following:
- Enhanced transit stops and/or stations within Employment Supportive Centres will be integrated, where applicable; and
- Transit rights-of-way will be preserved along Upper James Street, Airport Road and Garner Road East, within the study area, for the future use of Priority Transit opportunities.

It is understood that transit will grow in the study area in the future, and this study's recommendations include:

- Continue discussions with the Hamilton International Airport, existing businesses and potential future employers in the AEGD regarding increased levels of transit service.
- Extend existing HSR transit routes as appropriate to service the study area as shown in Figure 12.

4.3.3 Pedestrian, Cycling and Trails Network

The AEGD TMP Update has incorporated a comprehensive and interconnected network of cycling routes, including the proposed cycling network in the Cycling Master Plan, Recreational Trails Master Plan and City-Wide TMP 2018. In addition, all new infrastructure and reconstruction road projects in the study area and across the City are required to follow the Complete Street Design Guidelines by providing safe and comfortable pedestrian and cycling infrastructure.

Key cycling and pedestrian routes in the study area, augmented with multi-use recreational trail network, are shown in Figure 13.

Through the development application and site planning process staff will have opportunities to collaborate with private developers to augment the recreational trails network with a series of local pathways around the edges of major Natural Heritage systems to protect ecologically sensitive areas, biodiversity, and other environmentally significant sites.

4.3.4 Goods Movement

Reliable road access between the Airport, AEGD and provincial highways as well as major employment centres in Hamilton was incorporated into the study recommendations, including Complementary Policies such as:

- Ensure that development policies in the vicinity of the airport and beneath the flight paths do not impede the Airport's use as a 24/7 cargo/courier hub.
- Ensure direct, unimpeded (and secure) access between the AEGD and other end-of-runway industries and Airport's cargo/courier handling facilities.
- Consider the need for truck storage/staging areas near the AEGD
- Support the development of alternative fuel infrastructure in the vicinity of the Airport.
- Incorporate existing Full-Time and Part-Time Truck Routes:
    - Highway 6;
    - Garner Road East;
    - Carluke Road;
    - White Church Road;
    - Upper James Street;
    - Fiddlers Green Road; and
    - Airport Road (from Glancaster Road to Airport Terminal Access Road)
- Incorporate Dickenson Road West, Book Road East, Southcote Road, future Garth Street Extension and future Dickenson Road West Extension as future truck routes to fill the truck route network gap in the study area. The change in the designation of these roads is contingent on their infrastructure upgrades.

Figure 12 - Airport Employment Growth District Revised Conceptual Transit Network

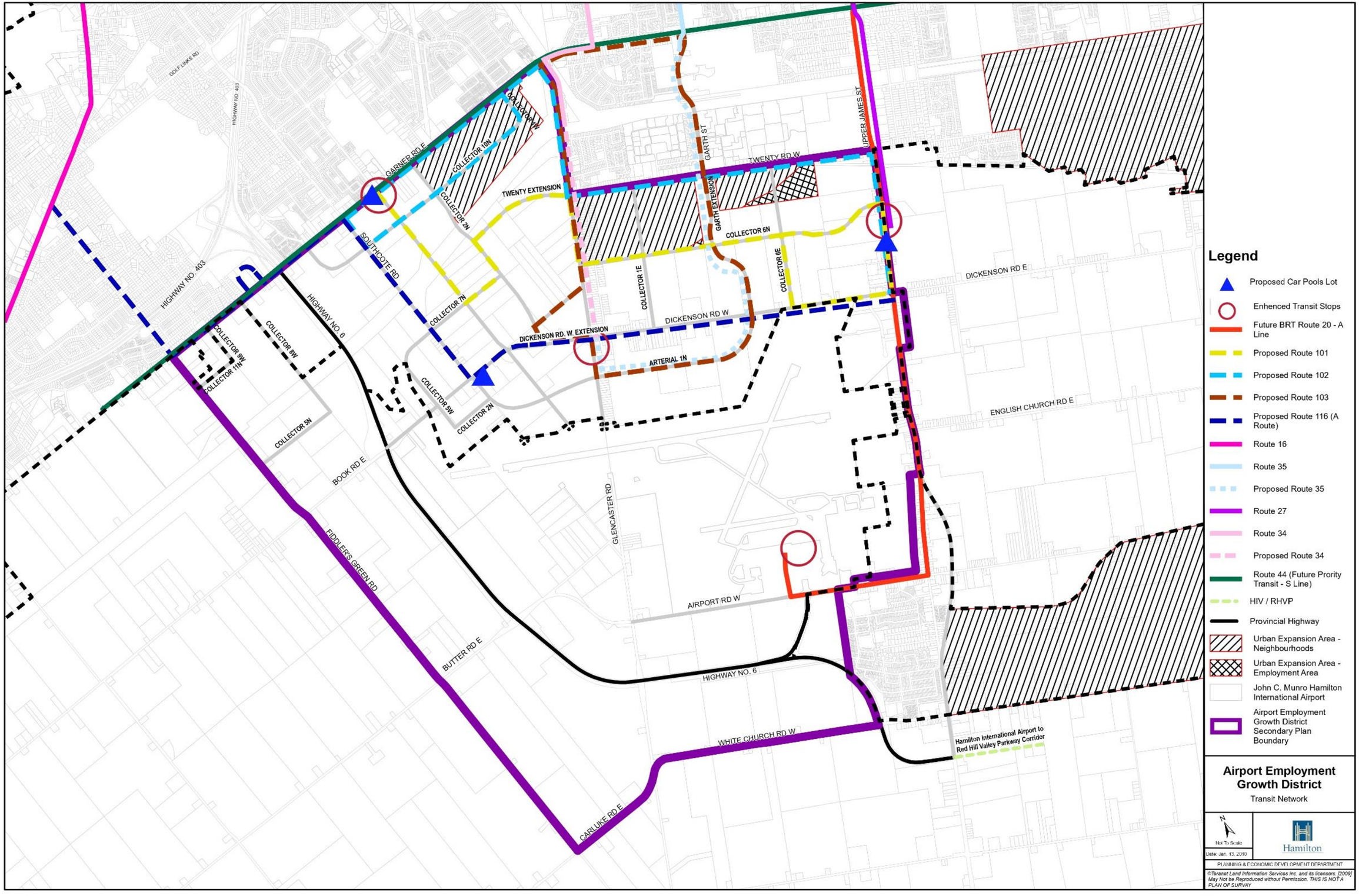
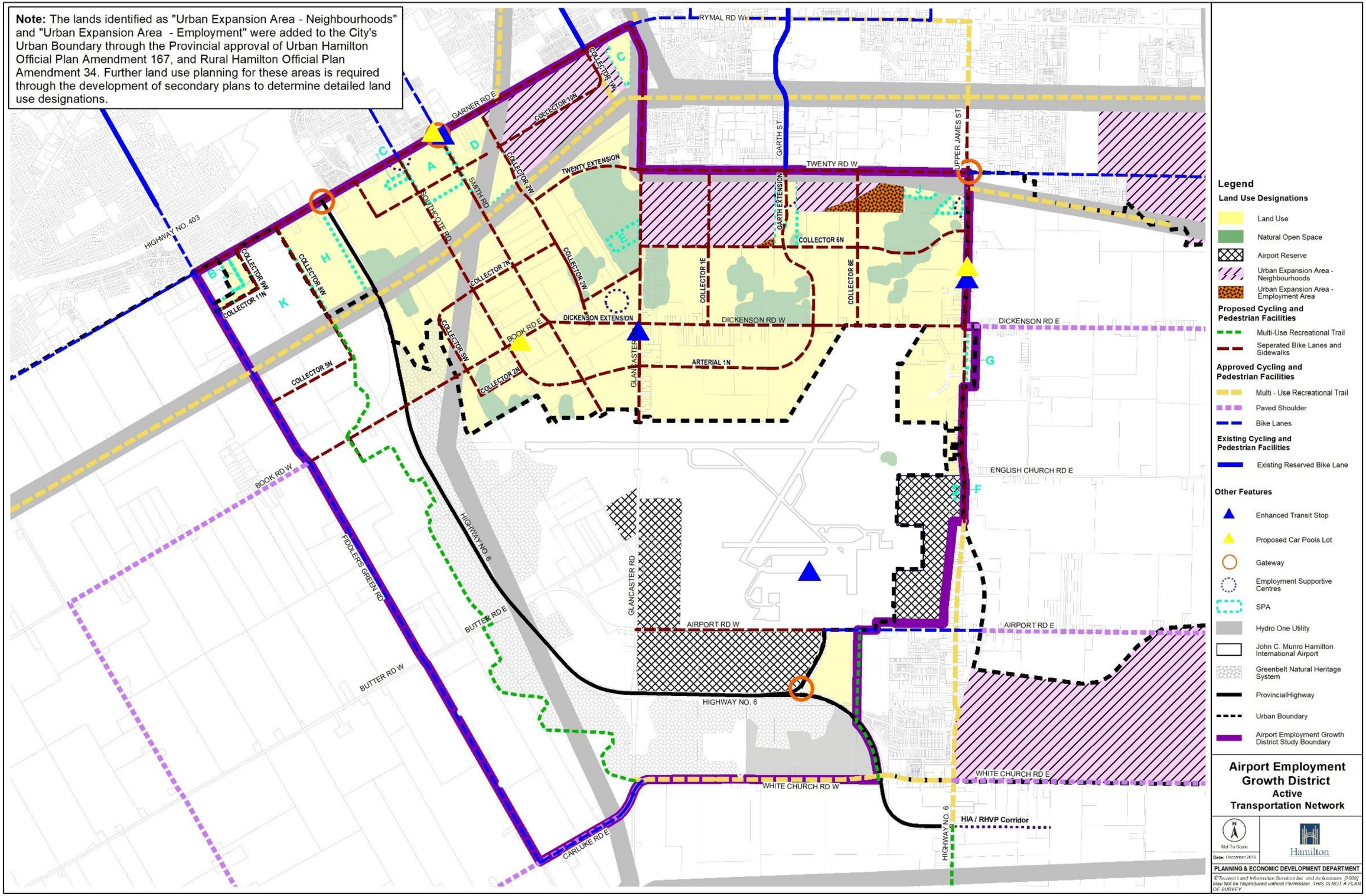


