Tewin Mobility Existing Conditions

Prepared for:

Taggart Investments and Algonquins of Ontario (AOO)

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1 Introduction

This Tewin Mobility Existing Conditions report is part of a set of technical reports which have been prepared as part of Phase 1 of the Tewin study process. The Tewin Study Area ("Study Area") lands were identified as a future urban development area in the new City of Ottawa Official Plan (2023). The Study Area is located in southeast Ottawa, generally bordered by Leitrim Road to the north, Farmers Way to the east, Thunder Road to the south, and Anderson Road and Ramsayville Road to the west. The Study Area is outlined in **Figure 1** below. These technical reports are intended to establish an understanding of the existing physical, social and ecological conditions that characterize the Study Area. Where appropriate, these reports also identify preliminary opportunities to help guide the next phase of the master planning process.

This information will be used to identify opportunities and strategic considerations that will inform the Tewin community design process going forward, as well as frame the preparation of additional site-specific technical studies and recommendation reports. Development at Tewin will explore new approaches to planning, design and development, including alternative strategies and solutions that can successfully implement the key community objectives.

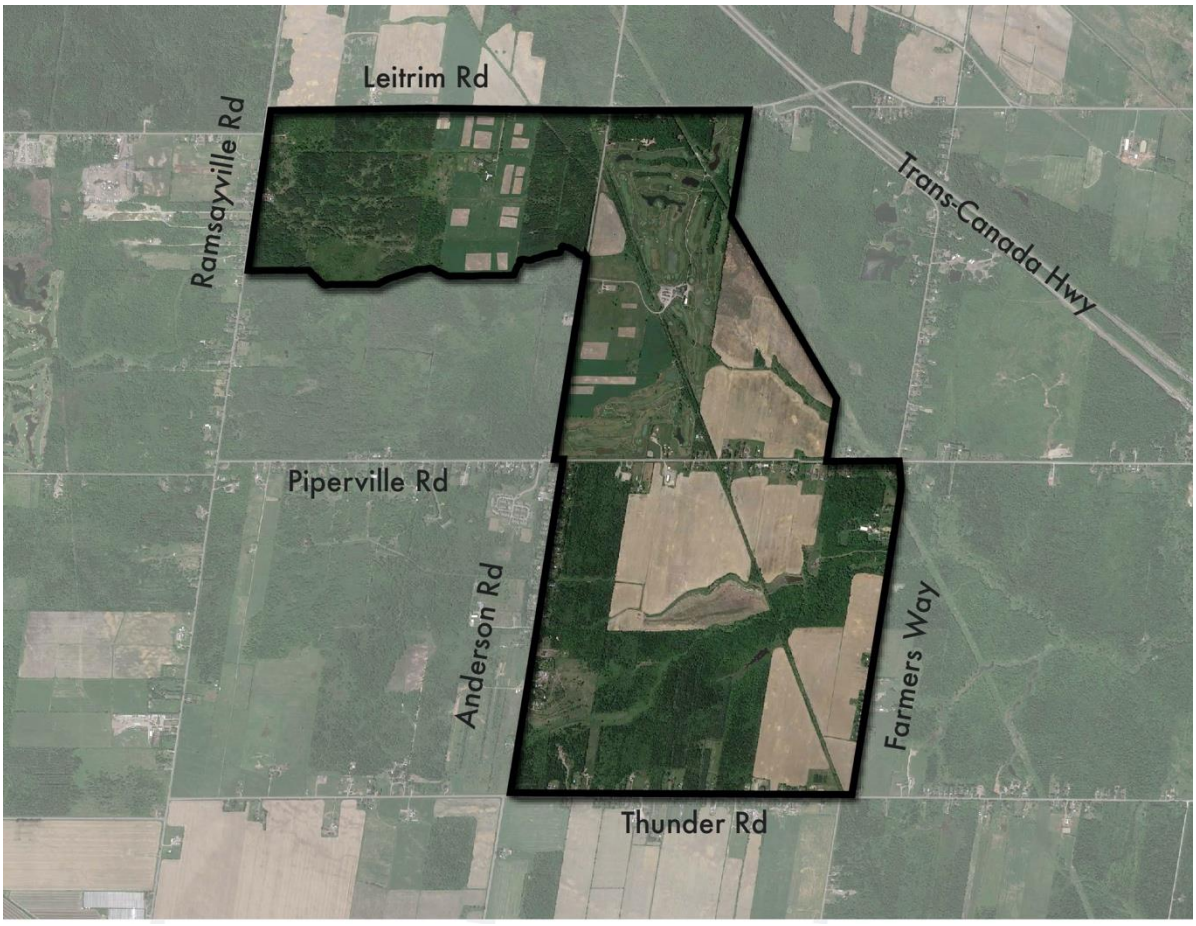

Figure 1: The Tewin Study Area is identified in black outline

1.1 Integrated Master Plan & Municipal Class EA Process

The ambition and scale of Tewin requires ongoing internal and external consultation. The purpose of the integrated Master Plan and Municipal Class EA process is to consolidate the various technical and community planning elements of the project to promote coordinated community engagement through streamlined and

aligned decision making. This format will ensure critical partners, consultants and stakeholders are brought together at major milestones to identify and track challenges and opportunities through the development process.

The integrated Master Plan and Municipal Class EA process will include a public consultation strategy and technical study review timeline that achieves the requirements of the Master Plan and Municipal Class EA concurrently. The statutory Municipal Class EA meetings will be timed to align with the development of the community objectives, urban framework, preferred plans, and the draft secondary plan. Additional public and targeted consultations will be planned to complement the statutory consultation requirements. The development of the One Planet Action Plan (OPAP) will occur in parallel, with the final OPAP available at the time of final secondary plan Council approval. One Planet Living endorsement will follow Council approval of the secondary plan.

1.2 Tewin Overview and Community Vision

Tewin is planned to be a community of approximately 45,000 people and thousands of jobs. It will be more compact and dense than existing suburbs in Ottawa, with new urban areas integrated alongside valuable natural areas. Tewin will be an inclusive community, anchored in Algonquin wisdom and placekeeping principles, and welcoming to all. The community will have a meaningful mix of land uses and support active mobility, to achieve a complete, future ready community. The Tewin Project Team and City of Ottawa have committed to exploring appropriate options, alternatives and standards to enable Tewin to become a model of best practices in sustainable and inclusive community design in the North American context.

The integrated Master Plan and Municipal Class EA process will bring together various technical and community planning considerations.

The key objectives for Tewin are to create a community that is:

- Anchored in Algonquin wisdom, principles and placekeeping;
- A benchmark for community design, demonstrating achievement of the 5 Big Moves identified in the Ottawa Official Plan;
- Mobility-oriented and supportive, promoting a broad range of active forms of movement, where personal vehicles are optional;
- Characterized by a meaningful mix of housing, community amenities, jobs and services in order to achieve a complete, future-ready community;
- Designed to protect and integrate alongside valuable natural areas and agricultural lands; and
- Affordable, inclusive, healthy, welcoming and accessible to all.

1.3 Tewin Intent: A Forward-Thinking Framework

Development at Tewin will explore new approaches to planning, design and development, finding successful options and alternatives to implement the key community objectives, in some cases likely going beyond what current development standards would allow for. The Tewin Project Team and the City of Ottawa have articulated these in the “Tewin Intent” which sets out the following:

1. Bold and Innovative Thinking:
Tewin is about creating a new kind of community, a future-focused model for smart, healthy and sustainable development. It will be a people-centred place that seeks to create the conditions for well-being. The Tewin Project Team will be open to bold ideas, innovative approaches, creative solutions, efficient use of land and resources, emerging technologies, smart city infrastructure that advances the City’s goals and objectives, and other future-forward ideas and opportunities that will enable Tewin to reach its full potential.

2. Integrating Algonquin Values and Principles:
Algonquin principles, values and teachings will guide the planning, consultation, design and development process for Tewin. The integration of Algonquin principles and design intentions will ensure the community is nature-based and sensitive to Mother Earth while creating capacity-building and economic development opportunities for the Algonquin people.

3. Sustainability and Resilience:
Tewin will be a model community that will position Ottawa as a leader in integrated sustainable design with the goal of being a resilient and holistic community. Tewin will be guided by the One Planet Living framework and Algonquin values of respect for the earth. The Community Design Plan will respond to the City's High Performance Development Standard and Climate Change Master Plan, and will result in a Community Energy Plan. A Community Energy Plan and performance-based sustainability metrics that address climate mitigation and adaptation, and the other categories of the High Performance Development Standards will be established from the start and monitored over time.

4. Systems-Based Environmental Planning
Tewin's organization and functions will be designed to respect nature and integrate natural features and landscapes into its form, character, and spirit. To that end, the Tewin Project Team is committed to pursuing a systems-based approach to natural heritage protection, environmental management, and water management in a way that is inclusive and integrated and encourages stewardship and a positive relationship with the natural world. Natural features are regarded as opportunities rather than constraints, will be woven into the fabric of the community, and will be central to its design and character.

5. Alternative Design Solutions:
Designing a community of the future requires progressive and forward-thinking infrastructure solutions. The Tewin Project Team is committed to being solutions-oriented and will consider alternative design and engineering standards that prioritize natural systems, pedestrians, cyclists and transit users, and which efficiently use available land and resources.

Surface water management strategies that achieve quality, conveyance and storage objectives will be based on the fundamentals of natural cycles, green/soft infrastructure, and multi-use opportunities that complement the human realm. Infrastructure design will consider the needs of those involved in the construction, operation and maintenance of municipal services to find opportunities to efficiently service the community and showcase sustainable practices while meeting the community's needs.

A framework for assessing alternative design standards will be established to consider and review alternatives against existing standards within the context of goals and objectives for the City and Tewin.

6. Cost-Effectiveness and Efficiency:
Tewin will demonstrate best practices in efficient and compact development. As a dense, mixed-use community of scale, Tewin will achieve a critical mass of people and jobs to support new infrastructure investments. The Tewin Project Team is committed to exploring opportunities to optimize the community's efficiency through a range of strategies, including prioritizing space-efficient modes of transportation, use of technology, green infrastructure, innovative construction practices, shared-use agreements, and mixed-use forms of development that will promote the efficient use and optimization of land; housing affordability; and supporting the long-term financial viability of the community and city resources.

7. Integrated Planning Process:
We are committed to advancing Tewin through a comprehensive and integrated planning and environmental assessment process where possible or applicable. The process will bring together various planning, environmental, transportation, urban design, infrastructure, economic, financial, social and technical considerations. The process will be underpinned by engagement with the Algonquin people, other stakeholders, and the public.

8. Collaboration and Problem Solving:
The Tewin Project Team and City of Ottawa Project Team are committed to working collaboratively together to move Tewin forward in an expedited way. We will plan with a spirit of collaboration and joint problem-solving to ensure that the development of Tewin meets the best interests of the City of Ottawa and the Algonquins of Ontario.

9. Communication and Transparency
The Tewin Project Team and the City of Ottawa Project Team commit to open and transparent communication throughout the project. This will require proactively sharing information between the groups as decisions are made and to ensure relevant communication materials are distributed in a timely manner.

The Tewin Project Team and the City of Ottawa Project Team will ensure that all parties, including City Council, residents, and other stakeholders, are provided with pertinent details. Effective information sharing will ensure the project achieves outcomes that are, to the greatest extent possible, known by all involved.

1.4 Existing Conditions Technical Reports

A range of specialized consultants have been studying the physical environment of the Study Area to support community design, servicing strategies and the future development of Tewin. This data has been collected and reported on in a set of Existing Conditions and Opportunities Reports, of which this document is one. The full suite of reports includes the following:

- **Tewin Existing Conditions and Preliminary Opportunities Report** dated May 2023 and prepared by Urban Strategies
- **Fluvial Geomorphology Study - Tewin Lands: Existing Conditions Summary Report - Bear Brook and Ramsay Creek Watersheds** dated May 2023 and prepared by GEO Morphix Ltd.
- **Tewin Lands: Existing Conditions Hydrogeological Study** dated May 2023 and prepared by Dillon Consulting
- **Existing Conditions - Geotechnical: Tewin Lands** dated May 2023 and prepared by Paterson Group
- **Tewin Lands: Natural Heritage Preliminary Existing Conditions Report** dated May 2023 and prepared by Kilgour and Associates
- **Tewin Lands: Cumulative Hydrologic Impact Assessment** dated May 2023 and prepared by J.F. Sabourin and Associates
- **Tewin Lands: 2021-22 Field Monitoring Report** dated May 2023 and prepared by J.F. Sabourin and Associates
- **Tewin Mobility Existing Conditions** dated May 2023 and prepared by CGH Transportation
- **Stage 1 Archaeological Assessment** dated November 2022 and prepared by Golder Associates

1.5 Framework for Identifying Preliminary Opportunities

Given the unique scale, vision, and project goals for Tewin, as well as the shared commitment to exploring new ways of advancing the community design process as expressed in the Tewin Intent, the existing conditions reports for Tewin include a discussion of potential design opportunities and management strategies. The identification of preliminary constraints and opportunities, as well as a preliminary community structure, is required in Phase 1 of the integrated master planning and EA process as per specific Terms of Reference that were established for each of the Tewin planning, environmental and transportation studies.

These opportunities summarized below are based on a series of key policy directions and strategic considerations, including:

- **Ottawa's new Official Plan**, which promotes the creation of complete, transit-supportive 15-minute neighbourhoods;
- **Algonquin values and principles**, underscored by respect for nature, integration of water, and a sustainable natural environment to achieve long-term vitality over many generations;
- **The Tewin Intent**, which promotes innovative thinking and alternative, performance-based solutions;
- **One Planet Living**, a holistic framework for achieving environmental resiliency, sustainable development, and reduced carbon emissions;
- **Provincial policy direction** focused on supporting housing development and facilitating growth, in order to address the province's housing supply challenges; and,
- **An integrated, systems-based approach** to planning at Tewin that brings together diverse planning, environmental, technical and economic considerations.

2 Time for Change

Times are changing.

Mega trends in lifestyle and future needs, and the demands they place on the planet can be difficult to predict. Generation Z, who are largely driving these trends, has a strong environmental, sharing and inclusion heartbeat. These traits will and should impact the way we plan our future communities and their supporting infrastructure, like transportation.

During the COVID-19 pandemic, it was the transportation sector which was among the most disrupted; people changed their travel patterns. In fact, the pandemic generally reduced the demand on the transportation system. New working habits, such as the virtual office, have changed both the commuter volumes, peak timings, and origins and destinations. These outcomes demonstrated that society is adaptive, and transportation can have a huge role to play in the policy response to issues like climate change, mental health and the housing crisis.

Tewin's development story will take a much different path than other neighbourhoods and suburban areas throughout Ottawa and North America. Tewin will integrate land uses, creating a 15-minute community. The car-dependant society of yesteryear will not be part of Tewin's story.

It is time for change.

In transportation, there is an increasing shift away from the "Predict and Provide" paradigm - modelling demand based on past experience and building infrastructure to meet this demand - towards the "**Decide and Provide**" paradigm. This means to decide the preferred future of the transportation system and provide the means to work towards that. This requires a rebalancing of land use, digital and physical transportation infrastructure to both meet and harness new and emerging access and travel needs.

2.1 Drivers of Mobility Change

There are a number of forces that are changing the way we travel both now and in the future. These must underpin the development of Tewin.

The legacy of the pandemic

Changing travel patterns during the pandemic were primarily the result of decreasing spread, the provision of new micro-mobility options, and changes in peak hour travel and overall travel behaviour. With the onset of the pandemic, there was a shift to more auto trips and active mode trips (walking and cycling) instead of transit; in

part due to physical distancing and other measures put into place (such as reduced transit vehicle capacity). Further, we saw a decrease in unessential travel and residents carefully evaluated their needs to determine if a trip was in fact necessary. Since overall transit demand decreased, this highlighted and created transportation barriers, resulting in decreased use of regional service for long-distance transportation.

The collision of transportation and technology.

Transportation system managers and transit managers use Intelligent Transportation Systems (ITS) to monitor systems in real time and undertake actions in real time to improve system efficiency. This includes traffic signal optimisation, traffic prioritisation and vehicle management. The data derived from ITS has been collated and synthesised to create useful information system managers and the traveller alike. With the near ubiquity of the internet and mobile handsets this information is widely available and its impacts therefore potentially much greater.

Smart infrastructure provides connection of vehicles (private or transit) and devices to the network. There is now a real opportunity for connection and therefore intelligence in the system, facilitating more fine-grained approaches to traffic and transit management. Open data has meant that more data form disparate sources can be used to get a picture of the system and act accordingly – as transit manager or traveller.

Technological advances are facilitating vehicle autonomy, demand responsive optional models and effective vehicle sharing. These changes are themselves enabling new business models and are therefore creating a new mobility business ecosystem, including e-scooters, Demand Responsive Transit (DRT) operators, bike sharing, peer-to-peer car sharing and autonomous vehicle provision in private and public transport and deliveries.

Given the increase in modal options available and the challenges this represents to complexity for the user, and opportunities for true multimodal mobility, there has been a growth in interest and deployment of Mobility as a Service (MaaS) demonstrations – providing predominantly mobile phone-based plan-book-pay functionalities and subscription services across all modes via one interface.

Policy response to global environmental change

Various policy arrangements have been set to drive change in the future concerning both social and environmental aspects of communities. Introduced by the City of Ottawa in 2020 to support their new Official Plan (OP), Ottawa designed **The Five Big Moves** as the policy framework to lead the city towards a more sustainable future, by highlighting the steps and resources required to meet Ottawa's changing environment. By emphasising the importance of "completeness" in development throughout the document, the framework strives to create "compact, well-connected places with a clustering of diverse mixes of land-uses where daily and weekly needs can be accessed" in both urban and suburban areas within Ottawa. Main targets within this document entail planning around the goal of having the new Transportation Master Plan meet a 50% sustainable transportation mode share by 2031. In detail, the sustainable modes that the OP refers to are walking, cycling, public transit and sharing options including cycling, micro-mobility, and car-sharing opportunities. These options will be encouraged, specifically those pertaining to active modes, by following **Vision Zero** principles, focussing on prioritizing vulnerable roadway participants and redirecting roadway safety responsibilities from the users to designers. As such, primary sections within the resource outline policy pertaining to topics on:

- Growth Management
- Climate, Energy and Public Health
- Mobility
- Economic Development
- Urban and Community Design

2.2 What do these Drivers of Mobility Change mean for Tewin?

Equally weighting spatial proximity, physical mobility and digital connectivity in new development has historically been the key tenet of subdivision design and development. The sudden onset of the Covid-19 Pandemic caused a cultural shift in the way we live. There has been a fundamental change in the way we work, go to school, and access goods and services. We had to adapt. We had to shift our in-person connections and trips in favour of going virtual. That shift drew attention to the drawbacks of our telecommunications systems and accessibility of essential services and systems.

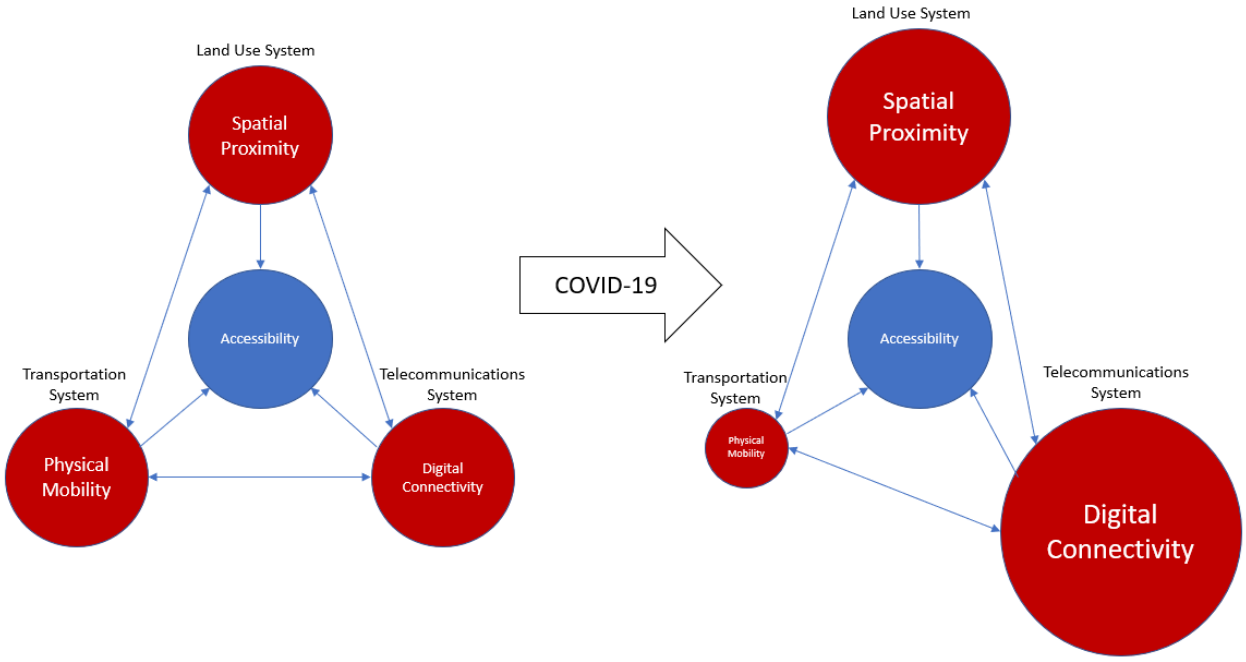

Figure 2: Spatial Proximity, Transportation and Telecommunications Accessibility (Source: Triple Access Planning for Uncertain Futures (2016, Lyons))

For Tewin, this means that in order to shift the modal share in favour of sustainable transportation modes, greater planning in the spatial proximity of essential services (i.e. commercial hubs and service providers) to residential land uses is critically important to the success of a contained 15-minute community. Another significant consideration is the digital connectivity of residents and their ability to embrace virtual travel and plan their trips individually, efficiently and conveniently. The key to the success of Tewin is the integration of technology in transportation to promote autonomy and a truly complete, 15-minute, sustainable community.

3 Tewin Mobility: Meeting the Challenge

3.1 The Vision

The Mobility Vision for Tewin

Tewin Mobility will provide real trusted mobility choice, with transit and sustainable modes at its core, and enable the lifestyles needs of the growing and evolving community.

Tewin Mobility is driven by innovation and a smart sustainable future which is grounded in the practicality of people's lives.

Tewin Mobility will be delivered through strong collaboration with stakeholders currently active in Ottawa as well as new mobility providers and services. This approach will deliver personalized, easy to use transport from day one.

As Tewin grows, Tewin Mobility grows with it.

Tewin Mobility will work from day one and throughout the stages of Tewin's development.

Tewin Mobility will be simple, easy to understand and use and fully integrated into people's lives and the community through all its phases of growth and development.

Tewin Mobility will actively address global and local environmental, social and economic challenges and the huge changes in technology, lifestyles and the transportation services marketplace.

3.2 Tewin Building Blocks – "The Big 3 Mobility Plays"

The following sections describe the "The Big 3 Mobility Plays" or "the Building Blocks" for Tewin and its transportation system. These building blocks will be used to help shape the various land-use options and their ability to achieve the vision and objectives.

3.2.1 Complete Community Building Blocks

Land Uses

Land-uses and proximity are codependent. A complete community can be defined and evaluated by the proximity of origins to destinations and the trip patterns they create. To ensure a complete community, availability of all types of land uses are required, and further, those land uses must be accessible conveniently by walking, cycling, and local transit to lessen the demand for local single vehicle auto trips. Sustainable travel modes need to be more attractive by way of convenience, efficiency, and affordability to generate and maintain the shift away from local single vehicle trips. It's important to note that land uses, origins and destinations will continuously evolve over Tewin's development story timeline, with more destinations becoming available and demand within Tewin increasing with population growth, therefore reducing proximity to services.

To establish their own definition of a 15-minute neighborhood that fits the needs of the citizens of Ottawa, the City of Ottawa has constructed sets of criteria in their Official Plan (OP) concerning the Five Big Moves initiative that describes the meaning of that specific 15-minute connection between origins and destinations.

Walking and Pedestrian Infrastructure

Tewin is about walking. Previous zoning and design methodologies meant residential and work-related land uses were to be separate entities; usually not permitting walking and cycling between the two. Updated concepts and changing trends have started to dismantle this way of thinking by integrating our residences and workplaces together to promote sustainable modes of travel such as walking or cycling.

By adding human-scale design features in the pedestrian street scape (such as street furniture, trees and wide pedestrian rights-of-way), more people are encouraged to linger in neighbourhoods and on the street.

Bike and Cycling Infrastructure

Residents will cycle when the infrastructure provided achieves their safety, health and convenience. To encourage trips to be made by cyclists, there needs to greater effort given to providing bike infrastructure with en-route destinations and increased human-scale street-design to encourage residents to ride that may not have cycled those trips before. Reclaiming and reallocating road space to more vulnerable users such as cyclists is a way to equalize the modal share and encourage more trips by bike and walking, and less trips by individual automobiles. In addition to cyclist facilities within the right-of-way to encourage bike trips, offering services such as bike share and providing adequate space for bike parking, bike repair and maintenance, are other means of

increasing the modal share to include more cyclist trips. Just shifting the priority of vehicle trips to a more bike/pedestrian friendly model can go a long way to ensure cycling is perceived as a solid alternative to auto trips.

Local and Regional Transit

Tewin Transit needs to be smart, convenient, and connected to all other modes. Aside from providing dedicated, safe, accessible facilities for walking and cycling, access to transit services is another key component in the context of 15-minute neighbourhoods. The intent of a 15-minute community is to enable people to live car-light or car free, promoting walkability, cycling and use of public transit. By having the option of combining cycling and transit travel methods, people can still access those services outside the scope of the 15-minute neighbourhood, such as post-secondary institutions and workplaces. Increasing the interconnectivity and convenience of pedestrian, cycling and transit trips, more people will be encouraged to decrease the use of private cars. Public Transportation is a key enabler of sustainable economic growth and equitable opportunity.

Transit routes need to connect origins and destinations. To increase the use of public transit, both locally and regionally, consideration must be given to connecting origins and destinations allowing pedestrians and cyclists convenient access to transit stops and stations at their origins and destinations. This allows residents to continue their journey by active modes after using transit as a connection method. It needs to offer accurate, real-time updates to riders so trips can be planned accordingly. Further, travel times by transit need to be able to compete with travel times associated with single vehicle trips to provide real choice.

Accommodating Automobile Trips

Tewin will still provide for inevitable vehicle trips, both locally and regionally. In an effort to balance multi modal uses and encourage car-light and car-free living, some of the historic elements of new development around the automobile can be redistributed/repurposed. Key features like large, under-utilized commercial and residential parking areas, as well as long, meandering pedestrian paths in parking areas are no longer required. Removing or reallocating the majority of that space for neighbourhood services, shops and residential development is key to developing Tewin, while still preserving provisions for auto trips. The opportunity exists to transform these parking areas into spaces for social congregation and co-working spaces; grouping these areas with other commercial land uses and residential development to further promote “work where you live” ideology.

3.2.2 Flexible Multi Modal Transportation Choice Building Block

Flexible multi-modal transportation choice

Providing flexible multi-modal transportation choice is central to the success of Tewin. Tewin can provide a real alternative to private car-based transportation by providing real choice of travel to meet traveller needs; a flexible multi-modal transportation system.

Flexibility does not just mean growing with Tewin over the coming years, it means providing transportation services which are geared to how travel demand changes throughout the day, week and year, and utilizing operational models built on on-demand and flexible/semi flexible routing. To be delivered effectively this system requires three areas of consideration and action: (i) Physical Infrastructure (the modes to use and the physical infrastructure upon which they operate); (ii) Operational Model (the management and co-ordination of these services and their performance monitoring and governance); (iii) User awareness (the mechanism to engage with potential users so they know what is available, how it works an can use the services to meet their travel needs).

Developments in Mobility as a Service (MaaS) provide an opportunity to provide real user connectivity. MaaS allows increased awareness and simplified use of transport services through digital channels, enabling users to plan, book and pay for multiple types of mobility services, and personalise this experience. This is possible through user preferences and settings. Perhaps as important is the ability of such MaaS services to touch all elements of

the mobility customer journey: from increasing awareness through to feedback and sharing of experiences, thus growing use. By touching all elements of the mobility customer journey there is a possibility for increased learning, encouragement and incentivization through the MaaS service.

3.2.3 Virtual Travel Building Block

Virtual Travel is a concept whereby a trip, traditionally made by physically moving between an origin and destination, is accomplished instead through communication via internet technologies.

The concept pre-dates the 21st century, when various applications and software have been used to support and connect people worldwide from their homes. Messaging platforms evolved from initial applications such as ICQ and AIM. They continued to grow with the advent of MSN messenger and Skype, adding video. Today, Microsoft Teams, Zoom, and others are much more robust and capable. As a result, people no longer use these platforms to connect with friends but also "to commute" to work productively in various locations, conducting meetings, and holding events. These advances in interconnected technologies have also evolved from solely being accessible on desktops and laptops to tablets and mobile smart devices.

The effects of Virtual Travel have influenced not only the connection of people but also accessing services.

Making an e-trip is a well-known concept to most, especially when it comes to working remotely. However, instead of walking to a bus, riding a bike, driving a car, or taking a plane to work, Virtual Travel enables people to join a meeting from their home or a local workspace such as a coffee shop.

However, to become a reliable "mode" and realise the travel behaviour changes referenced, a Virtual Travel trip requires physical infrastructure, virtual infrastructure and indeed a consumer/business/community offer.

4 Tewin Mobility Strategy Approaches and Opportunities

Based on the information provided in this report, the strategic planning and community design objectives for Tewin, and the commitment to exploring bold and innovative strategies for Tewin, the following section identifies a series of preliminary opportunities for consideration. These preliminary opportunities may help inform the next phase of the integrated master planning and EA process and can be used to frame community design options and technical solutions.

4.1 Approaches

Once land-use options are established, designed, and coordinated, they will be analysed locally and regionally using the TIMM and EMME/3 models. These models will be the framework for assessing the level of both regional and local mobility for Tewin. Analysis will primarily study eventual trip generation and mode share patterns. These will be used to predict how residents will engage with their transportation environment and consequently give a baseline understanding of how to accommodate each option efficiently. Further, the feasibility of each option based on analytical results will be evaluated. The evaluation process will depict, compare, and convey how well the configurations can both incorporate and optimize active and alternative travel modes that can be supported by virtual interfaces. As the primary goal with Tewin is to understand how active transportation and emerging technology can simultaneously work towards decreasing auto travel, the land-uses must be designed to accommodate that change while enforcing alternative transportation modes.

4.2 Opportunities

The creation of a vibrant, transit-supportive mixed-use community is a foundational tenet of the Tewin vision. The provision of a high-quality mobility network, with transit at its core, will support mobility choice and allow residents to easily access their daily needs within the community or throughout the city. An emphasis on transit, walking, cycling and other active modes is consistent with Ottawa's new Official Plan, which seeks to promote sustainable mobility and increase transit modal shares.

As a new community being planned at scale and from the ground up, Tewin is an opportunity to achieve a strong integration of land use and transit. Tewin has the potential to become a complete, transit-oriented 15-minute community, as envisioned in Ottawa's new Official Plan, which brings people in close proximity to schools, grocery stores, workplaces, businesses, libraries, community facilities, parks, natural spaces, cultural venues, community health facilities, and other amenities that are anticipated to be developed at Tewin over time.

There is an opportunity and a need to create a robust and interconnected transportation network at Tewin which supports access throughout the community and links to the broader city transportation network. A key objective is to ensure that as many residents as possible are within close proximity to transit to promote transit use and reduce the dependence on single-occupant vehicles over the long term.

The conceptual diagram below illustrates a potential primary street network at Tewin. A primary north-south spine could link through the community from Leitrim Road to Thunder Road, with new east-west connections linking from Ramsayville Road and Anderson Road towards the eastern edge of the community. These new corridors could create a spine for transit and development and be located to connect directly to higher-density nodes at Tewin.

The preliminary location of the corridors responds to the preliminary green space network, generally avoiding conflicts with natural hazards or major watercourses, and instead orienting these major streets in areas that can support more substantive development. The general corridor locations illustrated below also respond to the constraints presented by the existing arterial corridors, which are limited in terms of their potential to be expanded to accommodate transit infrastructure and the transportation needs of the Tewin community. The internalization of the primary Tewin street network not only brings more residents closer to transit, but it also avoids impacting existing properties and businesses along the adjacent road network.

Another opportunity for Tewin is to consider leveraging technology to create a smarter, more efficient mobility network. Given the paradigm shift that is taking place with respect to transportation and mobility, there is a need to consider the role of technology and contemporary modes of mobility, including shared transportation, newer modes of delivery, on-demand transit, and other mobility models which meet diverse lifestyle needs.

Figure 3: Tewin Generic Roadway Corridor Locations (Source: USI)

4.3 The Completed Mobility Strategy

The completed mobility strategy will include final plans for both regional and local transportation systems. This will coincide with the preferred land use plan. Using results from the land-use analysis and evaluations, plans for how to distribute and share travel proportionally between the provided modes. As such, these plans will be based on the building blocks emphasised within section 3 detailing the implications and results of implementing these foundational elements within Tewin. With the goal of changing the status quo, the previous sections highlight the possibilities of integrating land-uses and emerging transportation technology to instill connectivity, convenience, and safe active travel within 15-minute communities.

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Appendix A

South-East Ottawa Transportation Network Study

Existing Conditions Report

Date: May 24, 2024

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R1	Revised Draft Report	A. Sathya	T. Chow	R. Sooklall	01/11/2023
R2	Final Report	A. Sathya	T. Chow	R. Sooklall	05/24/2024

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1.0 Introduction

The vision for Tewin is to create a complete new urban node at the centre of a dynamic and inclusive mixed-use 15-minute community which supports 45,000 new residents and thousands of jobs while minimizing impacts to Ottawa's Greenbelt.

As part of the Tewin Secondary Plan, a transportation modelling study will be undertaken to determine the regional transportation needs and impacts of Tewin including the adjacent communities of Findlay Creek and Riverside South, which share interconnected transportation systems. This study, named the South-East Ottawa Transportation Network Study (SEOTNS), will inform the update to the City of Ottawa Transportation Master Plan (TMP) as well as the Tewin Local Transportation Plan (TLTP).

The first phase of the SEOTNS study involves the understanding of the existing transportation context. The intent is to gather all information that exists for the Tewin Secondary Plan study area to inform the Tewin Secondary Plan process, identify information gaps and opportunities, and to serve as a springboard to address issues affecting the future Tewin community.

1.1 Study Area

The geographic scope of the existing transportation conditions analysis focuses on the South-East Ottawa Transportation Network (SEOTN) study area shown in **Figure 1** while acknowledging the land use and travel patterns in the regional network will affect transportation within Tewin. The SEOTN study area consists of three communities: Riverside South, Findlay Creek and Tewin, as depicted in **Figure 1**.

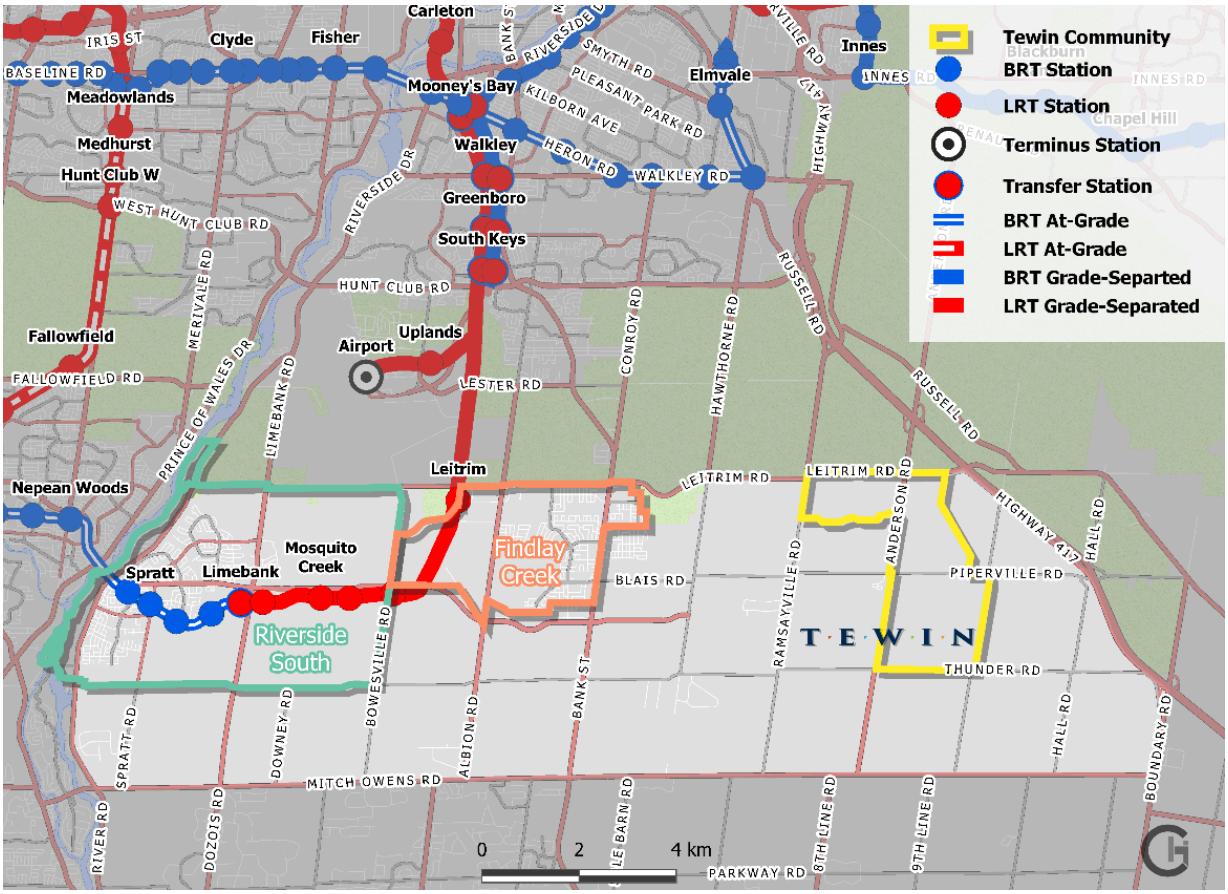


Figure 1: South-East Ottawa Transportation Network (light shaded area)

Tewin is currently a greenfield while Riverside South and Findlay Creek are more developed suburban communities. As such, understanding the travel patterns to/from these adjacent communities can inform travel patterns to Tewin without a 15-minute community design (i.e., 'typical' subdivision development patterns and design). This will also help guide modal split required to minimize impacts of the future transportation network on the greenbelt.

1.2 Study Objectives

The main objective of the existing transportation context review is to determine the regional transportation needs of the SEOTN study area. Understanding the regional and internal travel patterns of SEOTN will be crucial to guide the eventual development of an overall transportation solution for Tewin within both the South-East Ottawa transportation context and at a community level.

The existing conditions analysis documented in this report adopted a holistic approach by providing a high-level overview of the City-wide transportation context as well as a detailed review of the SEOTN and its integration with the wider network using the available data and information. The findings will supplement the transportation modeling component of the study utilizing the City's TRANS Regional Travel Demand Forecasting Model (TRANS Model) to support the proposed Tewin development.

1.3 Report Structure

The report is structured into two main sections. The first section involved a review of the city-wide transportation network context including the planned transit network based on the latest policy direction in the City's TMP documents. The second section focused on a detailed review of the existing transportation needs within SEOTN. The project team has leveraged the Streetlight Data platform to capture the existing travel patterns for the two existing communities in SEOTN. A select-link analysis was also carried out to establish an understanding of the existing traffic distribution passing through Highway 417, a key corridor to facilitate regional trips for the Tewin Community. The report is concluded with a summary of findings as well as next steps.

2.0 City-wide Transportation Context

2.1 Existing Transportation Network

City of Ottawa has a comprehensive multi-modal road network. Based on the City's GIS Open Data, its road system consists of approximately 9,600 km of roads including 1,900 km of arterials, and 7,700 km of freeway, collectors, and local streets.

The existing transit network is a mix of light rail transit (LRT), bus rapid transit (BRT) and O-Train facilities. The transit system is comprised of two O-Train lines (Line 1 and 2), rapid transit routes that operates along transitway or highway as well as local bus routes.

2.2 Future Transportation Network

Based on the City's Transportation Master Plan (2013), the City has developed a strategic approach to expanding its rapid transit and transit priority (RTTP) network for achieving the City's transit objectives and meeting future transportation needs. **Figure 2** is a map of the future (2031) rapid transportation network as extracted from the City's TMP Draft Policy Document (December 2021). The red lines are the O-Train's Light Rail Transit (LRT) transit alignments, and the blue lines are the Transitway alignments. The approximate location of Tewin Community is indicated on the map to show its position relative to the rest of the network.

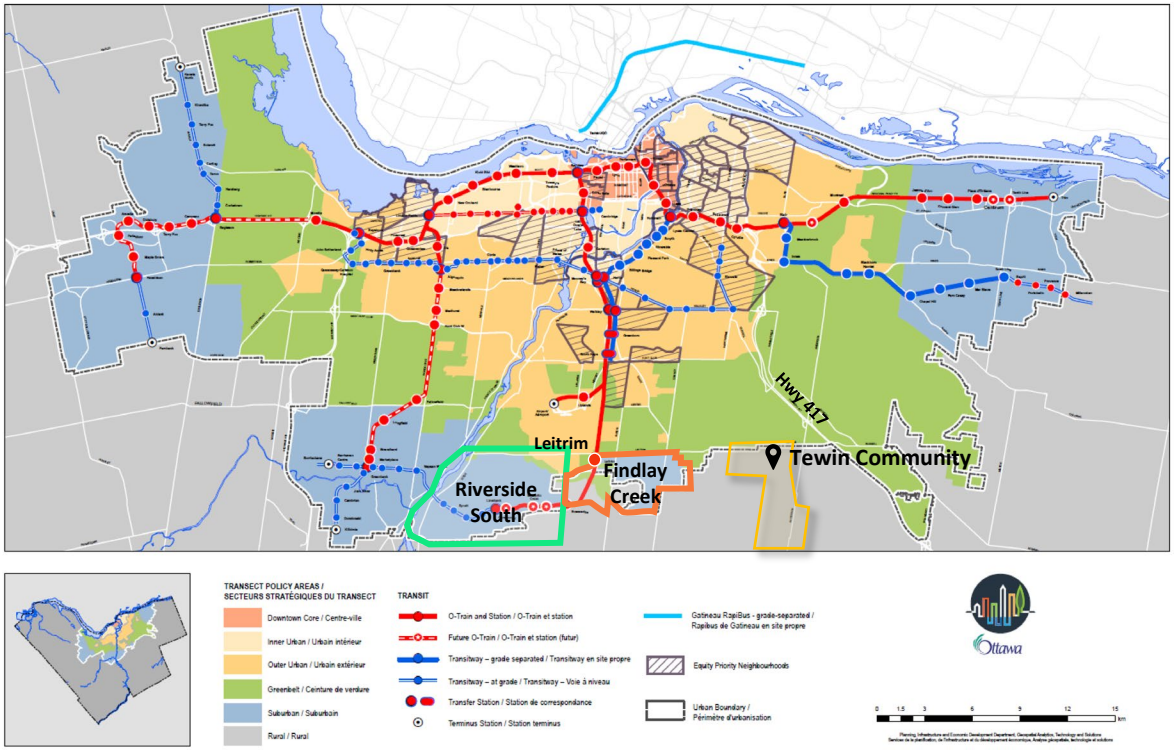


Figure 2: Future Rapid Transit Network (Source: City's TMP Policy Document, 2021)

The future planned rapid transit network will include O-Train Line 2 that extends south from Greenboro Station to Findlay Creek and continues west to Limebank. An at-grade transitway will connect Limebank to Barrhaven. The nearest O-Train station for Tewin will be Letrim Station on O-Train Line 2 which is approximately 7 km west of the community. The closest highway access is via the Highway 417 interchange at Anderson Street, located approximately 1.5 km north of Tewin.