Figure 13 - Airport Employment Growth District Revised Cycling and Recreational Trials Network

Note: The lands identified as "Urban Expansion Area - Neighbourhoods" and "Urban Expansion Area - Employment" were added to the City's Urban Boundary through the Provincial approval of Urban Hamilton Official Plan Amendment 167, and Rural Hamilton Official Plan Amendment 34. Further land use planning for these areas is required through the development of secondary plans to determine detailed land use designations.



4.4 Conceptual Cross-Sections:

The cross-sections for all road types were updated to reflect new policies and technical needs.

4.4.1 Adherance to Design Guidelines

Complete Street Design Guidelines: Road cross-sections were re-designed to comply with the Complete Street Design Guidelines to foster inclusive, safe, and efficient mobility options for all road users. Adhering to these guidelines ensures that road infrastructure is resilient, sustainable, and adaptive to the evolving needs of modern societies and changing climate.

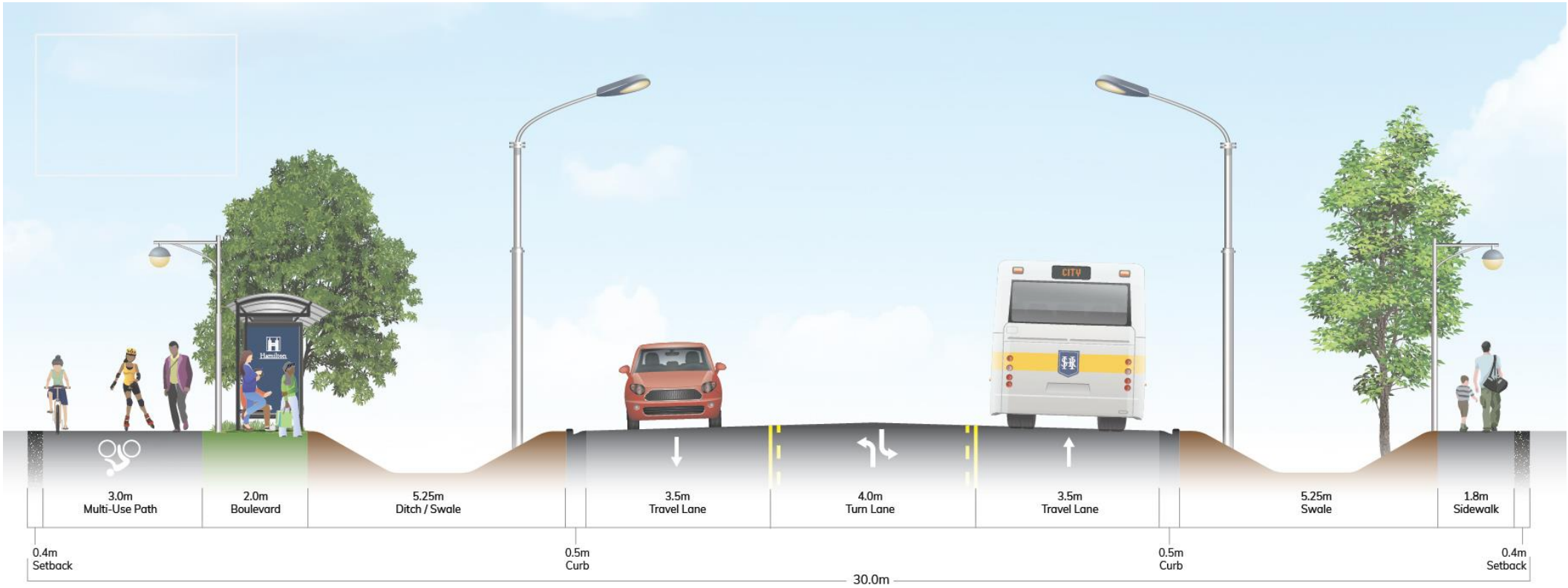
AEGD Eco-Industrial Design Guidelines: Road cross-sections were redesigned according to Eco-industrial Design Guidelines to ensure sufficient capacity for stormwater conveyance and management is provided. Increasing the width of ditches and providing space for low impact development techniques can reduce the velocity and volume of runoff, allowing for potential groundwater recharge. The redesign also accommodates minimum size culverts under driveways and maintenance needs (slope). Overall, such enhancements ensure the longevity and safety of the transportation network and contribute to sustainable urban development adaptability to climate change.

Typical cross-sections for the following road types are illustrated in Figures 14-18

- Two Lane Collector Road
- Four Lane Collector Road
- Two Lane Arterial Road
- Four Lane Arterial Road, and
- Six Lane Arterial Road.

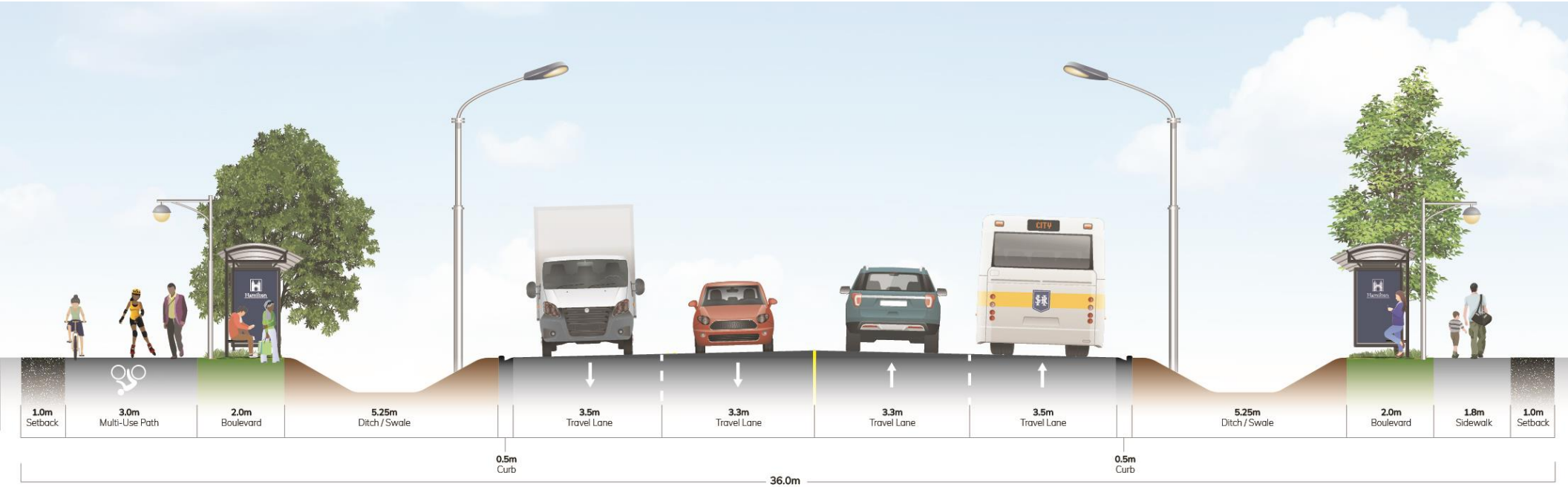
The cross-section configurations for all road classes are conceptual, context sensitive and, where applicable, subject to refinements through required phases 3 & and 4 Class EA studies or as part of Planning Act development applications.