3.0 The South-East Ottawa Transportation Network

This section summarizes the general trip patterns and behaviours within the South-East Ottawa Transportation Network (SEOTN). Since Tewin is an undeveloped area with no existing data, a benchmarking analysis of the two existing communities within SEOTN (Riverside South and Findlay Creek) was completed to establish an understanding of existing land use, network characteristics and key travel trends and influences.

The City-wide Origin-Destination Travel Survey is the standard source for collecting detailed information about the travel made by residents. However, the last survey was conducted in 2011. Considering the COVID-19 pandemic (COVID) and the current shifts in travel behaviours due to remote working or hybrid office settings, the patterns observed in 2011 survey data has likely changed.

A new OD survey was conducted in 2022 by the City and its partner agencies. A detailed analysis of the 2022 OD survey data was conducted for the Tewin Local Transportation Plan transportation model and the 2022 travel patterns from the 2022 OD survey are documented under a separate report. For this report, the City provided the project team access to the City's StreetLight Data platform to extract information on travel patterns and trip attributes under pre-COVID (2019) conditions.

Using StreetLight Data, a series of analyses were carried out to determine travel characteristics, trip patterns and demographic attributes of the two existing communities within the SEOTN: Riverside South and Findlay Creek. More specifically, analyses were undertaken to examine trip patterns for all-vehicles. Active transportation modes were also analyzed to examine travel patterns for internal trip activities. The 24-hour and AM-peak periods were assessed to determine both the daily and commuters' travel patterns for weekdays (Tuesday to Thursday). The extracted information was used to answer the following questions:

- Internal / External Trip Patterns
  - What are the key destinations for people residing in Riverside South and Findlay Creek?
  - Where are people originating from when they travel to Riverside South and Findlay Creek?
  - What are the travel characteristics (i.e., trip length, trip purpose) for these communities?
  - What are the route choices for people originating from Riverside South and Findlay Creek?
- Select-Link Analysis
  - Obtain an understanding of existing trip patterns along key corridors that will likely be impacted by Tewin in the future. For example, what are the key origins and destinations for trips along Highway 417? What are the general traffic conditions along this corridor?

Of note, the Streetlight Data Analysis Zones were developed based on the Traffic Analysis Zones (TAZs) boundaries in the TRANS Model. Since the resolution of the City's TAZs are at a much finer resolution than what is required for the purpose of a high-level transportation context review, the analysis zones were aggregated strategically to represent major communities and neighborhoods. The resulting zone boundaries used in the StreetLight Data analyses are shown in **Figure 3**.

The StreetLight Data analysis methodology and findings are discussed in the next subsections.

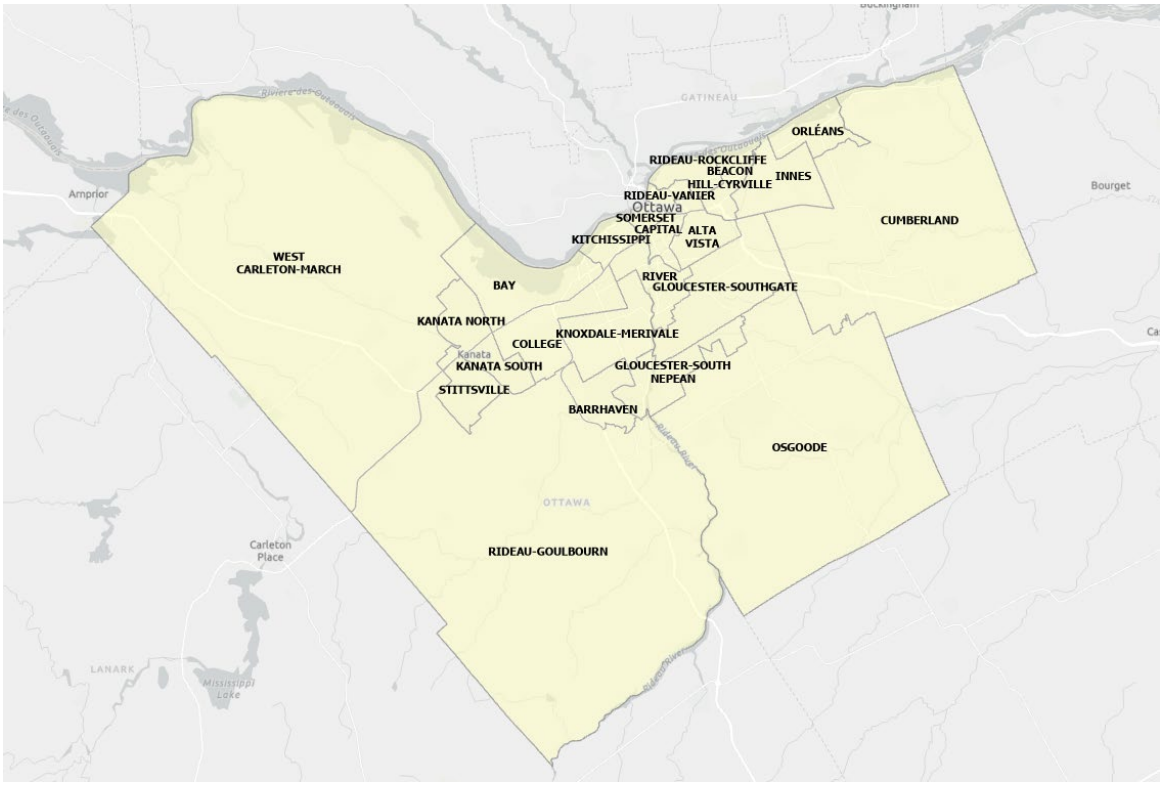


Figure 3: StreetLight Data Anaylsis Zones

3.1 Riverside South Community

Riverside South is a suburban community located in the south end of the City, southwest of Ottawa Macdonald - Cartier International Airport. The community is bound by Rideau Canal to the west, Bowesville Road to the east, Leitrim Road to the north, with planned expansion to the south closer to Rideau Road. The existing developed areas are mainly concentrated within the northwest quadrant of Earl Armstrong Road and Limebank Road.

The Riverside South Secondary Plan indicates that this fast-developing community has projected population and employment targets of 74,600 residents and 10,800 jobs. According to the 2024 Riverside South Community Design Plan (**Figure 4**), the land use composition of the community incudes residential to the south, employment areas to the north (airport employment and industrial area) and sporadic commercial lands at major intersections. The residential neighbourhoods will expect a mix of dwelling types include low-density housing in the south with medium to high-density in proximity to the major arterials, particularly in proximity to future rapid transit stations. The community design plan includes a community core area (mixed use) at the Earl Armstrong Road and Limebank Road intersection.

The arterial roads in Riverside South are River Road, Earl Armstrong Road, Limebank Road and Leitrim Road. Vimy Memorial Bridge provides crossing opportunity across the Rideau Canal and connects Riverside South to adjacent communities such as Barrhaven and Manotick via Earl Armstrong Road. Riverside South will also be served by higher-order transit services. The O-Train Line 2 (Trillium Line) has a planned extension to Limebank Road in Riverside South, which the intent to serve its Community Core. A Bus-Rapid Transit corridor is also planned to travel west from Limebank Road to Vimy Memorial Bridge enhancing transit connections between Riverside South and external communities.

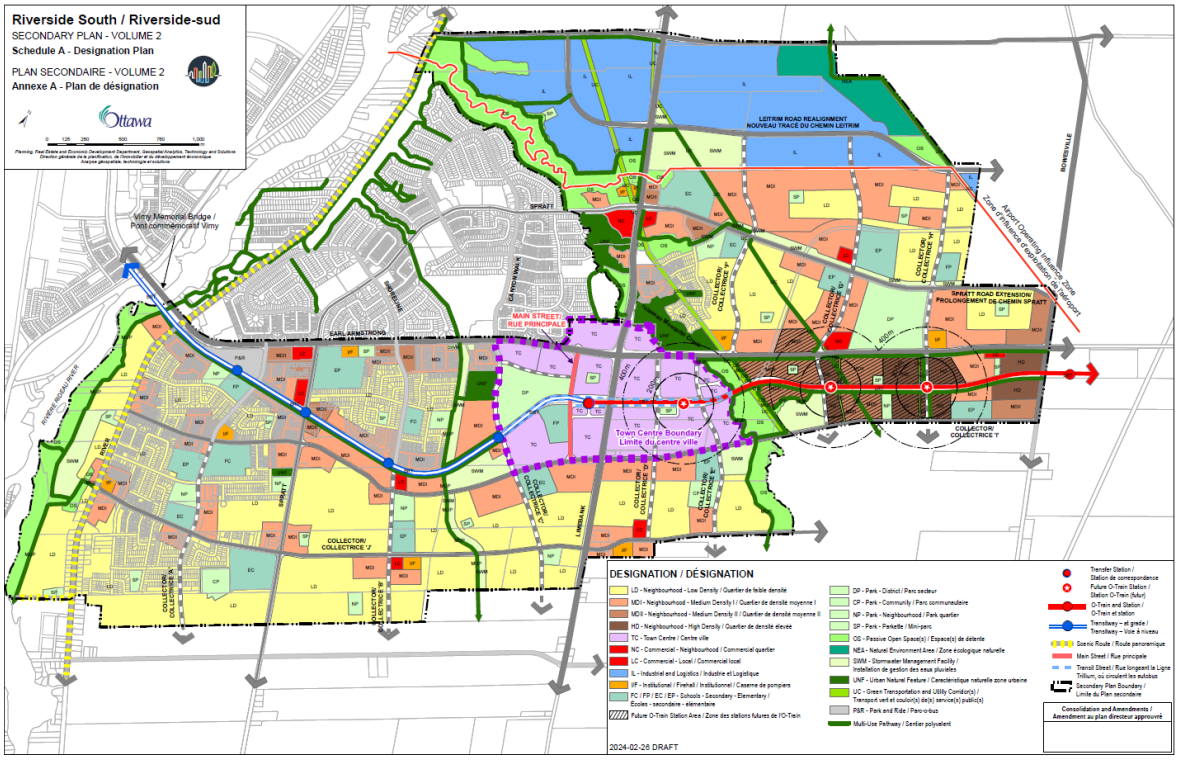


Figure 4: Riverside South Community Design Plan / Land Use Plan Map (2024)

The policy direction for Riverside South is to create a transit-oriented and dynamic neighbourhood that offers a great sense of community, enhanced neighbourhood vitality and active mobility options. Understanding the existing travel characteristics of such community will provide critical insights on the future planning of the Tewin's transportation network. The objective is to identify patterns associated with land use, available mobility options, travel preferences and determine key influences of travel patterns and behaviours.

The following sections provide more detailed information and analysis outputs on the travel characteristics of the Riverside South community.

3.1.1 Auto Origin and Destinations

The key origins and destinations were examined to establish a general understanding of where residents travel to and from within the community by auto.

As shown in **Figure 5**, the daily trip patterns extracted from StreetLight Data revealed that the most popular origins for travel to Riverside South are Barrhaven and Merivale which accounted for 17% and 10% of total daily trips destined to the community, respectively. For the AM peak period (**Figure 6**), the most popular origins for travel to Riverside South are Barrhaven and Hunt Club which accounted for 12% and 10% of total AM trips destined to the community, respectively.

As shown in **Figure 7**, the daily trip patterns extracted from StreetLight Data revealed that the most popular destinations for Riverside South are Barrhaven and Merivale which accounted for 17% and 10% of total daily trips originating from the community, respectively. For the AM peak period (**Figure 8**), the most popular destinations for Riverside South are Alta Vista and Merivale which accounted for 14% and 13% of total AM trips originating from the community, respectively.

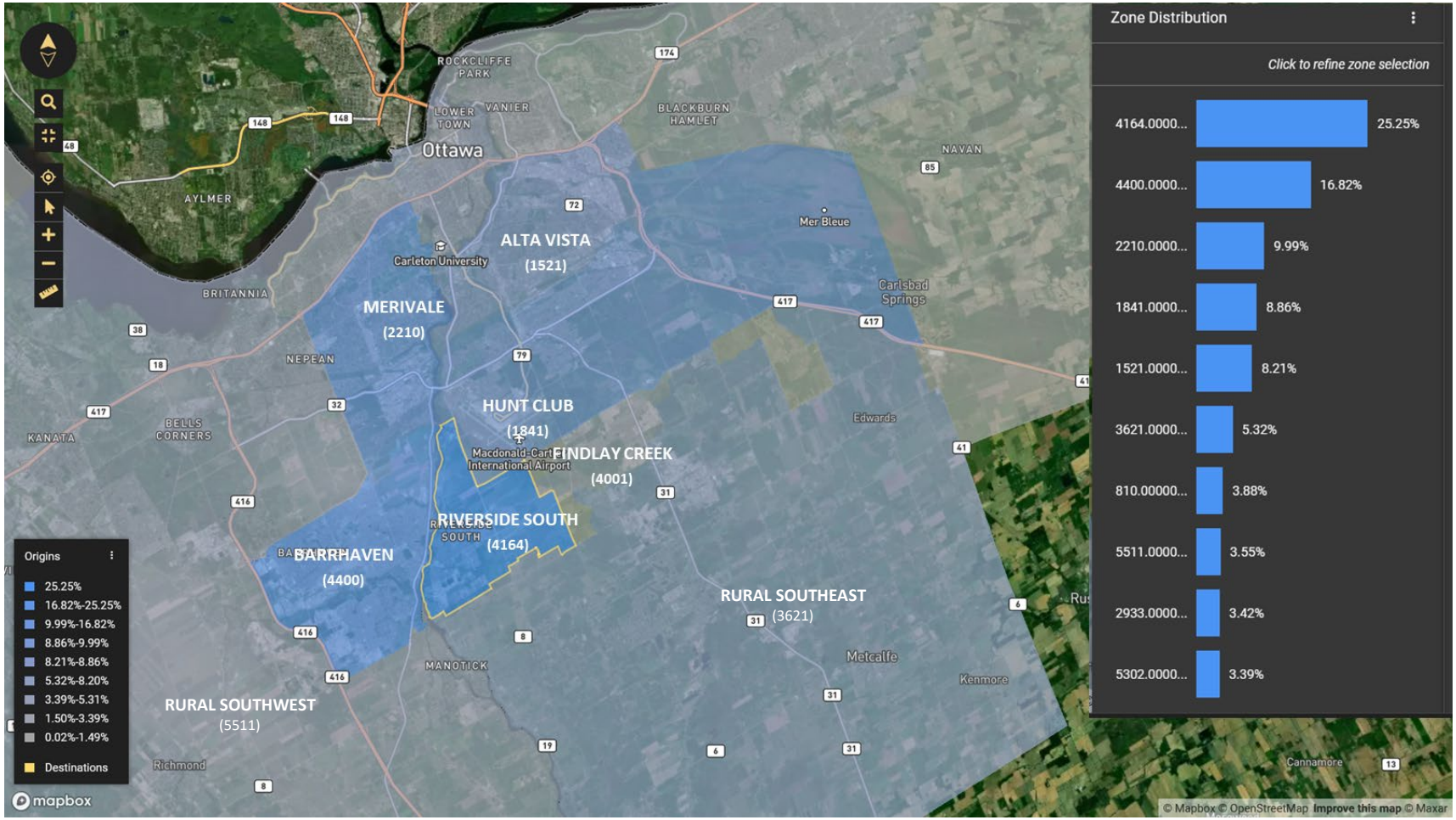


Figure 5: Key Origins for Riverside South (Daily Trips)

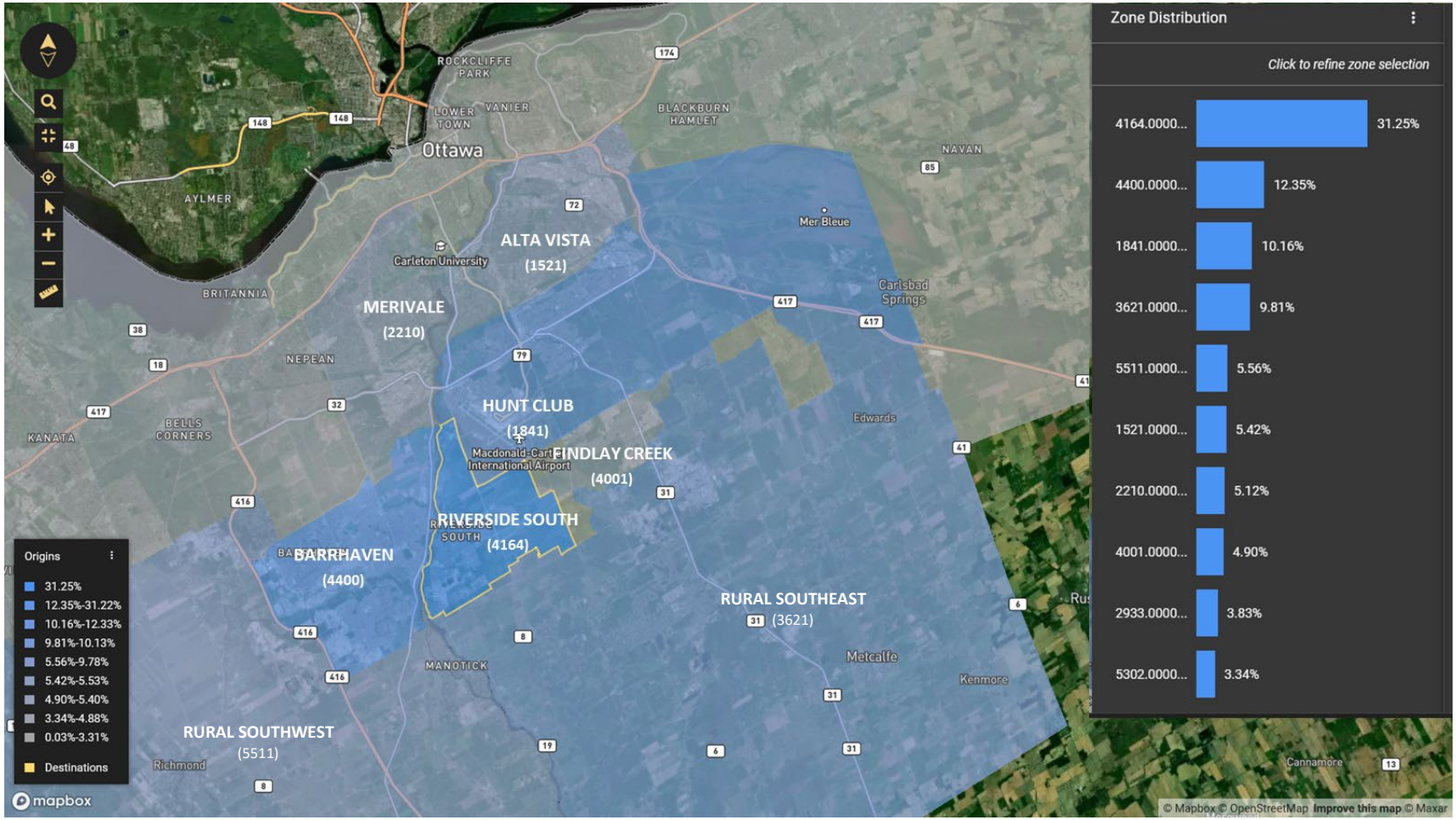


Figure 6: Key Origins for Riverside South (AM Peak Period)

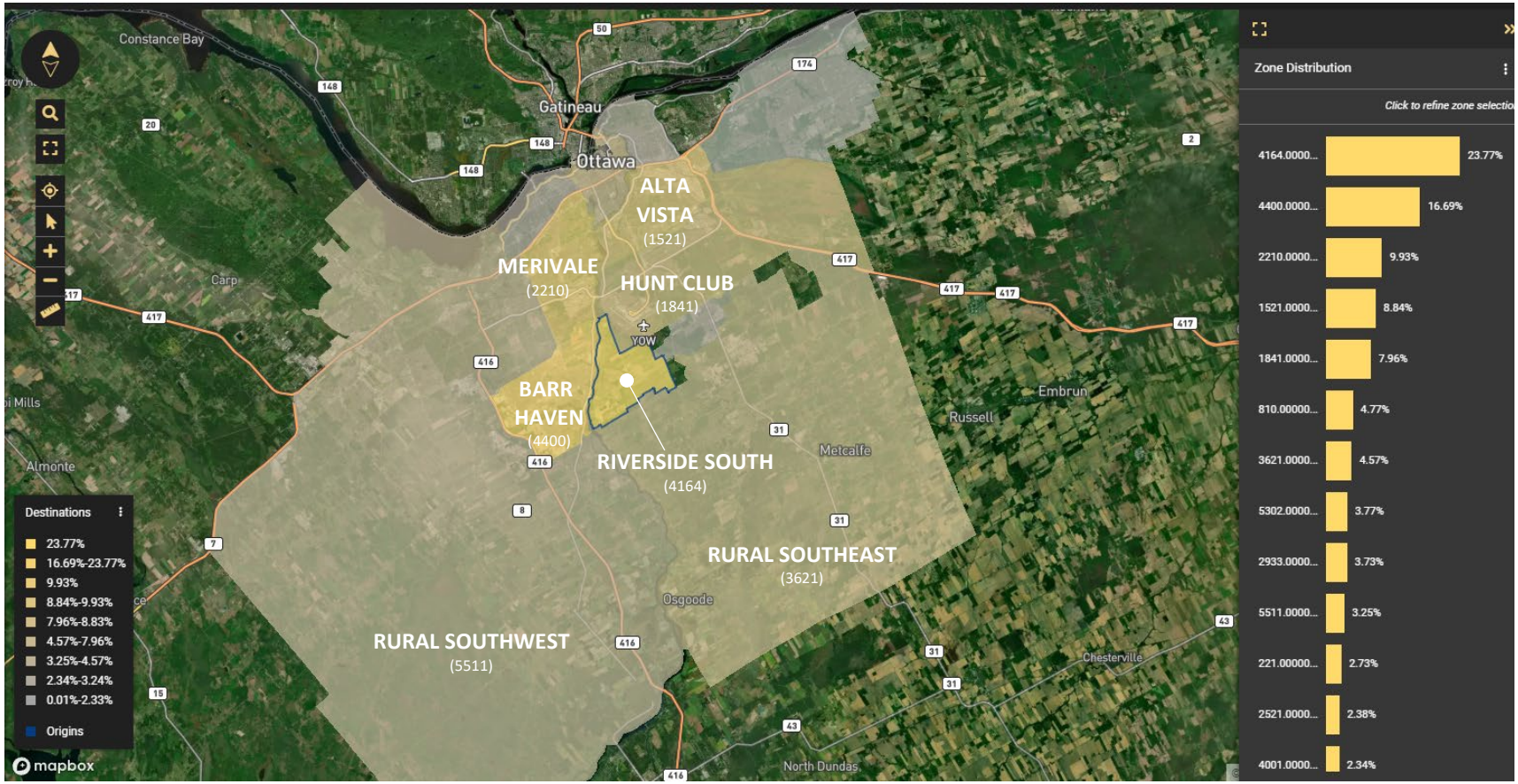


Figure 7: Key Destinations for Riverside South (Daily Trips)

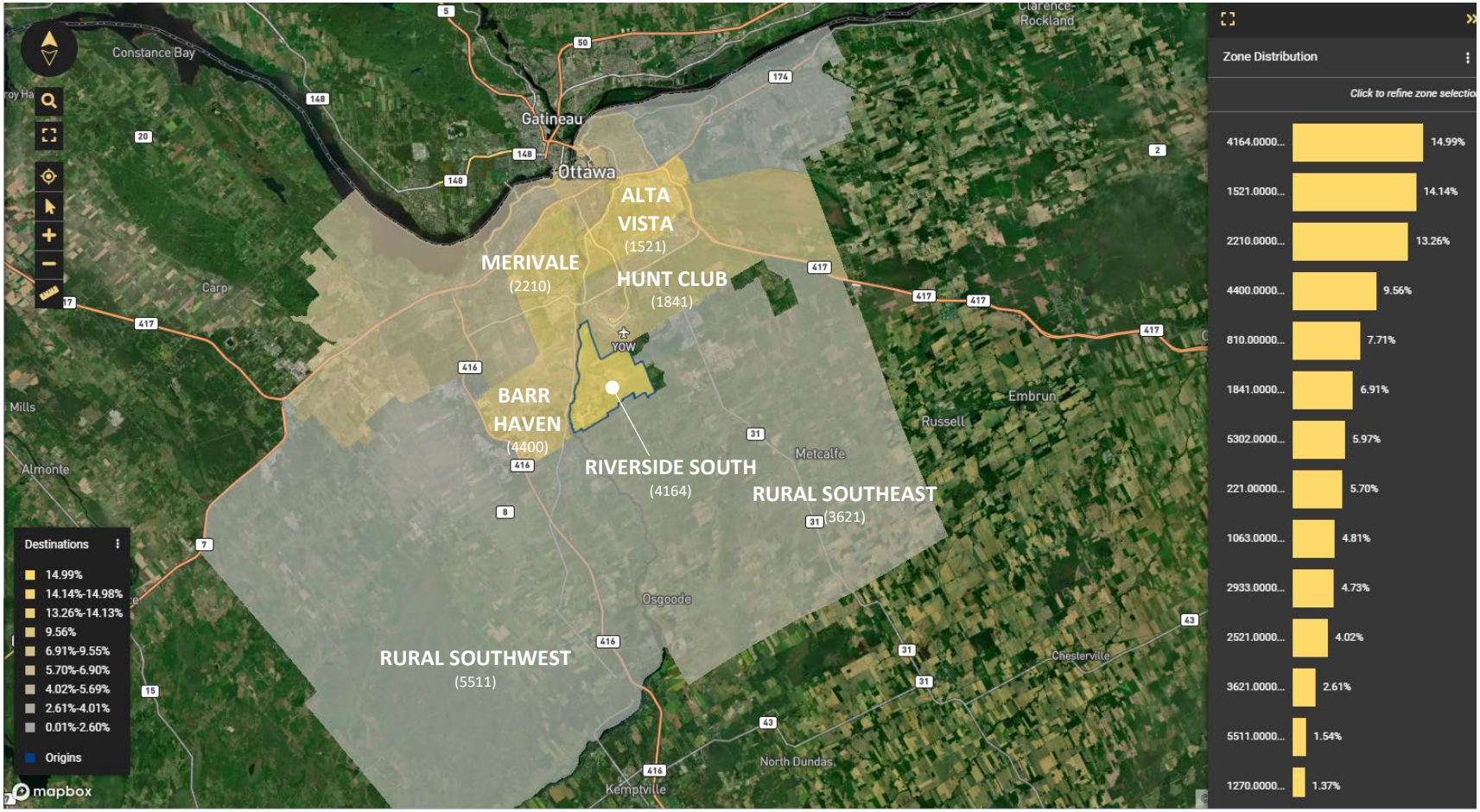


Figure 8: Key Destinations for Riverside South (AM Peak Period)

3.1.2 Auto Trip Attributes

Additional trip attributes that were analyzed included trip duration, travel speed and trip purpose. The attributes for the daily and AM peak period are presented in **Figure 9** through **Figure 11**.

For daily trips, approximately 61% of the daily trips originating from Riverside South belong to short distance trips (30 minutes). The range of travel speed is between 20 km/hr and 40 km/hr which is consistent with the road functions (i.e., arterials and collectors) that currently exist in Riverside South. Home-based-work (HBW) trips only accounts for 27% for daily trips since daily travel generally include other types of trips throughout a typical day such as shopping or school.

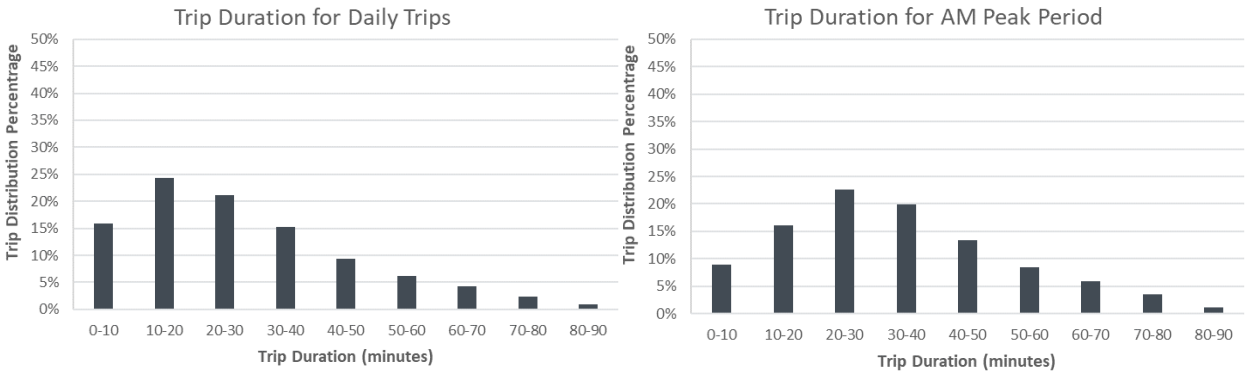


Figure 9: Auto Trip Duration – Riverside South

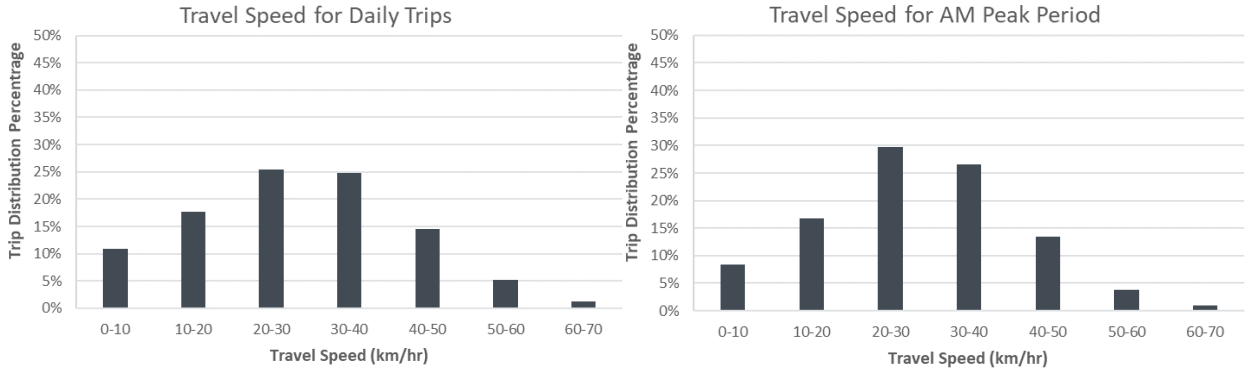


Figure 10: Auto Travel Speed – Riverside South

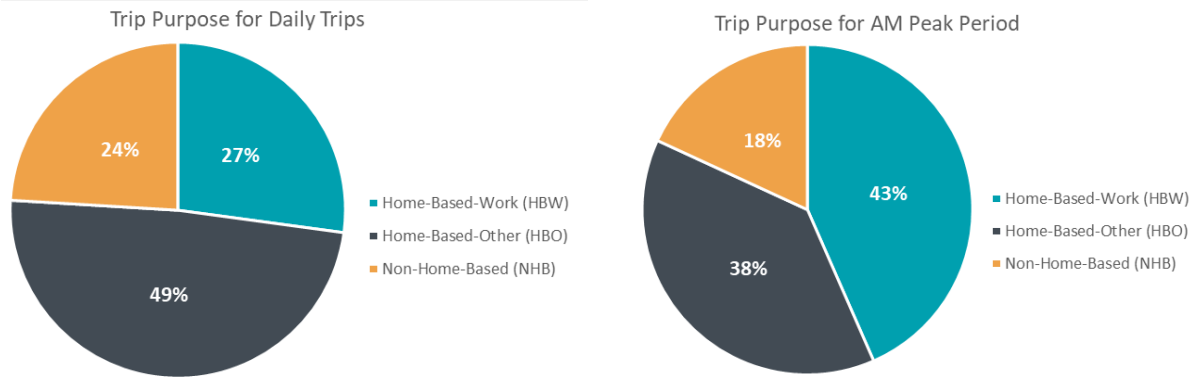


Figure 11: Auto Trip Purpose – Riverside South

During the AM peak period, approximately 48% of trips that originate from Riverside South belong to short distance trips (30 minutes). The range of travel speed is similar to daily trips which is between 20 km/hr and 40 km/hr. In terms of trip purpose, the AM peak period has observed a higher percentage of home-based-other (HBO) trips of 43%.

3.1.3 Auto Route Choices

The route choices with estimated StreetLight Data volumes for inbound and outbound trips are shown in **Figure 12** through **Figure 15**. As illustrated in **Figure 12** and **Figure 13**, the most popular routes for daily trips originating from Riverside South are Strandherd Drive that connects to Barrhaven via Vimy Memorial Bridge and Limebank Road / Riverside Drive that connects to the City's inner suburbs. Since Riverside South is situated east of the Rideau Canal, the Vimy Memorial Bridge is the key connection to communities in the west. Limebank Road is the main route for northbound and southbound trips while Leitrim Road is the intuitive choice for east-west traffic. Similar traffic patterns can be observed for the AM peak period as demonstrated in **Figure 14** and **Figure 15**.