Figure 14 - Conceptual Two-Lane Collector Road



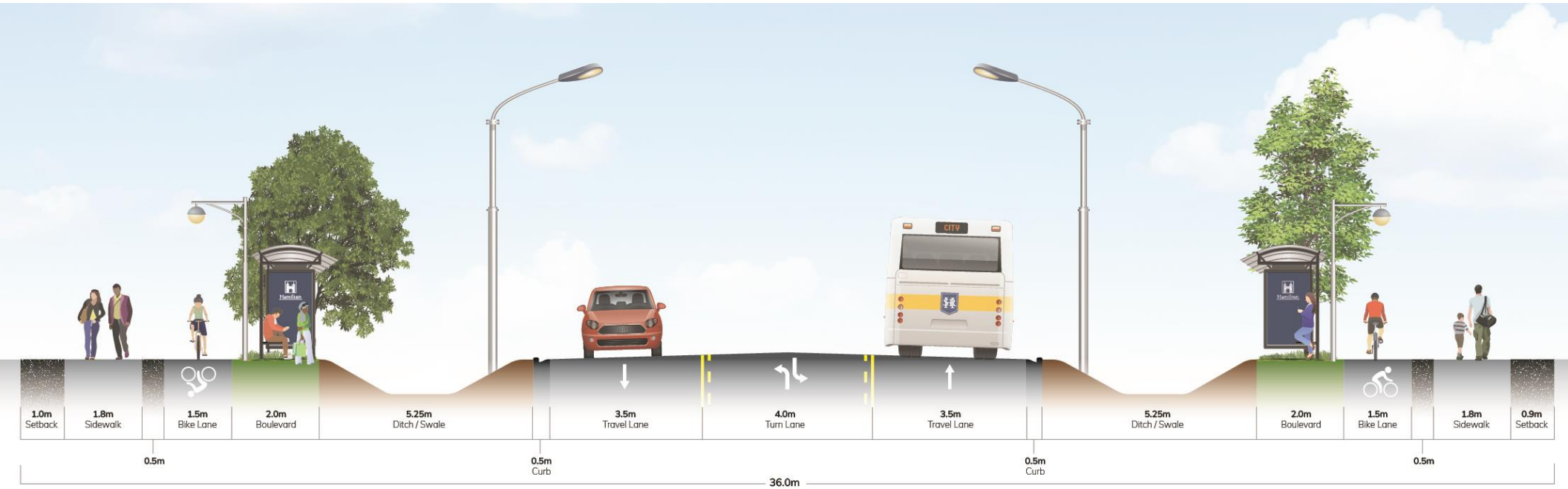
NOTE: The cross section configuration is conceptual, context sensitive and, where applicable, subject to refinements through required phases 3 &4 Class EA studies or as part of Planning Act development applications. All cross section elements shall conform to the Complete Street Design Guidelines, City master plans, polices and standards, including street lighting, stormwater, landscaping, etc.

Figure 15 - Conceptual Four-Lane Collector Road



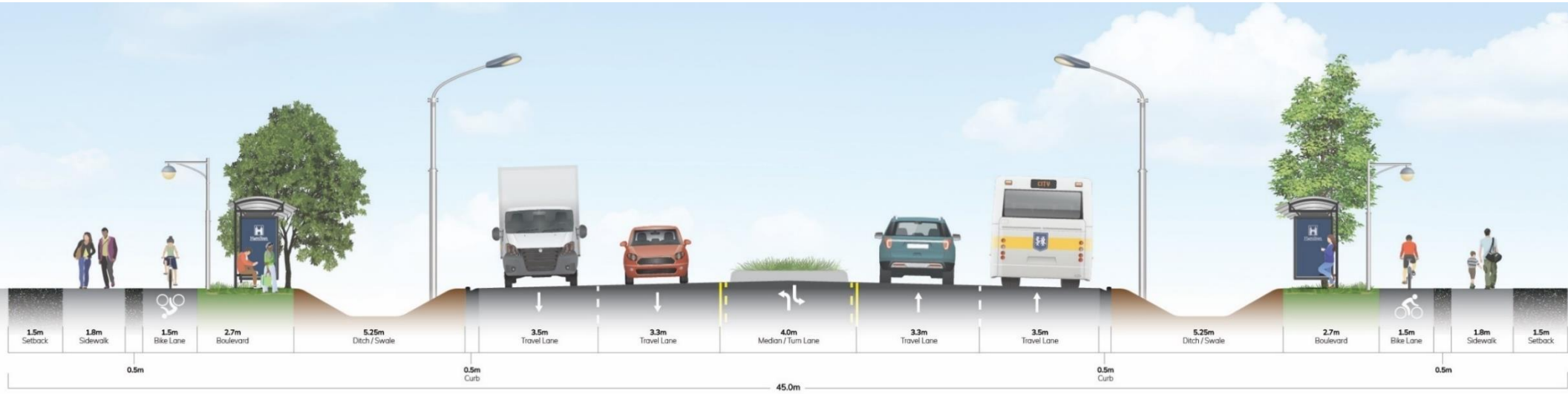
NOTE: The cross section configuration is conceptual, context sensitive and, where applicable, subject to refinements through required phases 3 &4 Class EA studies or as part of Planning Act development applications. All cross section elements shall conform to the Complete Street Design Guidelines, City master plans, polices and standards, including street lighting, stormwater, landscaping, etc.

Figure 16 - Conceptual Two-Lane Arterial Road



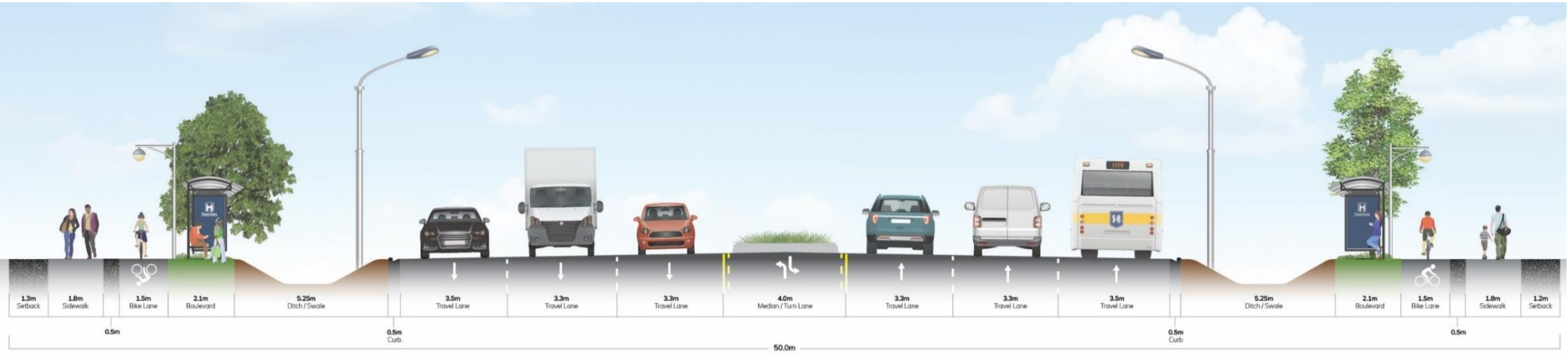
NOTE: The cross section configuration is conceptual, context sensitive and, where applicable, subject to refinements through required phases 3 &4 Class EA studies or as part of Planning Act development applications. All cross section elements shall conform to the Complete Street Design Guidelines, City master plans, polices and standards, including street lighting, stormwater, landscaping, etc.

Figure 17 - Conceptual Four-Lane Arterial Road



NOTE: The cross section configuration is conceptual, context sensitive and, where applicable, subject to refinements through required phases 3 &4 Class EA studies or as part of Planning Act development applications. All cross section elements shall conform to the Complete Street Design Guidelines, City master plans, polices and standards, including street lighting, stormwater, landscaping, etc.

Figure 18 - Conceptual Six-Lane Arterial Road



NOTE: The cross section configuration is conceptual, context sensitive and, where applicable, subject to refinements through required phases 3 &4 Class EA studies or as part of Planning Act development applications. All cross section elements shall conform to the Complete Street Design Guidelines, City master plans, polices and standards, including street lighting, stormwater, landscaping, etc.

4.5 Travel Demand Management (TDM)

A Transportation Demand Management (TDM) Strategy development for the AEGD area should, at minimum, consider the following:

- Create a Transportation Management Association (TMA) led by City of Hamilton staff comprised of area employers that would encompass the AEGD, and provide tools and assistance for employers within the AEGD to develop TDM programs. The 2011 AEGD TMP identified the TMA as a potential tool to manage travel demand in the AEGD as the area is built out. A TMA is an organized group applying carefully selected approaches to facilitate the movement of people and goods within an area[1]. TMAs are often led by local government and local businesses in specific geographic areas and work to reduce mobility issues, which can impact quality of life and the ability to do business in an area.
- Require new employers within the AEGD to join the TMA as a condition of development approval, but otherwise promote existing employers to join through active engagement.
- Employers within the AEGD to create, implement, and monitor a unique company-specific TDM Plan aligned with the goals of the TMA.
- Encourage the implementation of the following TDM measures:
    - Provide on-site bicycle parking facilities in a safe, in well-lit, and sheltered locations.
    - Ensure showers, change rooms, and lockers are part of every building, to encourage cycling.
    - Provide information digitally or erect boards in strategic locations providing useful information to commuters such as up-to-date public transit maps and timetables, bike routes, walking trip times, relevant news items, car-pool information and other useful smart commute features.
    - Promote carpooling to the AEGD using the Smart Commute website or other tools available and use preferential parking spaces for carpools/ vanpools.
    - Explore opportunities for a bike-share or other micromobility schemes.
    - Explore opportunities for communal ‘fleet vehicles’ for business travel.
    - Support teleworking and alternative work arrangements for employees (if possible),
    - Investigate opportunities to schedule shift start and end times outside of peak periods and
    - Investigate the feasibility of providing corporate bus passes for staff.

[1] TMA Handbook: A Guide to Successful Transportation Management Associations
https://www.actweb.org/files/ACT/Publications/tma_handbook_final.pdf

- Continuous engagement with HSR to ensure transit access and service to the area is optimum and that ancillary facilities (e.g. shelters, benches, etc.) are provided, where appropriate.
- Investigate the feasibility of implementing a ride-matching service.
- Investigate feasibility of implementing parking charges at appropriate locations to improve attractiveness of alternative modes.

4.6 Parking Policy

Having strategies for managing parking can support the choice of modes of transportation and encourage active forms of travel in the employment district and ultimately foster sustainable growth. Current best practices emphasize setting parking standards' minimums in order to ensure that the availability of parking spaces aligns with targets for mode share and urban design objectives. Additionally, creating opportunities to incorporate carpooling, park-and-ride facilities, and electric vehicle charging stations will establish a network of facilities that promote travel choices. These measures will contribute towards improving system efficiencies and address climate change, while integrating shared mobility options to support multimodal and emerging transportation alternatives, including car-share, bike-share, electric vehicle parking and potentially peer-to-peer carsharing models.

The city-wide Parking Master Plan and TMP's Parking Policy Paper (Development of Policy Papers for Phase Two of the TMP for the City of Hamilton) provide parking policy recommendations. The following policies should be considered in the AEGD:

- Adopt off-street parking policies, including required parking standard requirements established through zoning, that attempt to balance the need to supply sufficient parking to support business while avoiding excess parking supply that can discourage transit use.
- Improve parking options and related incentives for transit and active transportation modes.
- Shared parking where appropriate on private land.
- Limit Long Stay Parking in transit hubs and activity centres where high-quality alternative modes are in place.
- Consider strategic parking lot locations for park-and-ride, commuter lots, and shared parking facilities.
- Promote TMA membership within the study area.
- Provide better information in the form of improving signage, wayfinding, and digital tools.
- Adopt a City-wide EV charging policy.
- Expand bicycle and micro-mobility parking.

5

Implementation Strategy

5.0 IMPLEMENTATION STRATEGY

The following Implementation Strategy outlines a proactive approach to phasing and timing of implementation following growth patterns with updated construction costs. A description of the recommended road network projects can be found in Table 7.

5.1 Construction Cost

This AEGD TMP Update includes updated construction cost estimates based on 2023 available tender package quotes from other roadway construction project work.

The approach used in preparing the cost estimates is consistent with that used in preparation of the Transportation Background Study for the 2024 Development Charges By-law, and includes the following elements:

- unit costs for materials related to roadway, drainage, structures, landscaping, electrical, property, utilities, services, and other items based on five years tender documents;
- typical “per kilometre” cross-sections (at full width build-out) cost for the various roadway classifications located within the study area as per the Complete Street Design Guideline;
- potential number of intersections, intersection treatments (e.g. traffic signals, roundabouts), structure requirements, drainage, bike lanes, etc. for individual projects;
- length of previously approved and modified projects; and
- total road costs for the length of the specified project.

The final road alignment and implementation costs will be confirmed as part of subsequent phases of the Class EA, detail design, and the development process.

5.2 Timing and Phasing of Implementation

The strategic phasing of implementation of road projects is crucial to accommodate planned growth and will be coordinated with water and wastewater servicing.

The projected timing of implementation for recommended roads in the network is based on the following considerations:

a. The timing and pace of development with respect to network needs.
b. Proximity of available services (water and sewer) and orderly development
c. The ability to unlock large contiguous blocks of unserviced land
d. Existing constraints such as “legal non-conforming” land uses (e.g. existing residential communities),
e. Road jurisdiction, i.e. City-owned vs privately-owned

5.2.1 Phasing: Road projects may be implemented in phases in terms of road width and length. For example, a road could be built to an interim width stage prior to being fully built to its maximum capacity and it may be constructed in segments to match need and the phasing of

development. In the event of a staged implementation the full road ROW will always be protected. An example of phased implementation can be carried out as follows:

1. Interim: 2 travel lanes and a continuous left turn lane implementation while protecting the ROW for maximum capacity at full build-out, with all other elements/functionalities.
2. Full build-out: 4 travel lanes and a continuous left turn lane, as well as active transportation facilities and all other elements/functionalities.

Note that subsequent phases of the Environmental Assessment / detailed design process will determine the phasing of individual projects.

5.2.2 Timing: The Growth Plan for Greater Golden Horseshoe establishes 2051 as the planning horizon. For the purposes of planning, road improvements have been categorized as follows:

- High Priority – implemented by 2031
- Medium Priority – implemented by 2041
- Low Priority - implemented beyond 2041

“Beyond 2041” is intended to be an estimate of the full build-out of the study area. While project implementation is estimated based on currently known information, as shown in Figure 20, anticipated timing is subject to change based on regular review of the pace of development through the Staging of Development report, corporate work plans, the Capital budget forecast and annual Capital Budget process.

5.3 Future Projects’ Municipal Class Environmental Assessment Schedule Determination

The 2023 Municipal Class EA document outlines the criteria for scheduling road projects within the Environmental Assessment framework.

The AEGD TMP satisfies Phases 1 and 2 of the Municipal Class EA process for unchanged roads, and Phase 1 of the EA process for that are modified or newly added to the network.

5.4 Directions for implementation

Road Improvements and Next Phases of EA Process

The City of Hamilton intends to facilitate development of the network by conducting subsequent phases (2-4, as applicable) of the Municipal EA process and construction for strategic arterial roads and some collector roads, especially where the ROW is already established.