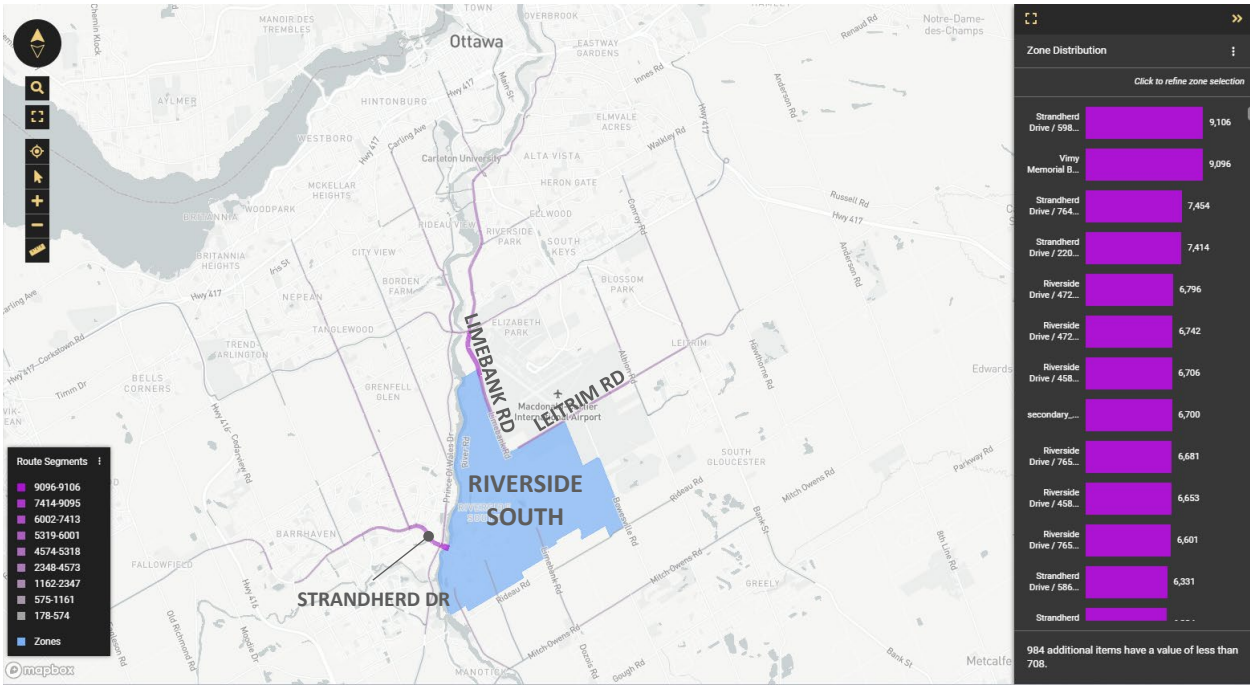


Figure 12: Auto Route Choices for Daily Outbound Trips - Riverside South

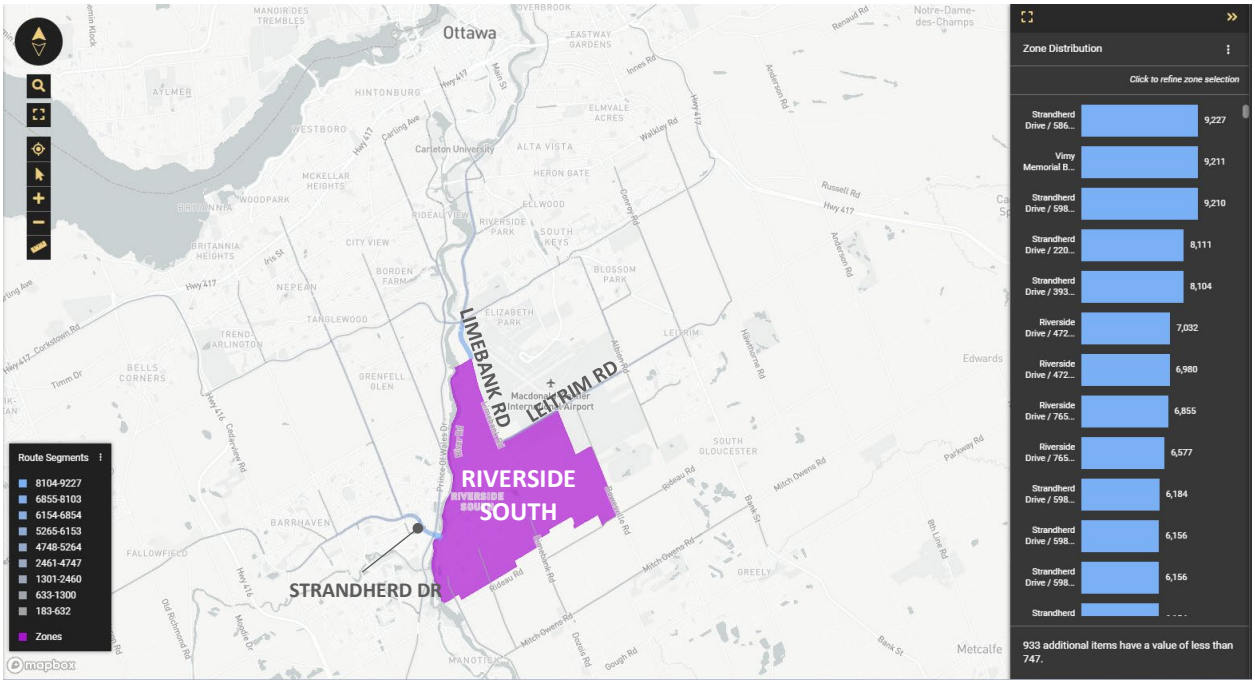


Figure 13: Auto Route Choices for Daily Inbound Trips - Riverside South

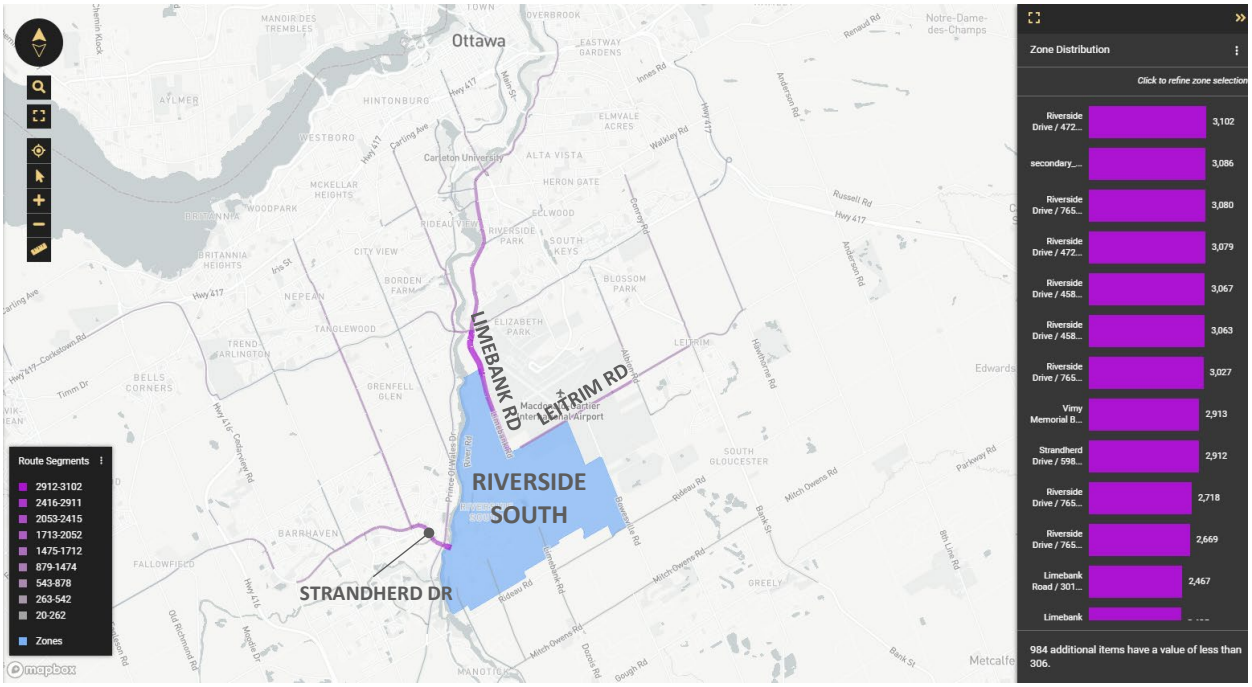


Figure 14: Auto Route Choices for AM Outbound Trips – Riverside South

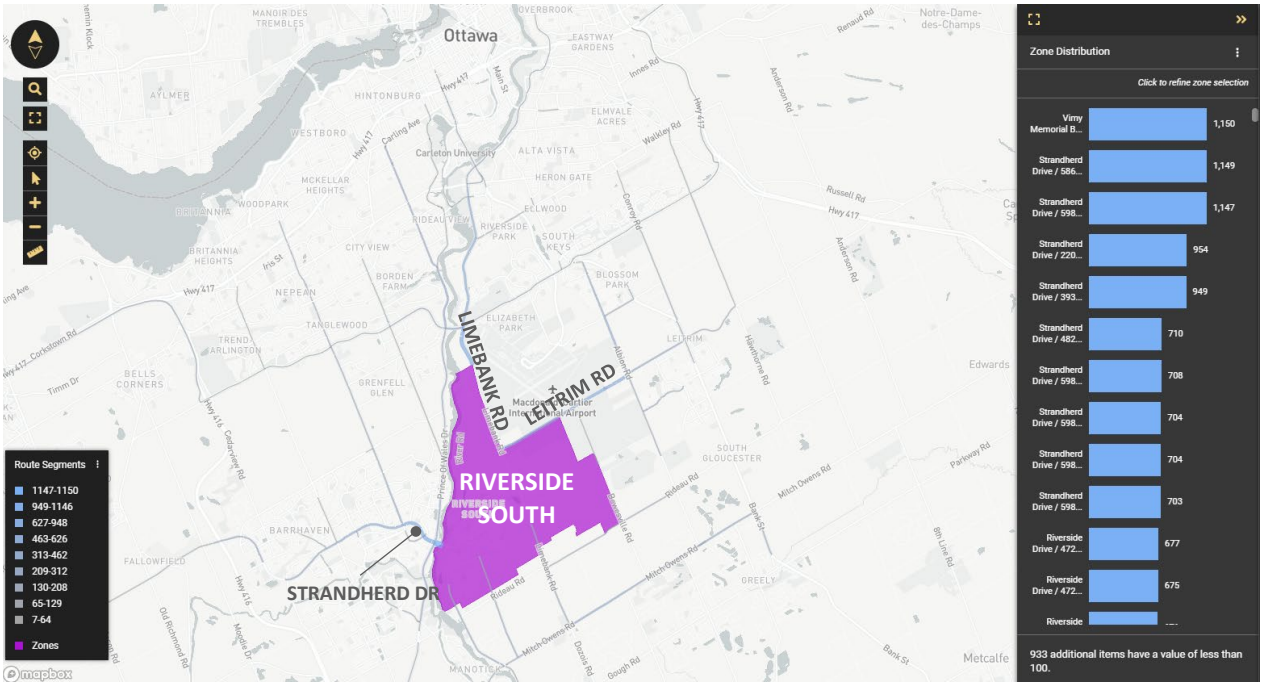


Figure 15: Auto Route Choices for AM Inbound Trips - Riverside South

3.1.4 Transit Trip Attributes

The existing bus routes serving Riverside South are shown in **Figure 16** and from StreetLight Data approximately 78% of the daily and AM peak period transit trips originating from Riverside South belong to short distance trips (15 minutes) as shown in **Figure 17**.

Figure 16: Riverside South Existing Bus Routes

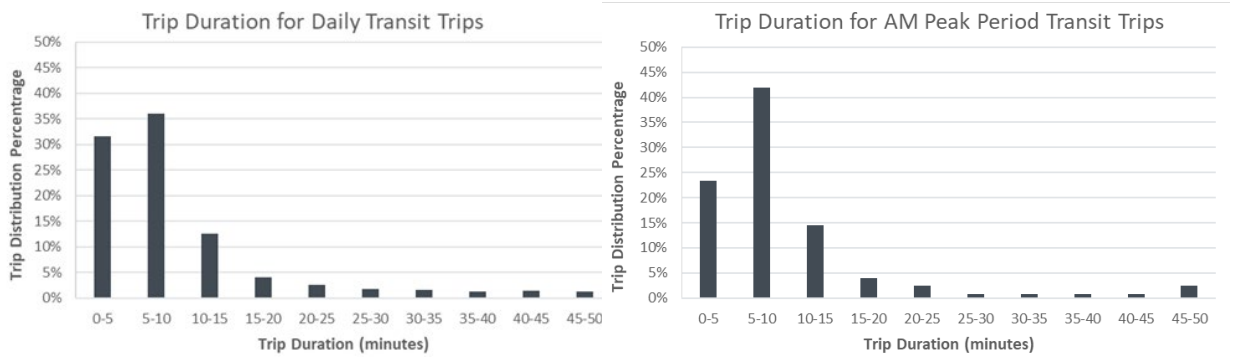


Figure 17: Transit Trip Duration – Riverside South

3.1.5 Internal Trips

The proportion of internal trips has implications to a community's ability to connect people with activities within the community itself – an indicator of self-containment which leads to fewer long-distance trips. To simply put, a community that can support more internal trips is an indication that its residents are able to complete their daily travel including work, shop, school, without making inter-regional trips.

3.1.5.1 Auto

The characteristics of the internal trips within the Riverside South community were further examined to identify other patterns and travel behaviours. As shown in **Figure 18**, trips that take 20 minutes or less account for approximately 61% of the internal trips within Riverside South. Overall, the AM peak period traffic exhibits similar patterns as daily traffic.

Based on **Figure 19**, approximately 29% of the internal daily trips within the Riverside South community are home-based-work (HBW) trips which indicates that about one-third of the residents has their workplaces located within the local neighbourhood. There is also high percentage (approximately 50%) of home-based-other (HBO) trips within Riverside South, suggesting that half of its residents complete their daily non-work-related activities within the local community, such as shopping or school. Almost 40% of all internal Riverside South auto trips are home-based-work (HBW) during the AM peak period.

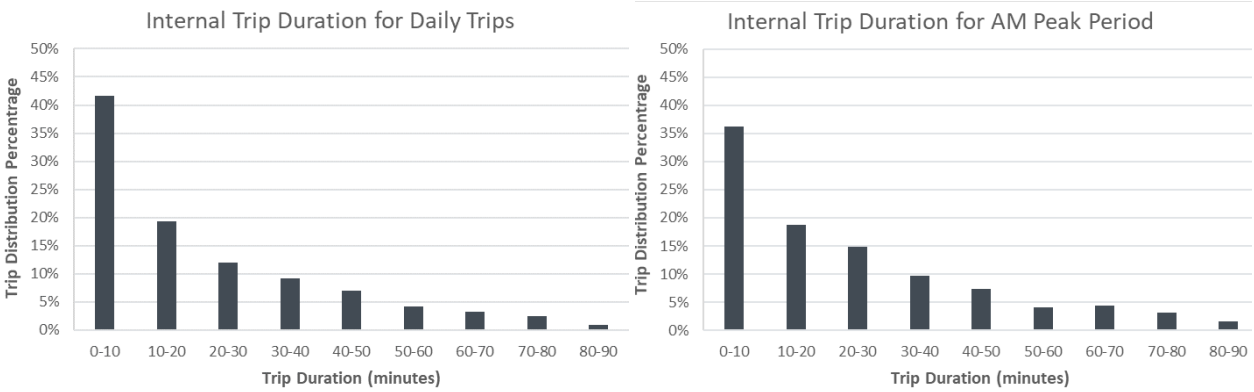


Figure 18: Internal Auto Trip Duration - Riverside South

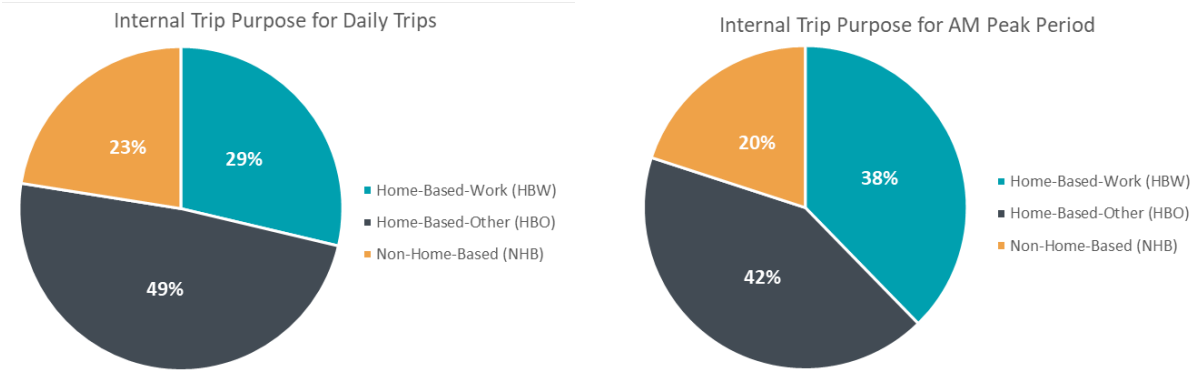


Figure 19: Internal Auto Trip Purpose - Riverside South

3.1.5.2 Transit

The characteristics of the internal transit trips within the Riverside South community were further examined to identify other patterns and travel behaviours. As shown in **Figure 20**, trips that take 15 minutes or less account for approximately 75% of the internal daily transit trips within Riverside South. The AM peak period transit trips of 15 minutes or less account for 65% of the internal transit trips within Riverside South.

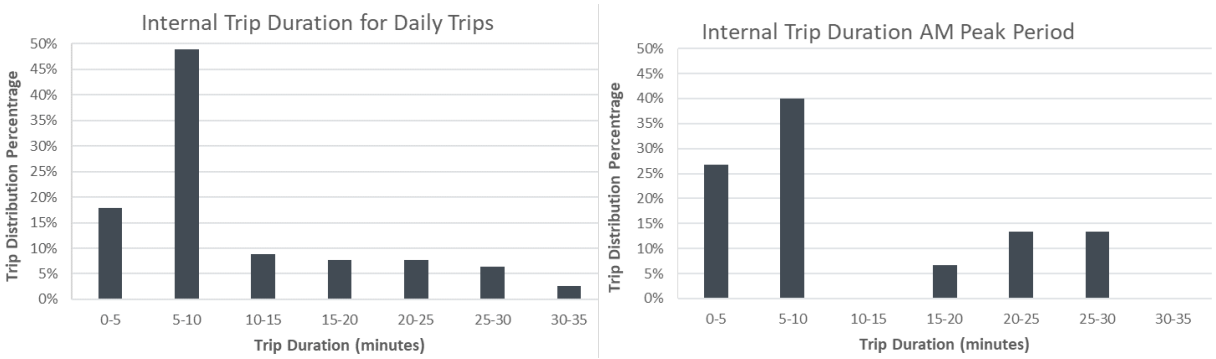


Figure 20: Internal Transit Trip Duration – Riverside South

3.1.5.3 Active Modes

Additional analyses were conducted to examine the travel behaviours for completing internal trips with active transportation modes (i.e., walking and cycling). The analyses revealed that people are more likely to walk if the trip can be made within 15 minutes. As shown in **Figure 21** and **Figure 22**, both walking and cycling demands start to decline when the trip takes more than 15 minutes.

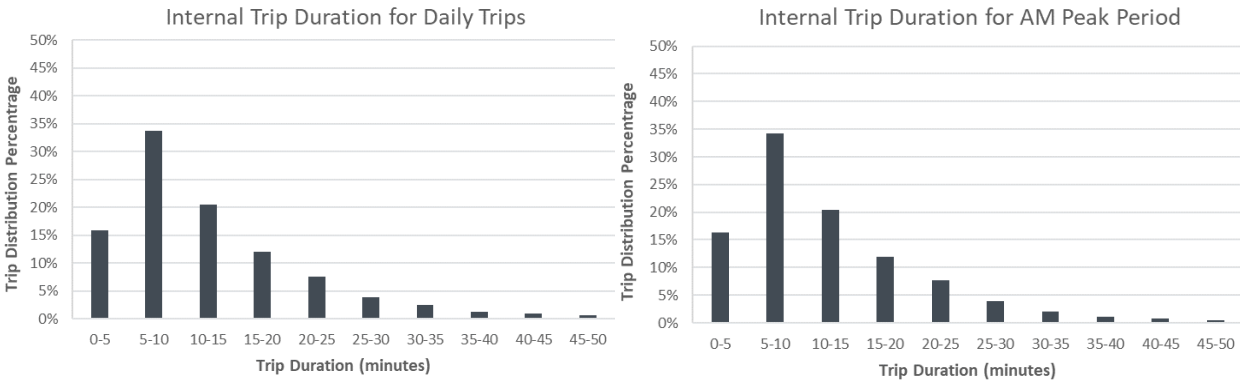


Figure 21: Internal Trip Duration for Walking - Riverside South

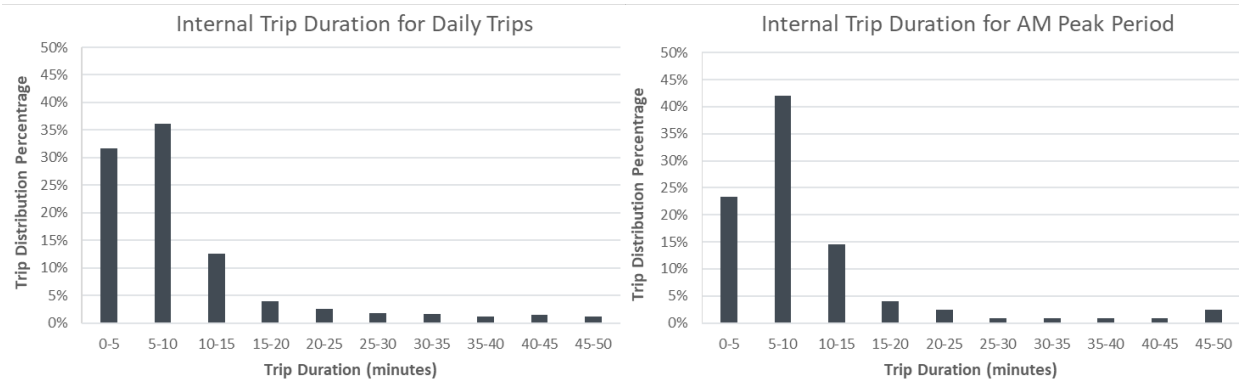
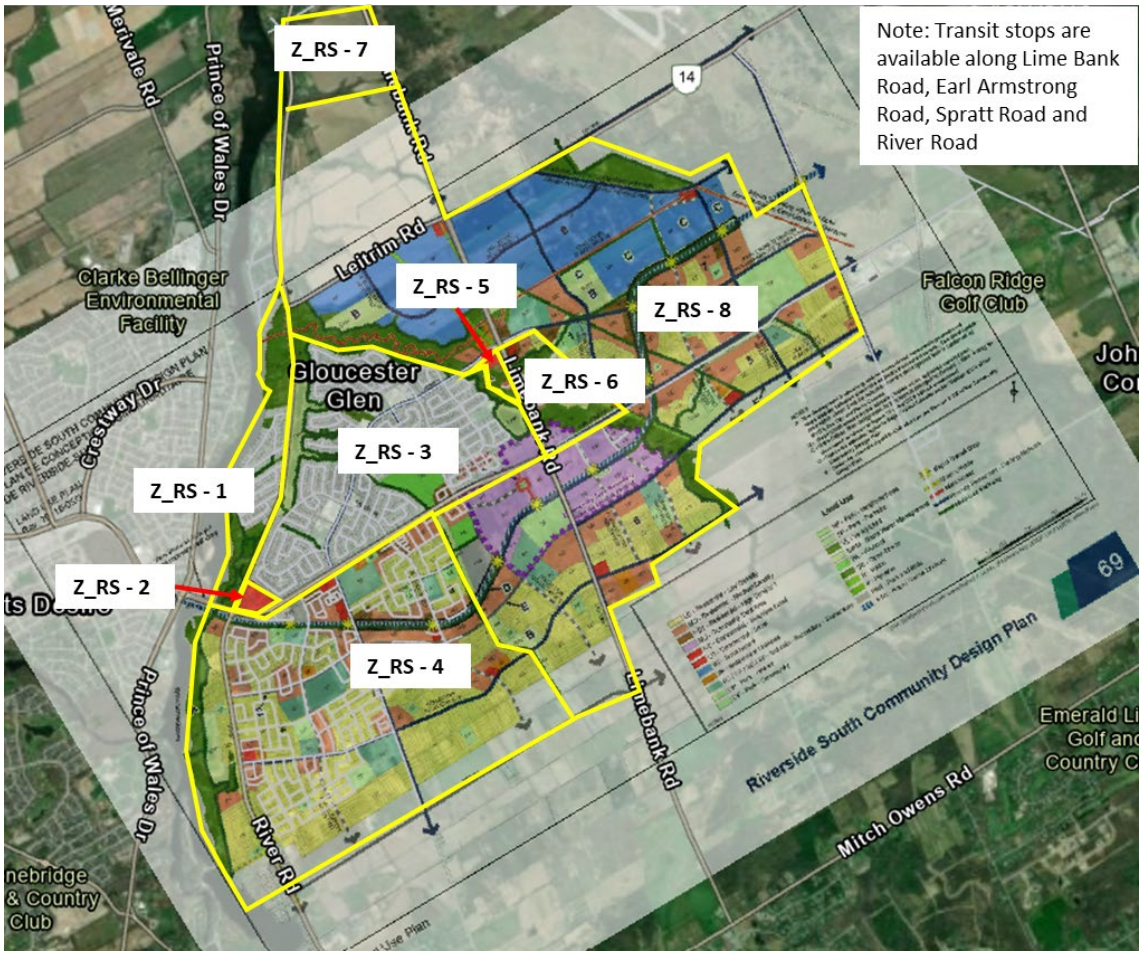


Figure 22: Internal Trip Duration for Cycling - Riverside South

The StreetLight Data zone representing the Riverside South community was disaggregated into eight sub-zones by land use as shown in **Figure 23** to enable further analysis to understand the influence of land use on active transportation travel patterns within the community.

The disaggregated zones considered the transportation network and land uses such as residential, commercial areas, school, parks, and access to transit. The internal travel patterns between different zones by land use are summarized in **Section 3.1.5.3.1** and **Section 3.1.5.3.2** for walking and cycling trips, respectively.



Z_RS - 1: Residential community with park and access to transit	Z_RS - 5: Commercial zone
Z_RS - 2: Commercial zone	Z_RS - 6: Residential community with school
Z_RS - 3: Residential community with school, park and access to transit	Z_RS - 7: Residential community (undeveloped)
Z_RS - 4: Residential community with school, park and access to transit	Z_RS - 8: No development

Figure 23: Riverside South Disaggregated Zones by Land Use

3.1.5.3.1 Walking Trip Patterns

The key origins and destinations for walking trips internal to the Riverside South community using StreetLight Data were identified. As shown in **Figure 24**, almost 75% of daily internal trips by walking originated in the two most dense residential zones with school and park (Zone3 and 4) and a similar pattern is observed during the AM peak period with 69% of internal walking trips originating in these two zones (**Figure 25**).

The two most dense residential zones (Zones 3 and 4) also have the highest combined destinations for internal daily walking trips (75%) and internal AM peak period walking trips (69%) as shown in **Figure 26** and **Figure 27**, respectively.

These results are not surprising since most walking trips in Riverside South are 15 minutes or less in duration (**Figure 21**) and at least two thirds of all internal walking trips in Riverside South are home-based during the day or during the AM peak period as shown in **Figure 28**.