Other road network improvements will be implemented by Developers through Development Agreements. These would include Collector Roads extending through private property (e.g. Collector 2W) and Local Roads which will be identified through the approval of development applications proceeding through the planning process.

Natural Heritage Systems

All development applications in the study area are required to align with the Secondary Plan, supporting master plans, including the AEGD Eco-Industrial Design and Urban Design Guidelines. Engineering designs must also comply with the City's Comprehensive Development Guidelines which include the Complete Streets Manual and the City's Green Infrastructure Standards and Guidelines. In that respect, it is expected that the development of employment uses and supporting infrastructure will have focus on prioritizing the natural environment through the employment of sustainable storm and wastewater infrastructure, enhancement of significant natural heritage system features like watercourses and wetlands, where feasible, and the connection of open spaces with the surrounding natural areas.

Discussions with Six Nations and City's Natural Heritage Planning staff served as a reminder that the direction of the above AEGD Secondary Plan policies shall be incorporated as above, with natural heritage to be treated as high priority.

Wildlife

Through the coordination of road network improvements and enhancement of natural heritage systems, wildlife corridors will be considered. In addition to requisite permits needed prior to construction; e.g. Species at Risk and Tree Preservation, examples of low-cost and effective measures to mitigate impacts to wildlife include:

- Avoiding the initial road work during reproductive (e.g. nesting) timing windows for wildlife
- Installing warning signs to alert motorists about wildlife in the area
- Installing wildlife exclusion fencing
- Specifically, designed culverts and bridges
    - While not Hamilton-specific, examples of wildlife corridors have been introduced in Milton (Tremaine Road and Main Street) and Long Point Causeway, samples of which are shown below in Figure 19:

Figure 19 - Examples of wildlife crossing/protection

Jump-out / Escape Tunnel, Neyagawa Blvd, Oakville, Ontario

Wildlife Fencing, Tremaine Rd, Milton, Ontario

"Catwalk", Tremaine Road, Milton, Ontario

Neyagawa Boulevard, Oakville, Ontario

5.5 Impact on Existing Built Environment and Legally Non-conforming Property(ies)

The implementation strategy take into consideration existing residential uses within the Business Park, to the extent possible. The AEGD Secondary Plan (Policy 8.3.6) acknowledges the presence of legal non-conforming lands and foresees their eventual redevelopment. Until such redevelopment occurs, the Plan mandates that abutting infrastructure, employment, and related uses evaluate their potential effects on these properties through specific studies and mitigate any impacts based on the studies' recommendations.

5.6 Roadway Project List

Table 7 identifies all projects within the recommended network, their costs, anticipated phasing priority, and EA schedule. Figure 20, below, shows the same list of projects on a map, with colour coded priority of implementation.

Table 7 - List of Recommended Projects, Construction Cost, Timing and Environmental Assessment Schedule:

Project ID	Roadway link	From	To	Description ***	length (km)	Total Cost ($M)	Timing of Implementation	EA Schedule
North-South Arterials								
R1	Southcote Road	Garner Road East	Hydro Corridor	2r-5u	0.95	$ 9.75	Short Term	C
R63	Southcote Road	Hydro Corridor	Collector 2N	2r-5u	1.270	$ 13.04	Short Term	C
R3	Glancaster Road	Garner Road East	Dickenson Road	2r-3u	2.67	$ 19.47	Short Term	C
R24	Glancaster Road*	Dickenson Road	Arterial 1N	2r-4u	0.39	$ 4.15	Short Term	C
R4	Upper James Street	Alderlea Avenue	Highway 6 South	4r-6u	6.450	$ 78.87	Long Term	C
R5	Garth Street Extension	Twenty Road	Dickenson Road	5u	1.46	$ 15.01	Short Term	C
North-South Collectors								
R22	Smith Road	Garner Road East	Book Road East	3u	1.890	$ 16.48	Medium Term	C
R25	Collector 1E	Twenty Road West	Dickenson Road	3u	1.400	$ 10.68	Medium Term	C
R26	Collector 6E	Twenty Road West	Dickenson Road	3u	1.340	$ 10.29	Medium Term	C
R31	Collector 2W	Garner Road East	Hydro Corridor	4u	0.770	$ 7.39	Short Term	C
R32	Collector 2W	Hydro Corridor	Dickenson Road Extension	4u	1.400	$ 13.41	Medium Term	C
R27	Collector 5W	Collector 2N	Collector 7N	3u	0.740	$ 7.04	Long Term	C
R42	Glancaster Road	Arterial1N	Airport Boundary	2r-2u	0.480	$ 3.21	Long Term	B
R64	Smith Road	Book Road East	Arterial 1N	2r-3u	0.810	$ 7.11	Medium Term	C

Project ID	Roadway link	From	To	Description ***	length (km)	Total Cost ($M)	Timing of Implementation	EA Schedule
R67	Collector 8W	Garner Road East	Collector 5N	2u	1.500	$ 9.99	Medium Term	C
R68	Collector 9W	Garner Road East	Collector 11N	3u	0.33	$ 2.85	Long Term	B
R78	Smith Road	Arterial 1N	Airport Boundary	2u	0.115	$ 1.84	Long Term	B
R43	Collector 1W	Garner Road East	Collector 10N	3u	0.387	$ 3.38	Medium Term	C
East-West Arterials								
R7	Book Road East	Highway 6	Southcote Road	2r-5u	1.050	$ 10.19	Short Term	C
R10	Book Road East	Southcote Road	Smith Road	2r-5u	0.450	$ 4.40	Short Term	C
R8	Garner Road East	Fiddlers Green Road	Glancaster Road	2r-5u	4.45	$ 43.25	Short Term	C
R9	Dickenson Road	Glancaster Road	Upper James Street	2r-5u	2.893	$ 28.14	Short Term	C
R11	Dickenson Road Extension	Smith Road	Glancaster Road	5u	0.83	$ 5.88	Short Term	C
R12	Twenty Road West	Glancaster Road	Upper James Street	2r-4u	2.910	$ 26.41	Medium Term	C
R13	Twenty Road Extension	Collector 2W	Glancaster Road	2u	1.060	$ 7.08	Medium Term	C
R14	Airport Road	East Cargo Road	Upper James Street	2r-3u	1.078	$ 8.80	Short Term	C
R14b	Airport Road	Terminal Access Road	East Cargo Road	2r-4u	0.323	$ 2.87	Short Term	B
R15	Airport Road**	Glancaster Road	Terminal Access Road	2u	1.710	$ 12.59	Long Term	C

Project ID	Roadway link	From	To	Description ***	length (km)	Total Cost ($M)	Timing of Implementation	EA Schedule
R16	Arterial 1N	Collector 2N	Dickenson Road	5u	2.970	$ 30.50	Short Term	C
East – West Collectors								
R17	Book Road East	Collector 2W	Glancaster Road	2r-3u	0.870	$ 8.28	Medium Term	C
R18	Collector 6N	Glancaster Road	Collector 6E	4u	1.950	$ 18.84	Short Term	C
R19	Collector 6N	Collector 6E	Upper James Road	5u	0.950	$ 9.12	Short Term	C
R20	Collector 10N	Garner Road East	Smith Road	3u	1.170	$ 10.19	Short Term	C
R21	Collector 10N	Smith Road	Collector 1W	3u	1.470	$ 12.86	Medium Term	C
R33	Collector 7N	Collector 5W	Southcote Road	3u	0.480	$ 4.21	Long Term	C
R40	Collector 7N	Southcote Road	Collector 2W	3u	0.840	$ 7.36	Long Term	C
R59	Collector 5N	Fiddlers Green Road	Collector 8W	2r	0.841	$ 4.93	Long Term	C
R69	Collector 2N	Collector 5W	Southcote Road/Arterial 1N	3u	0.420	$ 3.64	Long Term	C
R43	Collector 11N	Fiddlers Green Road	Collector 9W	2u	0.350	$ 2.35	Long Term	B

* Timing, cost and implementation depends on the outcome of Arterial 1N Phases 3 & 4 EA. If there is a change in intersection location between Arterial 1N and Glancaster Road, i.e. if the roadway is longer, cost will also increase.