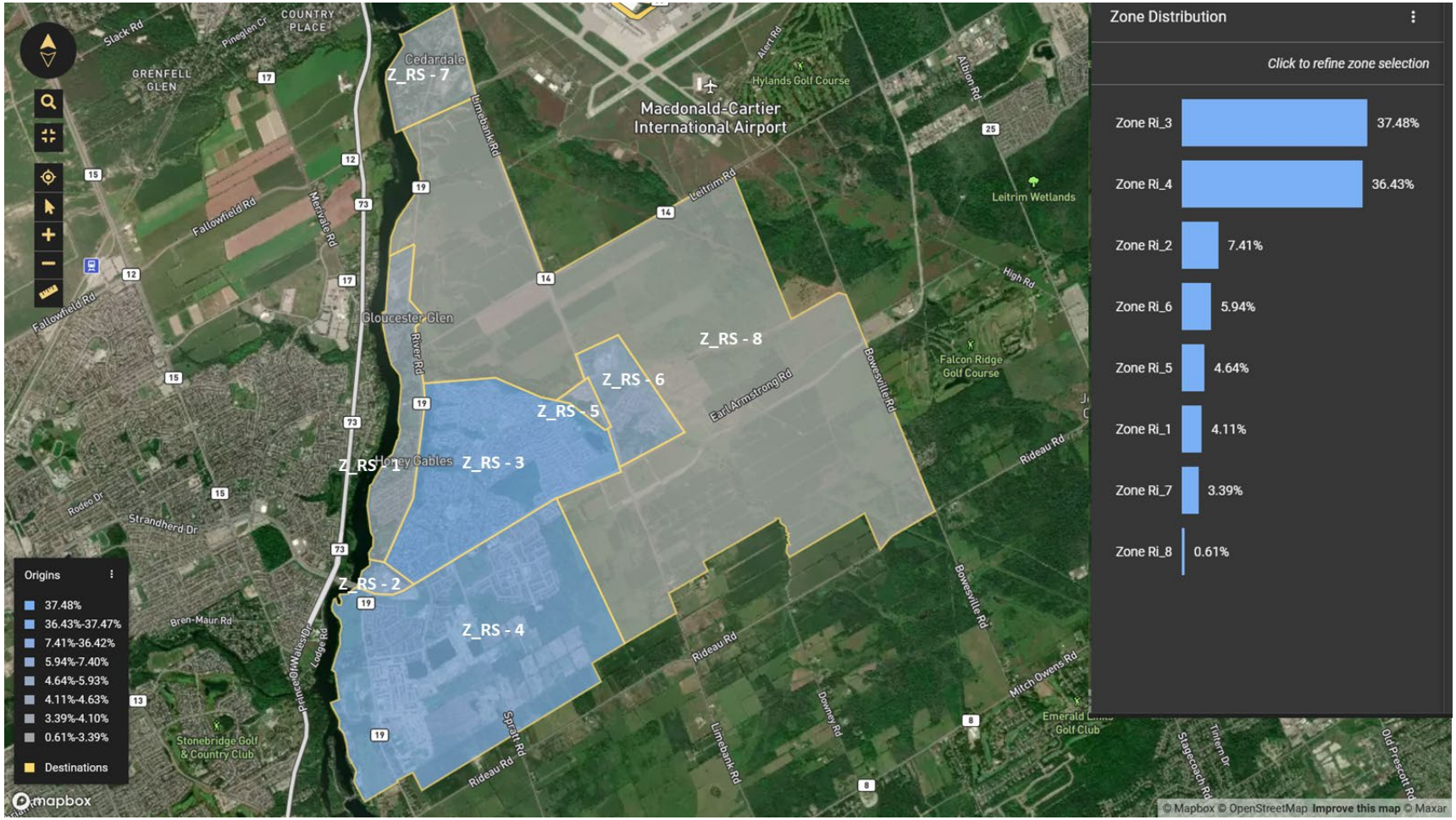


Figure 24: Key Origins for Riverside South Internal Walking Trips (Daily)

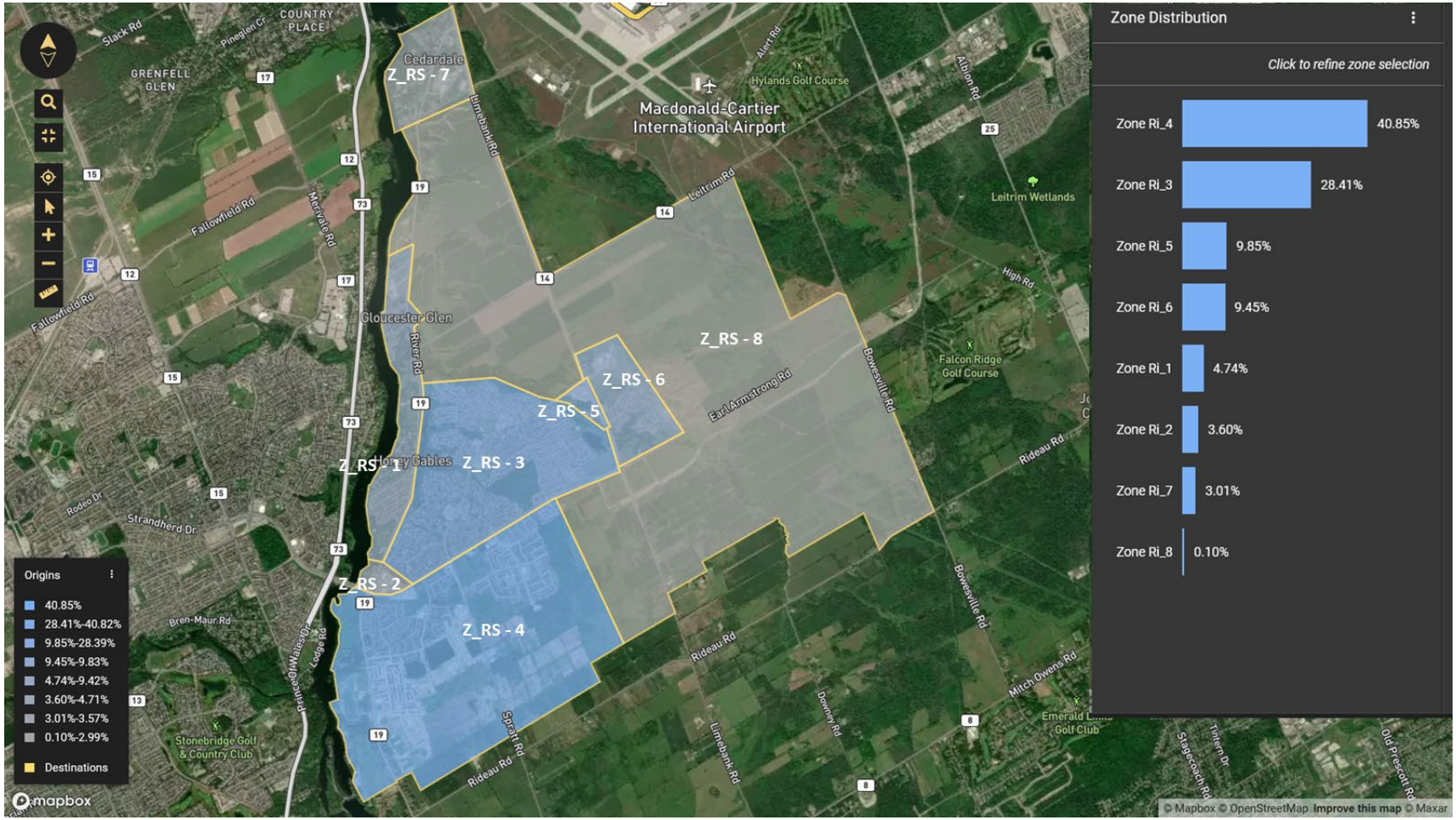


Figure 25: Key Origins for Riverside South Internal Walking Trips (AM Peak Period)

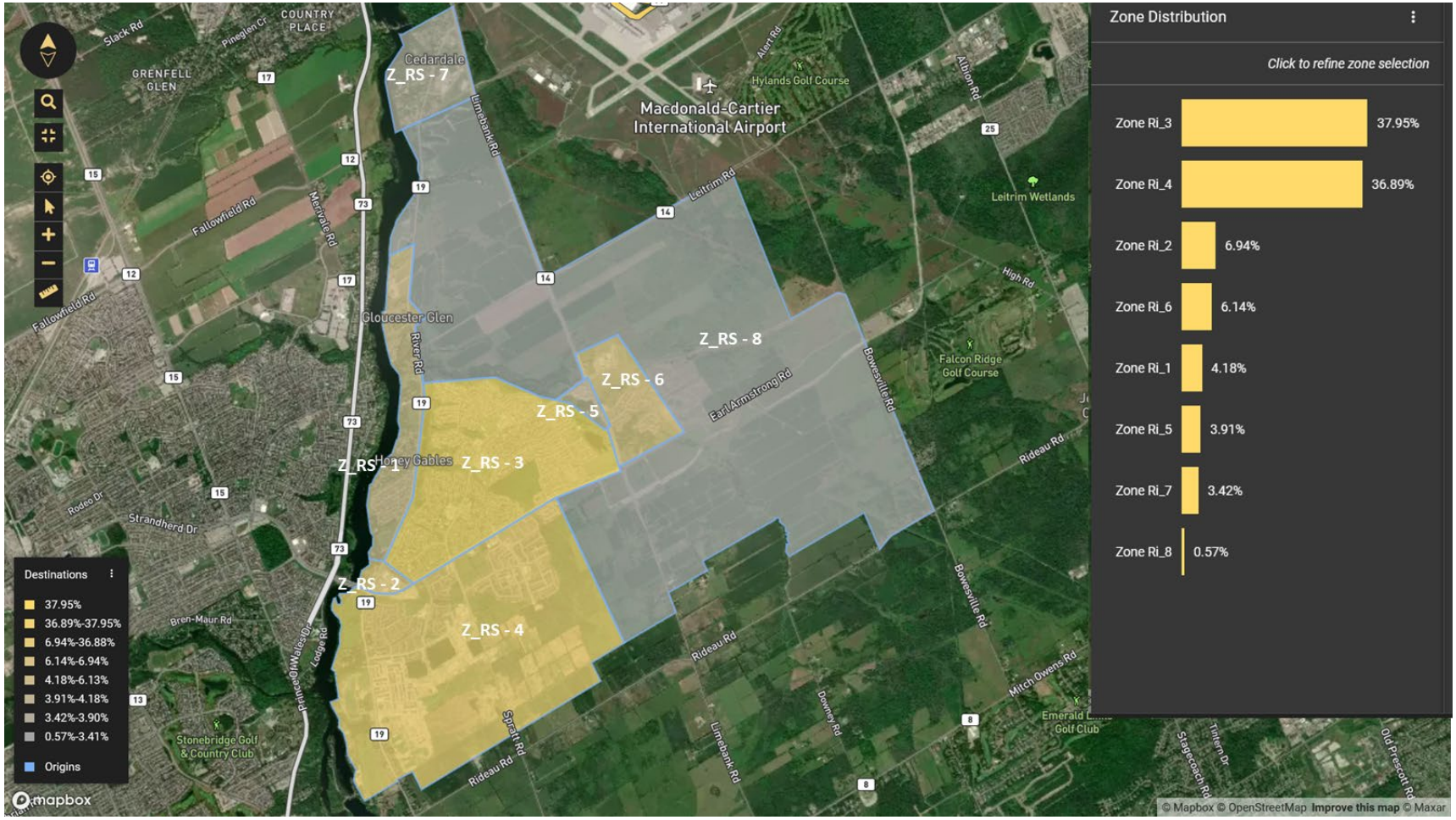


Figure 26: Key Destinations for Riverside South Internal Walking Trips (Daily)

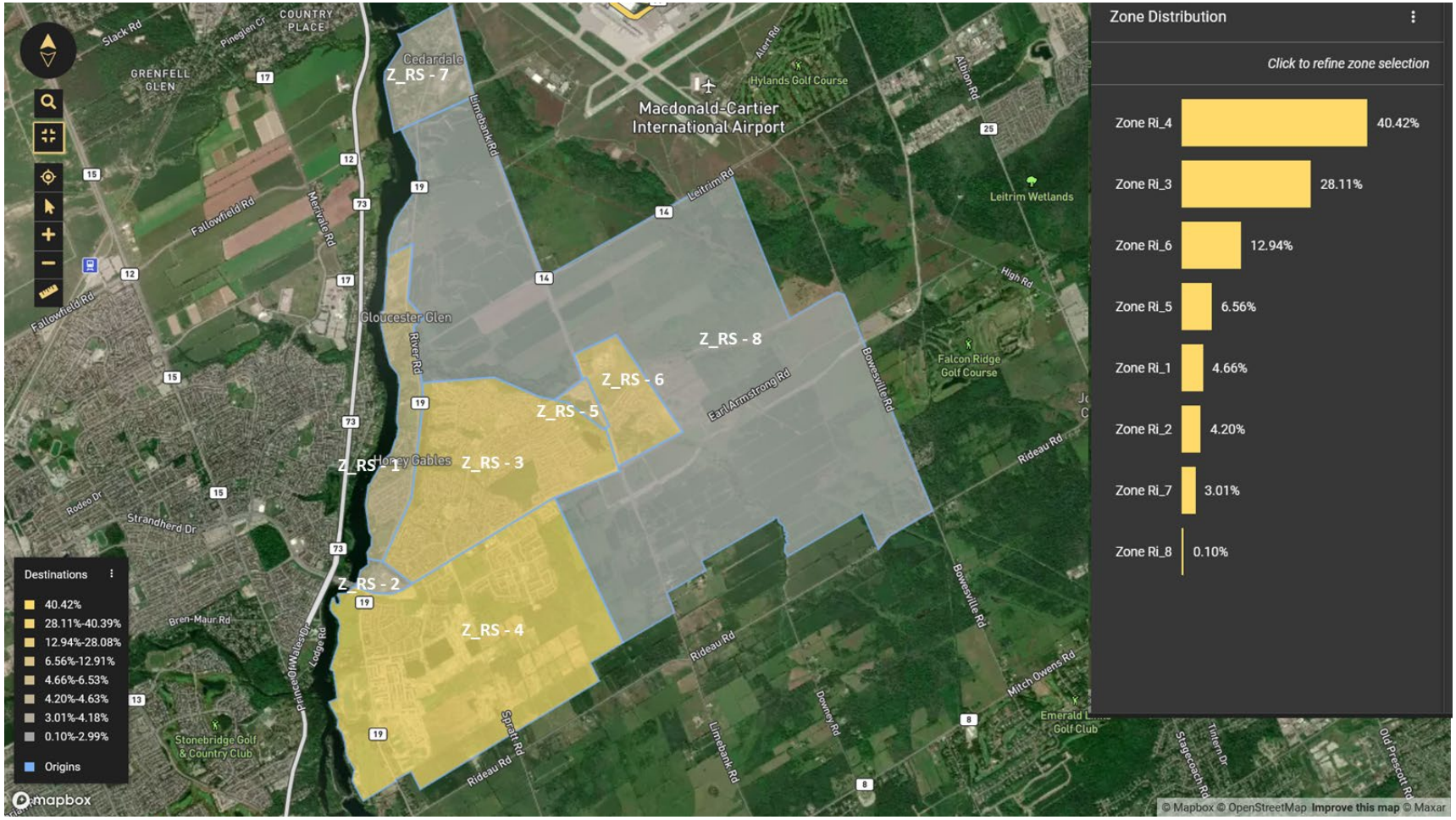


Figure 27: Key Destinations for Riverside South Internal Walking Trips (AM Peak Period)

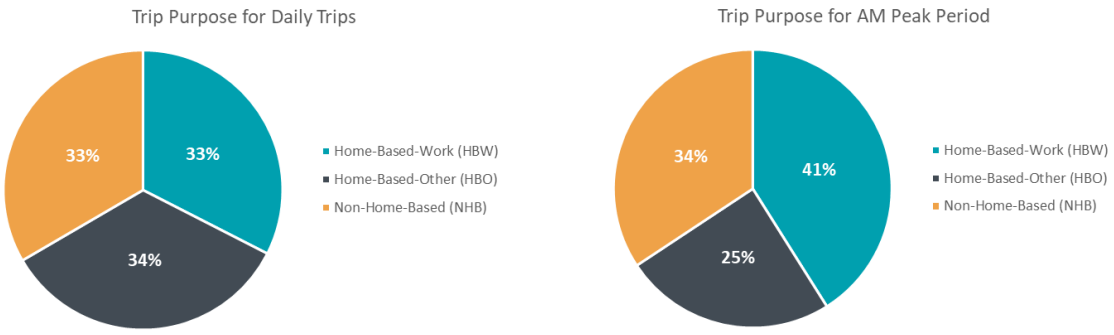


Figure 28: Internal Walking Trip Purpose - Riverside South

3.1.5.3.2 Cycling Trip Patterns

The key origins and destinations for cycling trips internal to the Riverside South community using StreetLight Data were identified. As shown in **Figure 29**, almost 70% of daily internal trips by cycling originated in the two most dense residential zones with school and park (Zone3 and 4) and a similar pattern is observed during the AM peak period with 86% of internal cycling trips originating in these two zones (**Figure 30**).

The two most dense residential zones (Zones 3 and 4) also have the highest combined destinations for internal daily cycling trips (75%) and internal AM peak period cycling trips (78%) as shown in **Figure 31** and **Figure 32**, respectively.

These results are expected since most cycling trips in Riverside South are 15 minutes or less in duration (**Figure 22**) and at least almost of all internal cycling trips in Riverside South are home-based during the day or during the AM peak period as shown in **Figure 33**.

Figure 29: Key Origins for Riverside South Internal Cycling Trips (Daily)

Figure 30: Key Origins for Riverside South Internal Cycling Trips (AM Peak Period)

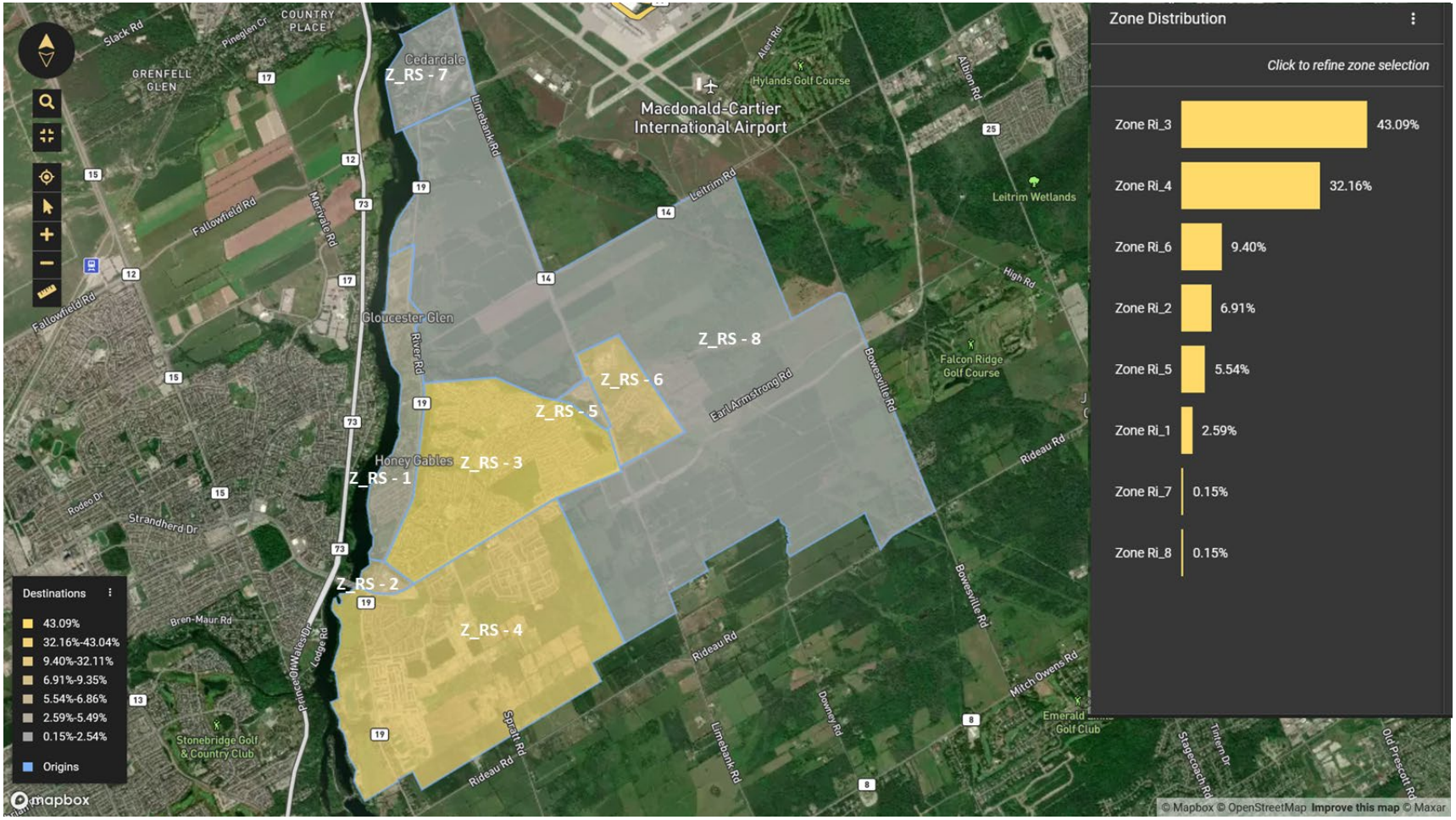


Figure 31: Key Destinations for Riverside South Internal Cycling Trips (Daily)