** Costs for project R15 Airport Service Road are based on a two-lane arterial road cross-section and the alignment as identified in preferred alternative network. - The John C. Munro Hamilton International Airport Master Plan will determine if the runway 06-24 will be extended, when and by how much. This will impact the Airport Service Road project scope and may change the functional classification as well as cost and EA Schedule.

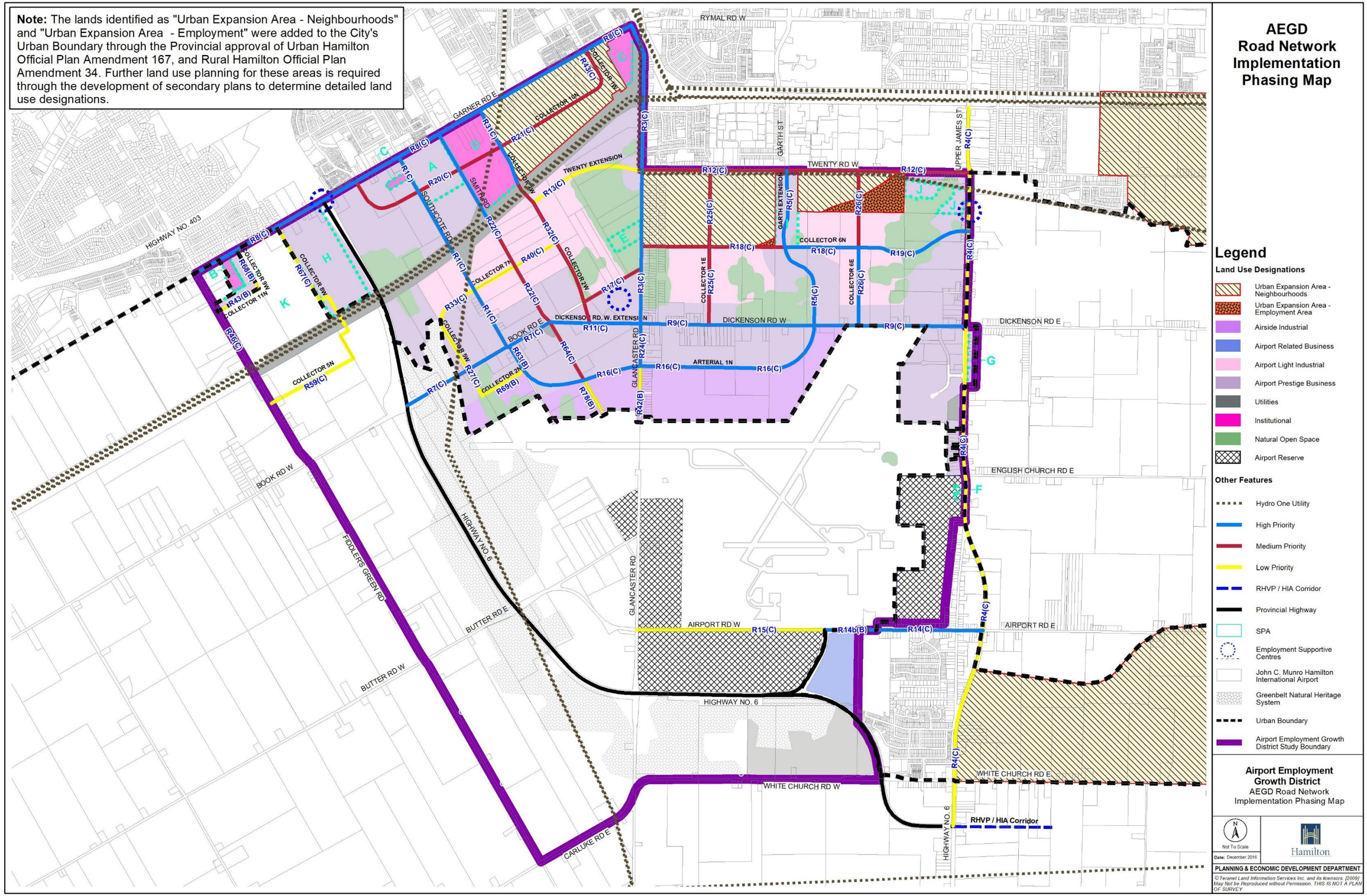
*** Projects with description “r” represent rural cross-sections and projects with “u” represent urban cross-sections.

Considerations for Implementation:

- Construction of a new collector road, or reconstruction or widening of an existing collector road that will not be for the same purpose, use, capacity or at the same location, and is required as a condition of approval on a plan of subdivision and/or the subdivision agreement which will come into effect under the Planning Act would normally trigger a need for a Schedule B or C EA. There may be an exemption to the EA process, if the proponent follows **Archaeology Screening Process (ASR)** and **Collector Road Screening Process (CRSP)** to make the determination of eligibility.
- Implementation of Road projects is to be coordinated with Water and Wastewater Servicing.
- Infrastructure assessment of the AEGD transportation network included considerations of infrastructure leading to the study area. Therefore, Garth Street (between Twenty Road and Rymal Road) is being recommended for widening from two lanes to four lanes to offset reduced traffic capacity on Glancaster Road.

Figure 20 - Implementation Phasing Map

Note: The lands identified as "Urban Expansion Area - Neighbourhoods" and "Urban Expansion Area - Employment" were added to the City's Urban Boundary through the Provincial approval of Urban Hamilton Official Plan Amendment 167, and Rural Hamilton Official Plan Amendment 34. Further land use planning for these areas is required through the development of secondary plans to determine detailed land use designations.



Legend

Land Use Designations

- Urban Expansion Area - Neighbourhoods
- Urban Expansion Area - Employment Area
- Airside Industrial
- Airport Related Business
- Airport Light Industrial
- Airport Prestige Business
- Utilities
- Institutional
- Natural Open Space
- Airport Reserve

Other Features

- Hydro One Utility
- High Priority
- Medium Priority
- Low Priority
- RHVP / HIA Corridor
- Provincial Highway
- SPA
- Employment Supportive Centres
- John C. Munro Hamilton International Airport
- Greenbelt Natural Heritage System
- Urban Boundary
- Airport Employment Growth District Study Boundary

AEGD Road Network Implementation Phasing Map

Airport Employment Growth District
AEGD Road Network Implementation Phasing Map

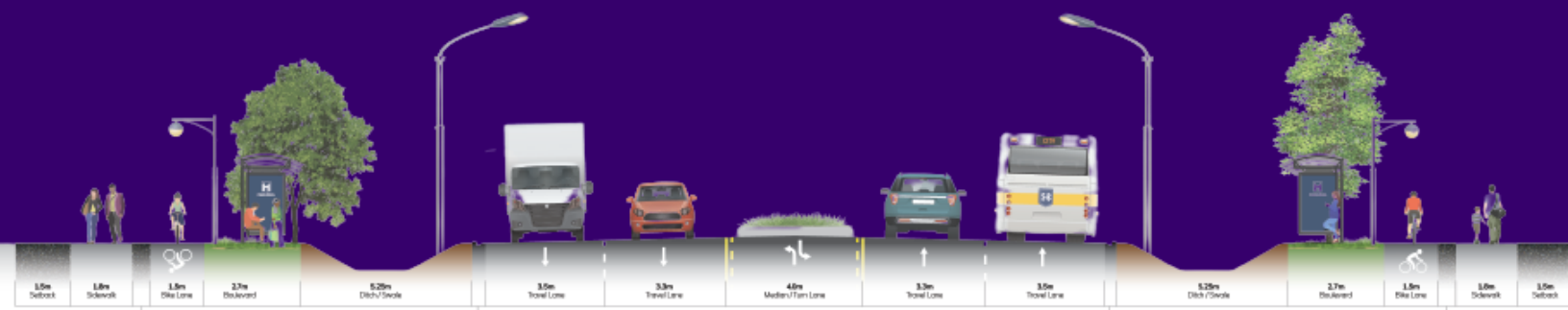
Not To Scale
Date: December 2016

Hamilton

PLANNING & ECONOMIC DEVELOPMENT DEPARTMENT

6

Summary of Recommendations



6.0 SUMMARY OF RECOMMENDATIONS

This Chapter summarizes the recommendations for implementation, direction for subsequent studies, phasing of implementation and policy document updates as summarized below:

6.1 Road Network Improvements

- Implement road network improvements (new roads, widenings and reconstruction projects) according to timing identified in Table 7.
- Conduct required remaining phases of the Municipal Class EA for individual infrastructure projects to confirm property and environmental (i.e. cultural and natural heritage etc.) impacts and cost of implementation.
- Coordinate the Highway 6 South access to the AEGD area with the MTO to determine the appropriate design and timing for interchanges.
- Expand the ROW widths in redesigned cross-sections for all road typologies through an Offical Plan Amendment to the OP.

6.2 Transit Improvements

- Implement the recommended Conceptual Transit Network as presented in Figure 12.
- Expand the Urban Transit Service Area boundary to include the AEGD Secondary Plan area.
- Ensure that transit service is planned within the AEGD in concert with the development approvals and construction of the road network.
- Extend and develop HSR transit routes to meet transit mode share targets for the study area.
- Ensure that employment development meets transit accessibility targets for the employment district (e.g. distance from development to transit facilities such as stops or stations).
- Integrate enhanced transit stops and/or stations within Employment Supportive Centres, as specified in the Secondary Plan and this TMP.
- Protect ROW for future Priority Transit use, specifically on Garner Road East, Upper James Street and Airport Road West.

6.3 Pedestrian and Cycling Network Improvements

- Implement the comprehensive and interconnected network of trails, pedestrian, and cycling routes within study area as part of the strategic implementation of the road network as presented in Figure 13.

- As a condition of development approval, enhance the cycling and trail network connectivity by integrating local pathways within private lands around the edges of major Natural Heritage systems to protect ecologically sensitive areas, biodiversity, and other environmentally significant sites.

6.4 Goods Movement Improvements

- Implement truck routes for the AEGD consistent with the outcome of Hamilton's Truck Route Master Plan Study 2022.
- Provide direct connectivity and increased travel reliability between AEGD and other business parks and goods movement hubs locally and regionally.

6.5 Transportation Demand Management Improvements

- Develop a TDM Strategy for the AEGD as identified in Section 4.5.

6.6 Parking Improvements

- Investigate the feasibility of parking policies for the study area as identified in Section 4.6 and adopt, as required.

6.7 Implementation

Build-out of the employment district is anticipated to be completed in coordination with water/wastewater servicing needs to support orderly development and the pace of growth.

Table 8 includes the list of recommended projects and schedules of EAs, i.e. additional phases of EA still required before detailed design and construction can take place.

The City of Hamilton intends to facilitate development by conducting subsequent phases (2-4, as applicable) of Municipal EA process and construction for strategic arterial roads and some collector roads, especially where the ROW is already established.

Other road network improvements will be implemented by Developers through Development Agreements.

6.8 Secondary Plan and Official Plan Amendments

Amend the AEGD Secondary Plan's Transportation Maps, as well as Schedule C of the Urban and Rural Hamilton Official Plan Maps as follows:

- **Amend Map B. 8-3 -** Airport Employment Growth District - Road Classification Map to be consistent with road network and classification changes shown in Figure 11 Airport Employment Growth District Road Network Map.

- **Amend Map B. 8-4 -** Airport Employment Growth District Phasing Map to add the road network priorities shown in Figure 20 - Implementation Phasing Map.

- **Amend Appendix A -** Airport Employment Growth District Transit Routes and Trails Map to incorporate changes to transit routes and trails shown on Figure 12 Airport Employment Growth District Conceptual Transit Map and Figure 13 Airport Employment Growth District Active Transportation Network Map.

Table 8 - Road Right-of-Way Widths and Remaining Phases of Class EA

Road Name	From	To	ROW Width	Remaining Phases of EA
Airport Road	East Cargo Road	Upper James Street	30	3 & 4
	Terminal Access Road	East Cargo Road	45	3 & 4
	Glancaster Road	Terminal Access Road	36	2, 3 & 4
Arterial 1N	Collector 2N	Dickenson Road	45	3 & 4
Book Road East	Highway 6	Southcote Road	45	3 & 4
Book Road East	Southcote Road	Smith Road	45	3 & 4
Book Road East	Collector 2W	Glancaster Road	30	3 & 4
Collector 10N	Garner Road East	Smith Road	30	3 & 4
	Smith Road	Collector 1W	30	3 & 4
Collector 11N	Fiddlers Green Road	Collector 9W	30	3 & 4
Collector 1E	Twenty Road West	Dickenson Road	30	3 & 4
Collector 1W	Garner Road East	Collector 10N	30	2, 3 & 4
Collector 2N	Collector 5W	Southcote Road/Arterial 1N	30	3 & 4
Collector 2W	Garner Road East	Hydro Corridor	36	3 & 4
	Hydro Corridor	Dickenson Road Ext.	36	3 & 4
Collector 5N	Fiddlers Green Road	Collector 8W	30	3 & 4
Collector 5W	Collector 2N	Collector 7N	30	3 & 4
Collector 6E	Twenty Road West	Dickenson Road	30	3 & 4
Collector 6N	Glancaster Road	Collector 6E	36	3 & 4
	Collector 6E	Upper James Street	36	2, 3 & 4
Collector 7N	Collector 5W	Southcote Road	30	3 & 4
	Southcote Road	Collector 2W	30	3 & 4
Collector 8W	Garner Road East	Collector 5N	30	2, 3 & 4
Collector 9W	Garner Road East	Collector 11N	30	3 & 4
Dickenson Road West	Glancaster Road	Upper James Street	45	3 & 4
Dickenson Road W. Ext.	Smith Road	Glancaster Road	45	3 & 4
Garner Road East	Fiddlers Green Rd	Glancaster Road	36	3 & 4
Garth Street Extension	Twenty Road West	Dickenson Road West	45	3 & 4
Glancaster Road	Garner Road East	Dickenson Road West	36	3 & 4
	Dickenson Road West	Arterial 1N	36	3 & 4
	Arterial1N	Airport Boundary	30	3 & 4
Smith Road	Garner Road East	Book Road East	30	3 & 4
	Book Road East	Arterial 1N	30	3 & 4
	Arterial 1N	Airport Boundary	30	3 & 4
Southcote Road	Garner Road East	Hydro Corridor	45	3 & 4
	Hydro Corridor	Collector 2N	45	3 & 4
Twenty Road W. Ext.	Collector 2W	Glancaster Road	36	3 & 4
Twenty Road West	Glancaster Road	Upper James Street	45	3 & 4
Upper James Street	Alderlea Avenue	Highway 6 South	50	2, 3 & 4

GLOSSARY OF TERMS

AEGD / [Hamilton] Airport Employment Growth District – An area approximately 1,200 hectares (Rural and Urban) in size surrounding Hamilton Airport which is subject to Secondary Plan and is expected to employ approximately 28,000 people by 2051 in a variety of ancillary job-types.

Airside Industrial – Airport Employment Growth District land-use designation which primarily permits the development of warehousing, transportation terminals, research and development, office, communication establishment, fuel storage, and airport catering services. Airport-related industrial uses will also be permitted, such as airport transportation and cargo services, airport waste processing facilities, and airport waste transfer facilities, outdoor storage of goods that do not cause interference with airport operations, and utility activities benefiting from proximity to airport services.

Airport Light Industrial – Airport Employment Growth District land-use designation which primarily permits development of manufacturing, warehousing, transportation terminals, research and development, office, communication establishment, private power generation, high technology industry and post secondary schools. Additionally, uses that support industry are, permitted, such as trade schools, training facilities, halls, commercial vehicle sales, commercial rental establishment, airport transportation and cargo services, airport waste processing facilities within enclosed buildings, and utility activities benefiting from proximity to airport service.

Airport Prestige Business – Airport Employment Growth District land-use designation which primarily permits manufacturing, warehousing, transportation terminals and repair service, research and development, offices, private power generation, high technology industry, and communication establishments.

Airport prestige business uses will also permit hotels, trade schools, commercial motor vehicle and equipment sales, commercial rental establishment, outdoor storage, salvage yards, waste processing facilities, cafes, fitness centres and utility activities benefiting from proximity to airport service.

Airport-Related Business – Airport Employment Growth District land-use designation which primarily permits the development of hotel/motels, convention centres, trade schools, restaurants and catering services, commercial storage facilities, automobile rental, leasing and servicing, gas stations, taxi terminals, commercial rental establishments, places of entertainment and recreation, and financial institutions.