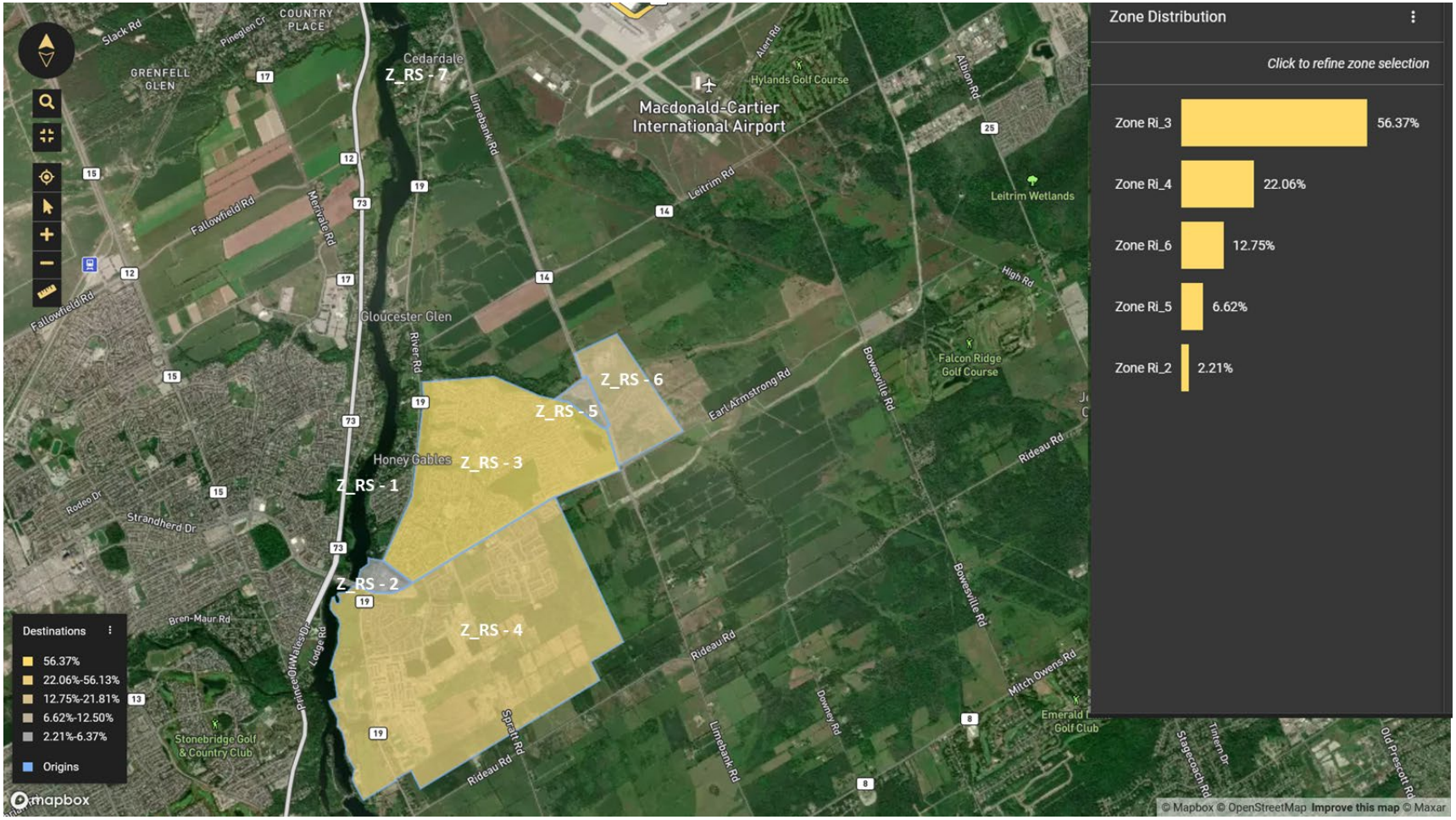


Figure 32: Key Destinations for Riverside South Internal Cycling Trips (AM Peak Period)

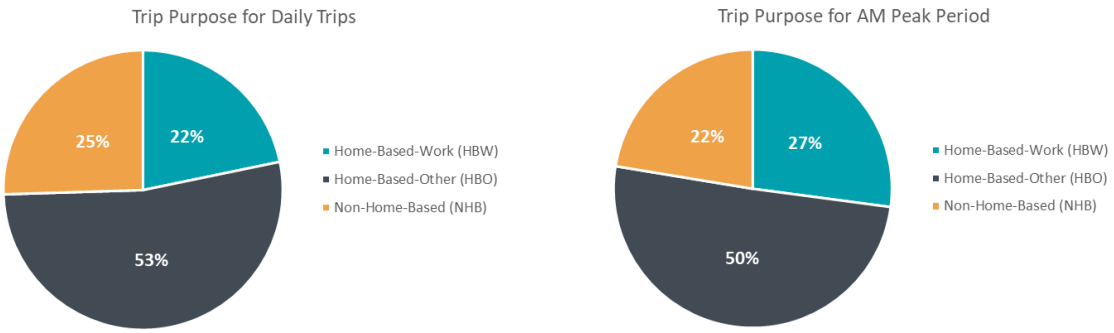


Figure 33: Internal Cycling Trip Purpose - Riverside South

3.2 Findlay Creek Community

Findlay Creek is a suburban community located in southeast Ottawa and slightly south of Ottawa's International Airport, outside of the Greenbelt. According to Canada 2021 census, Findlay Creek currently has a population of 14,089 with 4,395 dwellings. There are existing commercial, institutional, industrial, residential uses and green spaces throughout the area, mainly situated along Bank Street, Leitrim Road and Findlay Creek Drive, as shown in **Figure 34**. Employment areas are primarily located at the intersection of Albion Road and Leitrim Road.

Findlay Creek is recognized as a family-friendly community that has experienced rapid growth in the past few years. One of its key neighbourhoods, the Findlay Creek Village, has been undergoing major development of over 2,200 homes with scheduled completion in 2027. In April 2022, the Ottawa Carleton School Board also announced the government-approved funding for constructing a second elementary school in Findlay Creek.

As mentioned in the Leitrim Community Design Plan (2005), the vision for Findlay Creek is to develop a well-connected community that has excellent transit and pedestrian connections. The transportation network in Findlay Creek mainly comprises of local roads within the developed residential areas adjacent to three key major arterials roads including Leitrim Road, Albion Road South, and Bank Street. Recently in 2021, two regular OC Transpo bus routes started servicing the Findlay Creek community, namely Route 93 and Connection Route 294. Access to the O-Train Line 2 will be provided via Leitrim Road. Dedicated bicycle lanes and bicycle friendly roads are provided within the community.

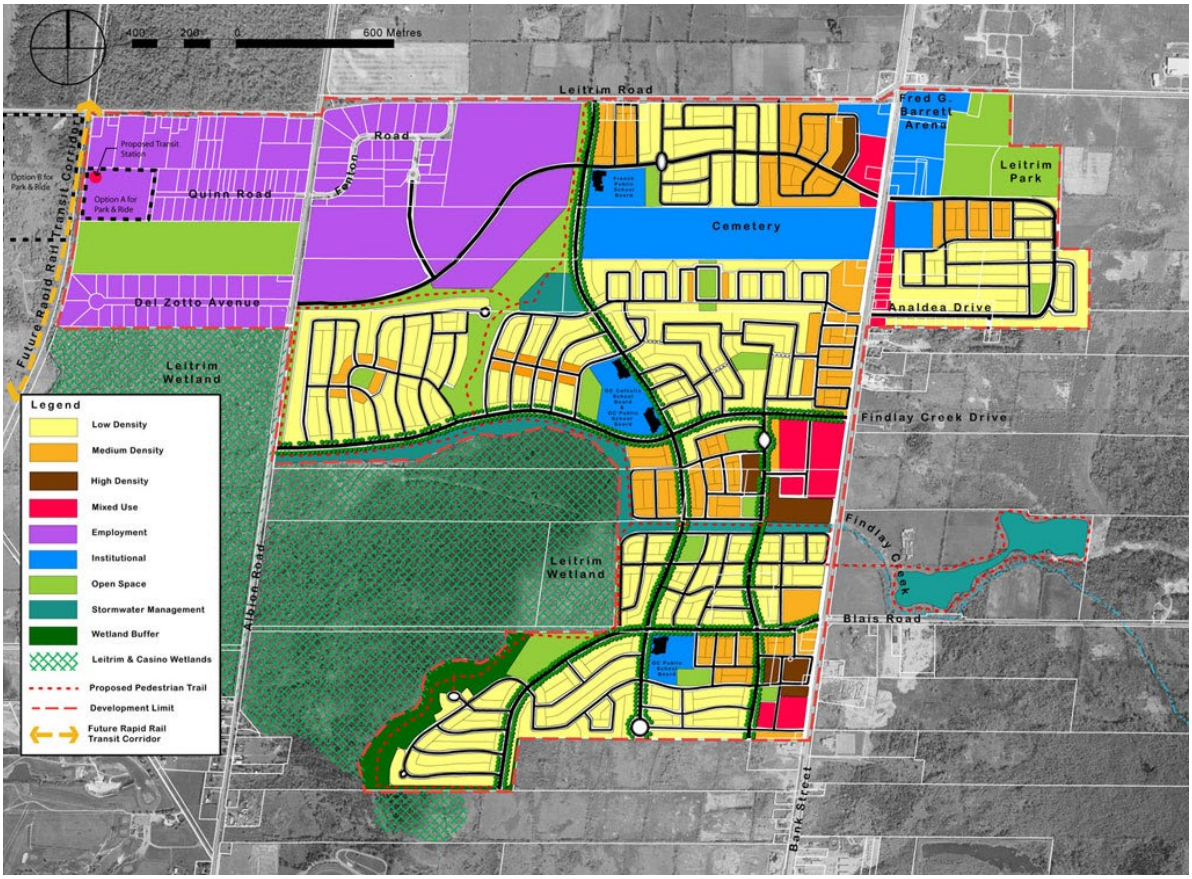


Figure 34: Land Use Plan (Source: Leitrim Community Design Plan, 2005)

The following sections provide more detailed information and analysis outputs on the travel characteristics of the Findlay Creek community.

3.2.1 Auto Origin and Destinations

The key origins and destinations were examined to establish a general understanding of where residents travel to and from within Findlay Creek using auto mode. The 24-hour and AM-peak periods were assessed to determine both the daily and commuters' travel patterns.

As shown in **Figure 35**, the daily trip patterns extracted from StreetLight Data revealed that the most popular origins for travel to Findlay Creek are Hunt Club and Alta Vista which accounted for 18% and 14% of total daily trips destined to the community, respectively. For the AM peak period (**Figure 36**), the most popular origins for travel to Findlay Creek are the Rural Southeast and Hunt Club which accounted for 13% and 11% of total AM trips destined to the community, respectively.

The most popular destinations for Findlay Creek are its adjacent neighbourhoods, with 16% and 14% of total daily trips traveling to Hunt Club and Alta Vista, respectively. A heatmap showing the daily OD distributions for Findlay Creek is provided in **Figure 37**.

The OD distribution for AM peak period is presented in **Figure 38** which shows Alta Vista is the community that attracts the most morning trips from Findlay Creek (20%). Based on land use, Alta Vista has several sub-neighbourhoods with schools and shopping malls which are key trip attractors. Other key destinations include the internal Findlay Creek community (13%) and Hunt Club (13%).

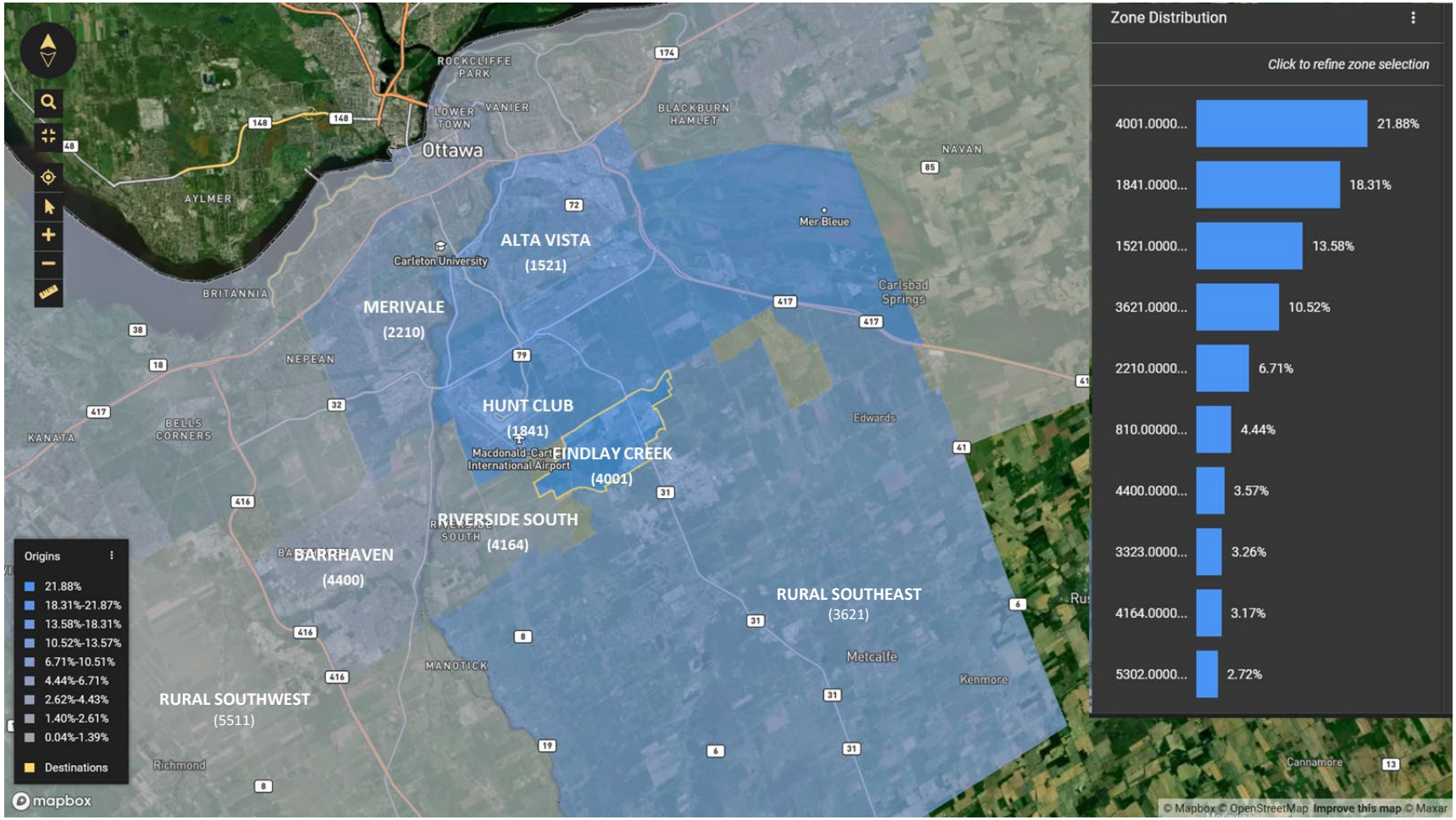


Figure 35: Key Origins for Findlay Creek (Daily Trips)

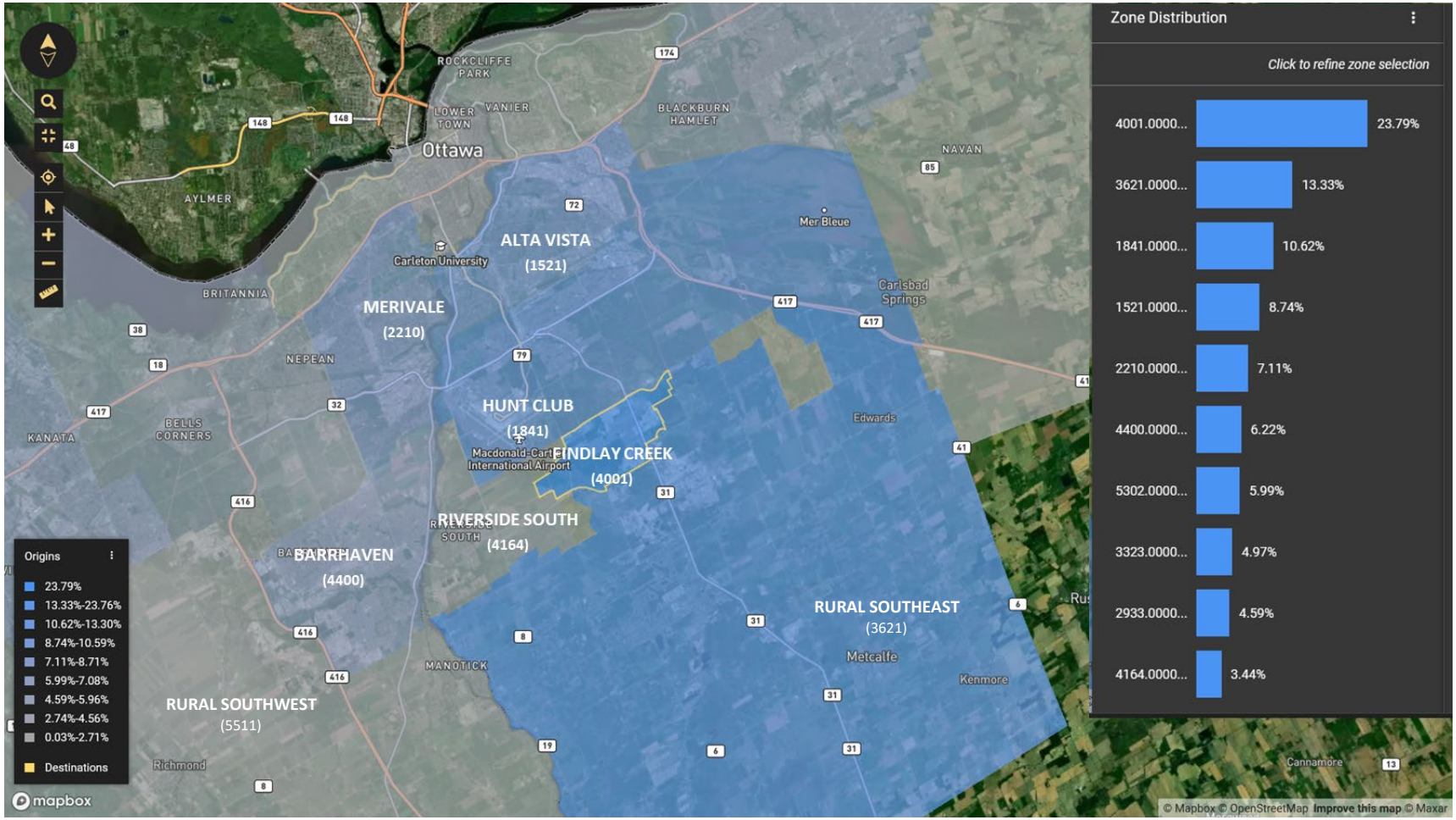


Figure 36: Key Origins for Findlay Creek (AM Peak Period)

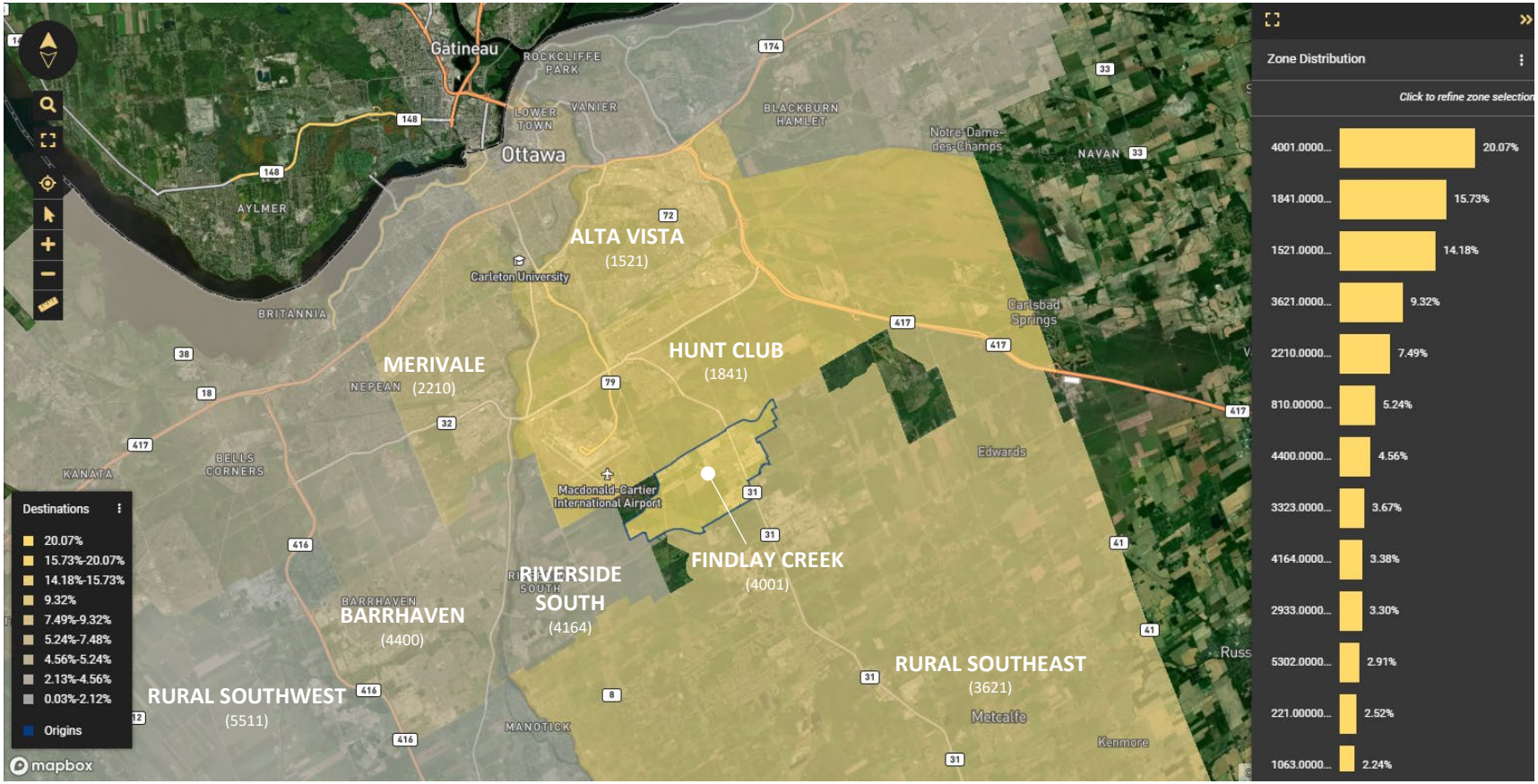


Figure 37: Key Destinations for Findlay Creek (Daily Trips)