AM Peak Hour – The busiest one-hour time period during the 'morning rush hour', typically occurring sometime between approximately 7:00 A.M. and 9:00 A.M., when most commuters travel from home to their place of employment or education.

Bike Lane – A Bike Lane is defined as a portion of the roadway that has been designated by striping, signage, pavement markings and physical barrier for the preferential or exclusive use of bicyclists.

Priority Transit – is a high-quality bus-based transit corridor that delivers fast, reliable, comfortable, and cost-effective services. It does this through the provision of dedicated lanes, transit signal priority measures, all-door boarding, and iconic stations typically aligned to the center of the road, off-board fare collection, and fast and frequent operations.

Collector Road – A roadway which provides direct land access to businesses and accommodates the movement of moderate traffic volumes through industrial / commercial areas.

EA / Environmental Assessment – A study which analyses the potential positive and negative impacts which a proposed development/project might have on the natural, social, cultural, economic or physical environment.

EMME – A multimodal travel demand forecast software (product of INRO) used to create a model of a transportation network and forecast resultant traffic volumes for the planning horizon, project travel patterns, and determine infrastructure capacity deficiencies amongst others.

Existing Network – The current 'as-is' transportation system including all hierarchies of roads, public transit facilities/infrastructure, truck route designation, provisions for pedestrians/cyclists, etc.

GGH / Greater Golden Horseshoe – A general phrase used to describe the densely populated, 'horseshoe-shaped' urban conglomeration around the western edge of Lake Ontario, consisting of cities such as Niagara Falls, Hamilton, Kitchener-Waterloo, Oshawa and the Greater Toronto Area.

GRIDS / Growth Related Integrated Development Strategy – City of Hamilton strategy to identify the most ideal places for growth and the type of growth based on environmental priorities, social issues, economic opportunities and population studies as well as to identify strategies to fund the servicing of these areas.

GRIDS 2 / Growth Related Integrated Development Strategy Update – An update of the previous GRIDS which plans for the City's population and employment growth to the 2051 planning horizon.

GTA / Greater Toronto Area – The area populated by approximately 6 million residents consisting of the City of Toronto and the surrounding regional municipalities of Durham, Halton, York and Peel.

HIA – [John C. Munro] Hamilton International Airport Horizon Year – A selected planning horizon year (e.g. 2031) for which certain assumptions have been made related to criteria such as population and employment growth, transportation infrastructure, modal split, etc.

HSR / Hamilton Street Railway Company – A division of Public Works Department at the City of Hamilton with jurisdiction over bus routes, transit and para-transit planning, operations and services.

LINC / Lincoln M. Alexander Parkway – A major 'east-west' expressway in the Hamilton area connecting Ancaster and Highway 403 in the west to the Red Hill Valley Parkway and the shores of Lake Ontario in the east.

Legal, Non-conforming Land uses - lawful violations of current zoning by virtue of the fact that the use of the land or structure existed in compliance with applicable by-laws before the by-laws with which there is non-compliance was passed (These are uses of land, structures, or buildings that were legally established according to the zoning and land use regulations that were in place at the time but do not currently conform to the latest set of zoning and land use regulations. Typically, a legally non-conforming use is allowed to continue until it is discontinued, destroyed, or abandoned, although specifics can vary based on local regulations.)

Local Road – A roadway which primarily provides direct land access to businesses and other land uses; the accommodation of low traffic volumes is considered a secondary function.

LOS / Level of Service – A quantitative measurement typically used to communicate the effectiveness of an intersection operation/capacity, ranging from 'A' (good operating condition) to 'F' (unsatisfactory operating condition).

Major Arterial – A high capacity roadway type carrying high volume of inter-regional and intra-municipal multimodal traffic throughout an area and/or city. Traffic movement is the primary consideration of this type of roadway. Stringent access control is required to provide uninterrupted traffic flows along the facility except for signalized intersections and Pedestrian cross-overs.

MCR / Municipal Comprehensive Review - is the process by which the City brings its Official Plans into conformity with updated policies of the various Provincial plans which apply to Hamilton (PPS, Growth Plan for the Greater Golden Horseshoe, Niagara Escarpment Plan, Greenbelt Plan). The population and job forecasts of the Growth Plan to 2051 need to be planned for and accommodated through the MCR.

Minor Arterial – A high capacity roadway type carrying moderate volume of intra-municipal multimodal traffic throughout an area and/or city. Traffic movement is the primary consideration of this facility type. Some access control is required to provide uninterrupted traffic flows along the facility except for signalized intersections and controlled pedestrian cross-overs.

MEA / [Ontario] Municipal Engineers Association – An association of public sector Professional Engineers in the full time employment of municipalities performing the various functions that comprise the field of municipal engineering.

Modal/Mode Choice – The form of travel used to travel to/from a destination, such as single occupant vehicle, car-pool, bus, train, ferry, bicycle, walk – and in some instances, 'telecommuting'.

MTO – Ministry of Transportation, Ontario

Multi-Use Path – Typically a paved off-street pathway designated to be shared for both cyclists and pedestrians. No motorized vehicles are allowed to use these facilities.

OLT – Ontario Land Tribunal

OP / [City of Hamilton] Official Plan – Official Plans in the City of Hamilton provide guidance to ensure that development progresses in a rational, efficient and orderly manner, while minimizing impacts on adjacent land uses and existing infrastructure systems.

PM Peak Hour – The busiest one-hour time period during the 'evening rush hour', typically occurring sometime between approximately 4:00 P.M. and 6:00 P.M., when most commuters travel from their place of employment or education back to their place of residence.

Ride Hailing / Ride Sharing – A term referring to when a person uses a mobile application to request a local driver to pick them up and take them directly to a specific location. These trips can take place on-demand or scheduled in advance.

ROW / Right-of-Way – A parcel of land designated for existing or future infrastructure such as roads, railways, hydro towers, etc.

Screenline – An imaginary line across roadways (e.g. highways, expressways, arterials, collectors, etc.) used in transportation modelling and analysis to examine traffic volumes and roadway capacity entering or exiting a particular area.

SOV / Single Occupancy Vehicle – The term assigned to a vehicle consisting of a single driver who carries no passengers. Such vehicles typically make up the majority of all vehicles on urban roads in Canada.

TAZ / Traffic Analysis Zone - A unit of geographical area delineated by local transportation officials to represent the spatial distribution of trips origin and destination, population and employment and other spatial attributes that generate or otherwise influence travel demand. A TAZ usually consists of one or more census blocks or census tracts.

TDM / Transportation Demand Management – A strategy which aims to 1) reduce the number of unnecessary single occupant vehicle trips; 2) encourage the use of more sustainable alternatives such as public transit, car-pooling, tele-commuting, walking and cycling; and 3) make more efficient use of existing infrastructure and resources.

TMA / Transportation Management Association – An organisation typically comprised of businesses, institutions, individuals, or other organisations which have similar transportation, parking, safety or traffic-related needs/concerns within a certain local area such as a business park, mall or neighbourhood.

TMP / Transportation Master Plan – A strategic policy document aims to provide a framework which guides future transportation-related studies, projects, initiatives and decisions and accommodate predicted transportation related requirements created by future population and employment growth forecasts.

Transit Hub – A central, transit-oriented area which, in addition to bus stops or rapid transit stations (if applicable), may include amenities such as signage, shelters, drinking fountains, benches, trash receptacles, bicycle racks, lighting, decorative paving; and trees, shrubs and groundcovers.

Truck Route Master Plan Review Study – A study that explored opportunities to provide safe and efficient movement of trucks in Hamilton, support economic activities, minimize negative impacts of truck traffic on sensitive land uses, and balance between the industry and community needs.

Ultimate Build-Out – The predicted scale of a development based on assumptions/knowledge related to criteria such as population and employment growth, land use type, transportation infrastructure, modal split, etc. upon full development of the Secondary Plan Area.

V/C / Volume-to-Capacity Ratio – A term used to express the number of vehicle trips per hour relative to the intended design capacity of that road, usually expressed as a decimal. Conventional traffic engineering practice states that a V/C ratio greater than 0.85 indicates a roadway is approaching capacity, while a V/C ratio above 1.00 indicates a roadway is over capacity