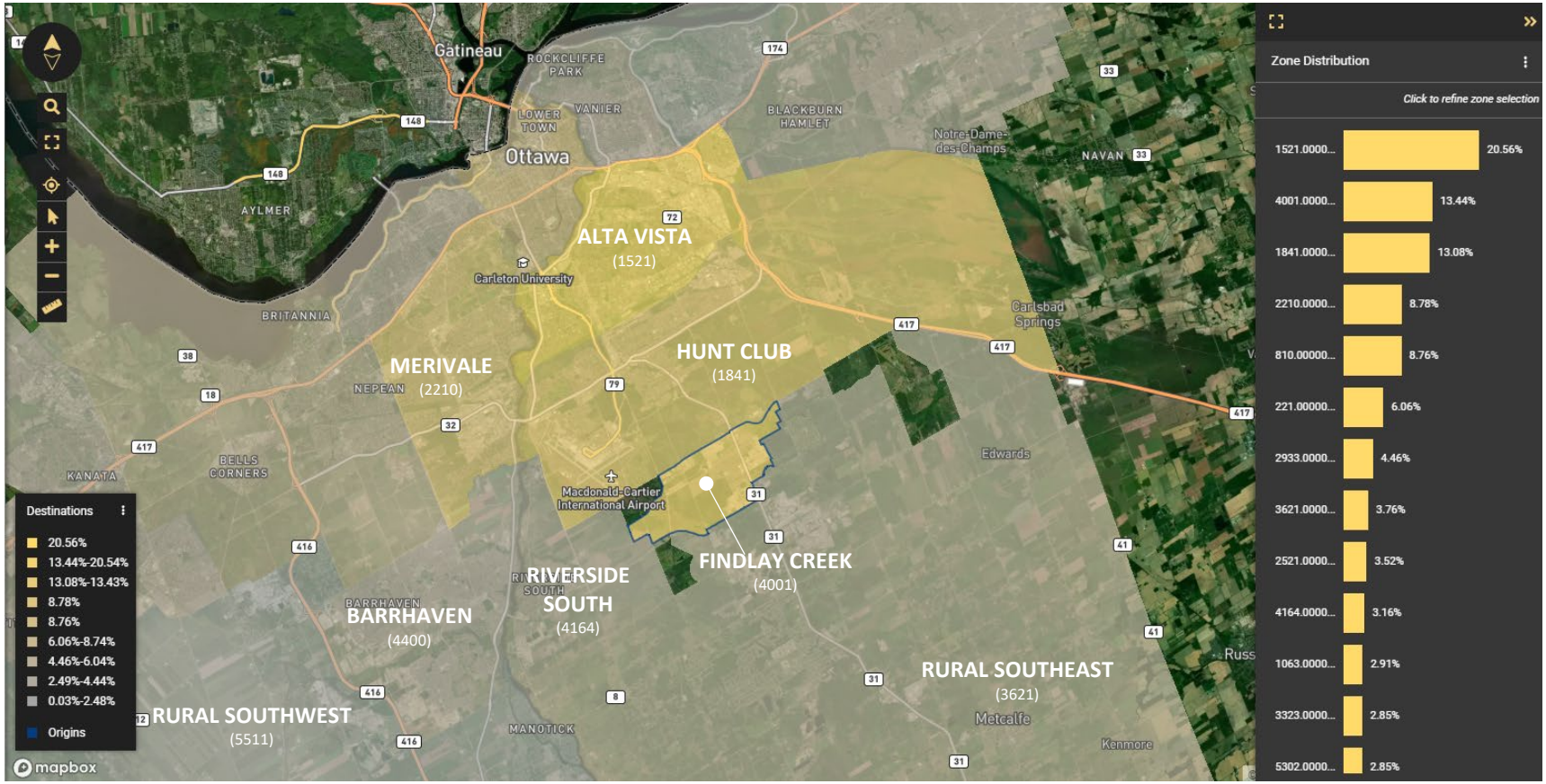


Figure 38: Key Destinations for Findlay Creek (AM Peak Period)

3.2.2 Auto Trip Attributes

A more detailed analysis on trip attributes were conducted for Findlay Creek including trip duration, travel speed and trip purpose. The attributes for daily and AM peak periods are presented in **Figure 39** through **Figure 41**.

For daily trips, approximately 60% of the daily trips originating from Findlay Creek are short-distance trips (30 minutes). The range of travel speed is between 20 km/hr and 40 km/hr which aligns with the road network of Findlay Creek as the community is comprises of mainly local roads with only two major arterials (Bank Street and Albion Road).

The trip purpose summary (**Figure 41**) of Findlay Creek aligns with the observed OD distribution patterns as previously discussed in **Section 3.2.1**. For AM peak period, home-based-work (HBW) and home-based-other (HBO) trips account for a totalled of 80% of all morning trips (40% HBW, 40% HBO). Home-based-other (HBO) made up 47% of the daily trip activities. Using the Streetlight Data platform, a review of local demographics within Findlay Creek also showed that about 50% of the households in Findlay Creek have children. Given the household type and limited commercial and institutional uses within the local community, residents are likely traveling to neighbouring communities for school and shopping.

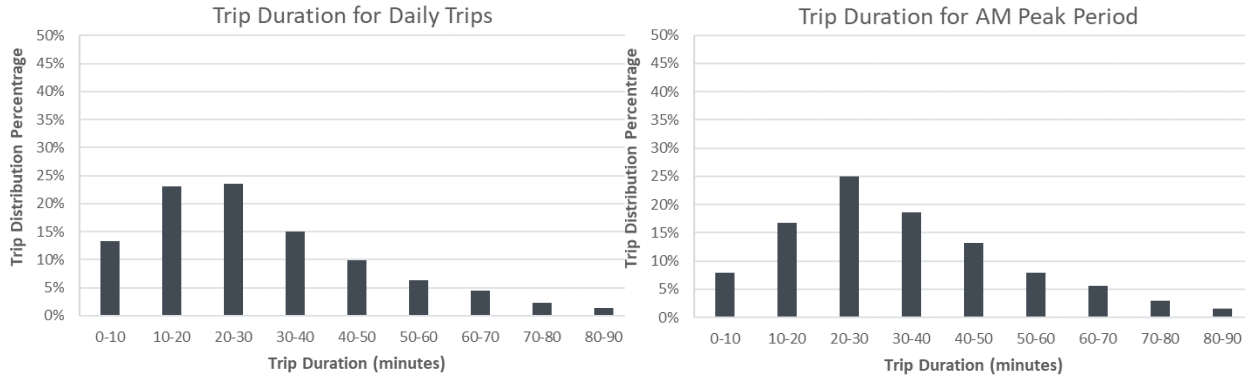


Figure 39: Auto Trip Duration for Findlay Creek

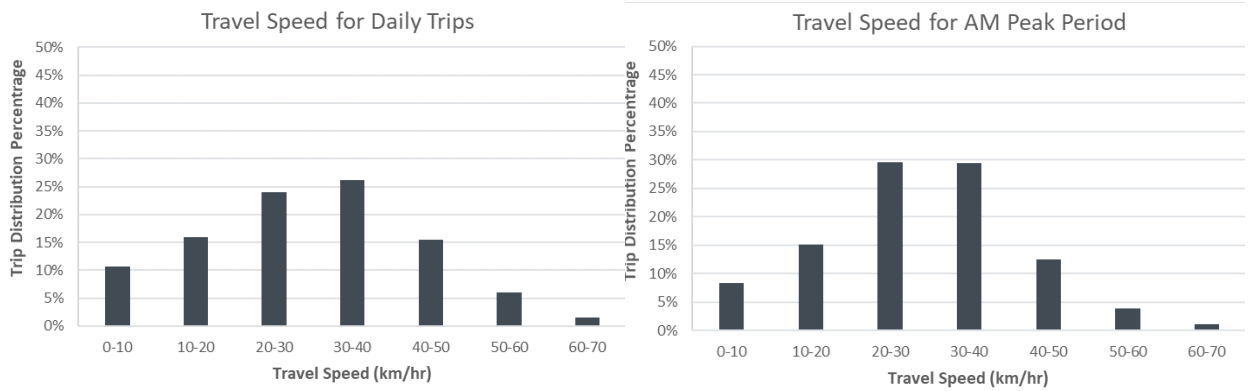


Figure 40: Auto Travel Speed for Findlay Creek

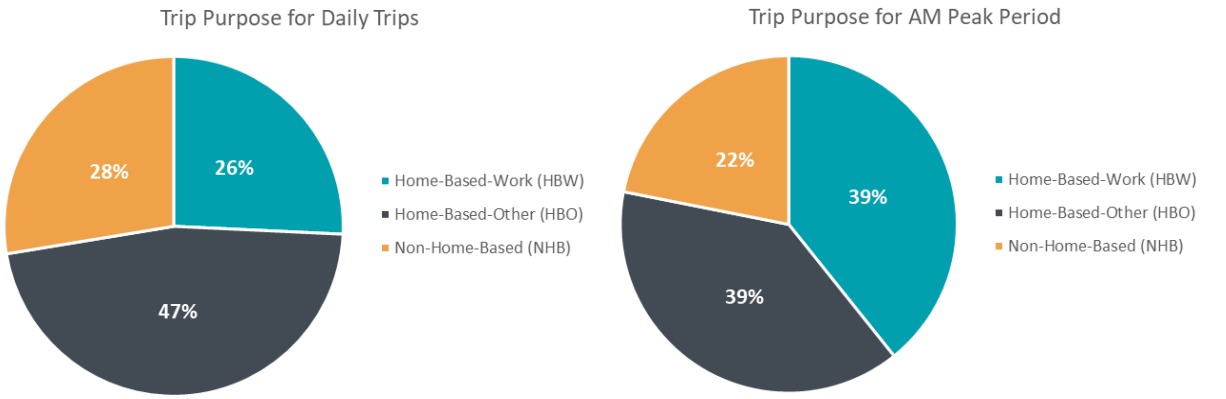


Figure 41: Auto Trip Purpose for Findlay Creek

3.2.3 Auto Route Choices

The route choices with estimated Streetlight Data volumes for inbound and outbound trips are shown in **Figure 42** through **Figure 45**. As illustrated in **Figure 42**, a high proportion of outbound trips use Bank Street or Conroy Road to travel to communities north of Findlay Creek. Similar routes choices can be observed for trips traveling into Findlay Creek with a higher distribution of northbound traffic along Bank St coming from the south in the South Gloucester area. Other intuitive routes are Leitrim Road (east-west direction) and Albion Road (north-south direction). Similar traffic patterns can be observed for the AM peak period as demonstrated in **Figure 44**.

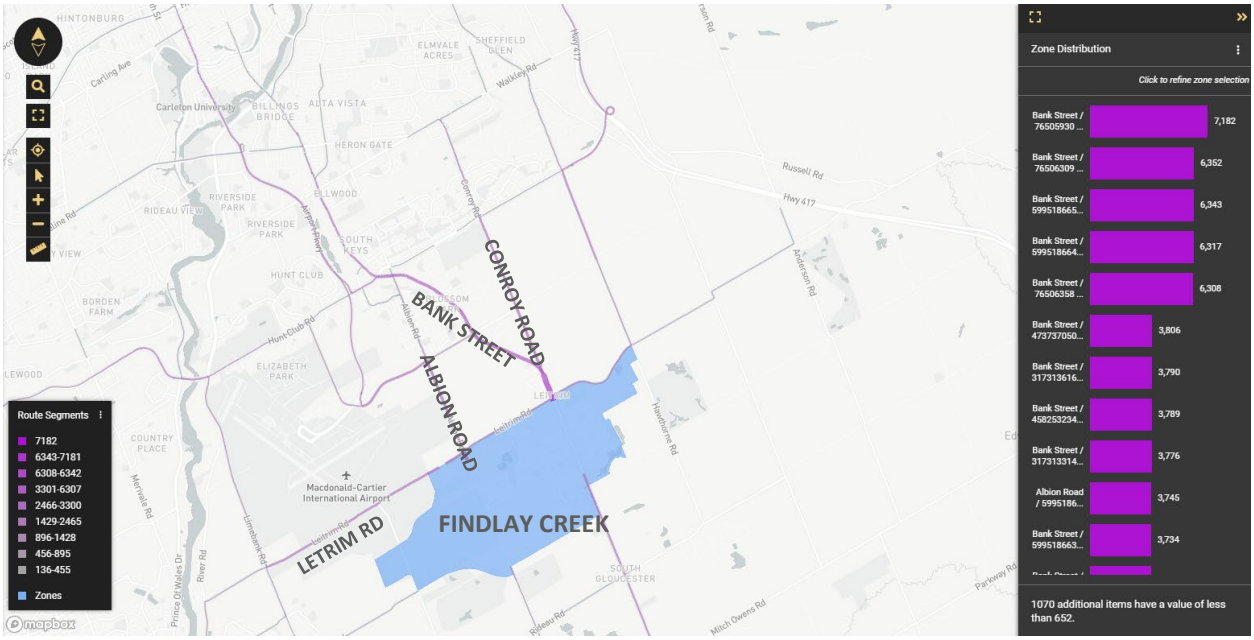


Figure 42: Auto Route Choices for Daily Outbound Trips - Findlay Creek

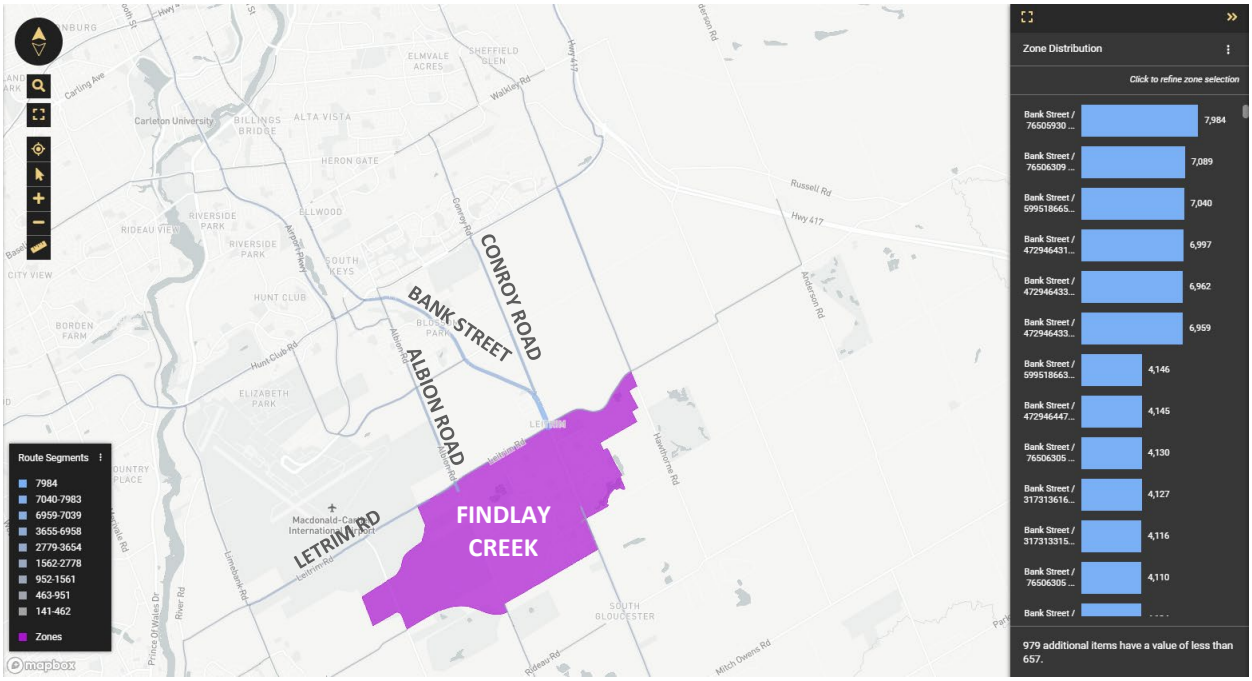


Figure 43: Auto Route Choices for Daily Inbound Trips - Findlay Creek

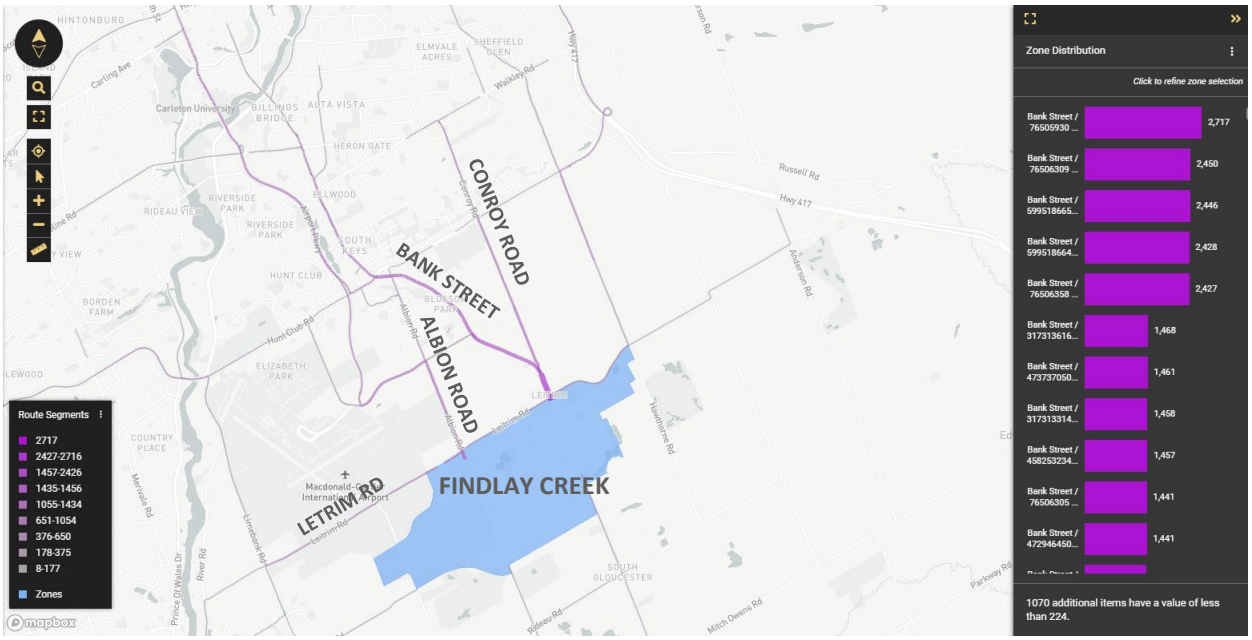


Figure 44: Auto Route Choices for AM Outbound Trips - Findlay Creek

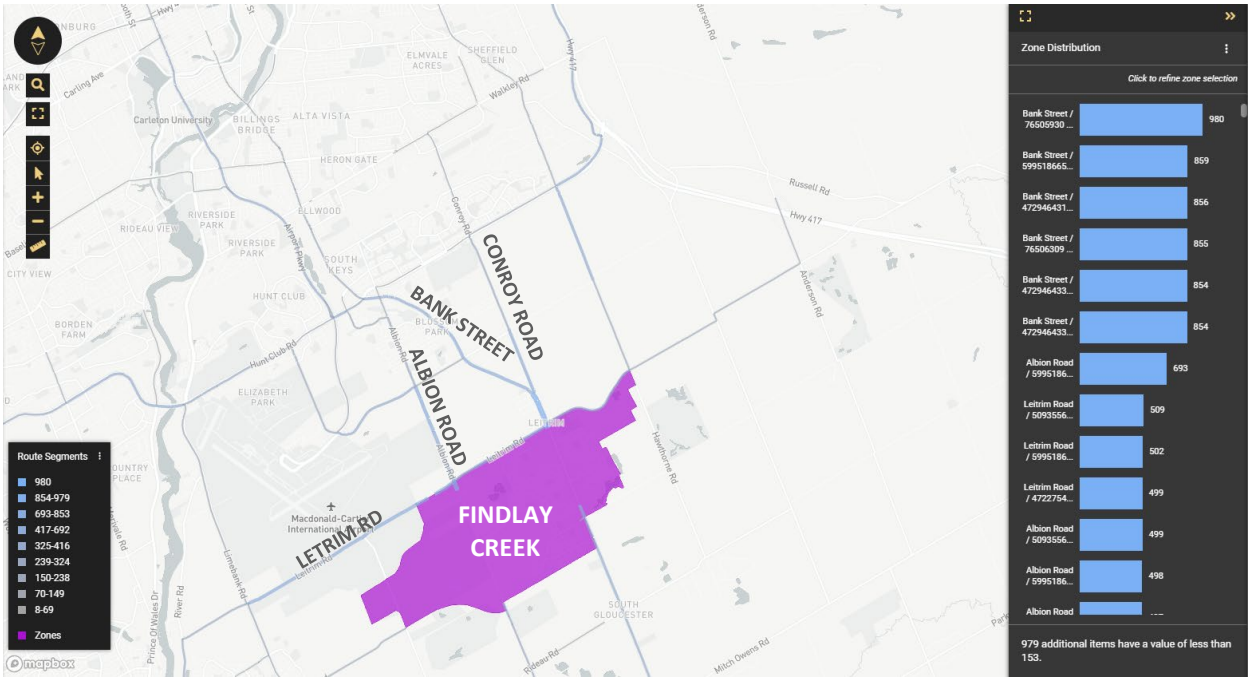


Figure 45: Auto Route Choices for AM Inbound Trips - Findlay Creek

3.2.4 Transit Trip Attributes

The existing bus routes serving Findlay Creek are shown in **Figure 46** and from StreetLight Data most of the daily and AM peak period transit trips originating from Findlay Creek are longer than 15 minutes as shown in **Figure 47** which suggests that most daily trips are external to the community.

Figure 46: Findlay Creek Existing Bus Routes

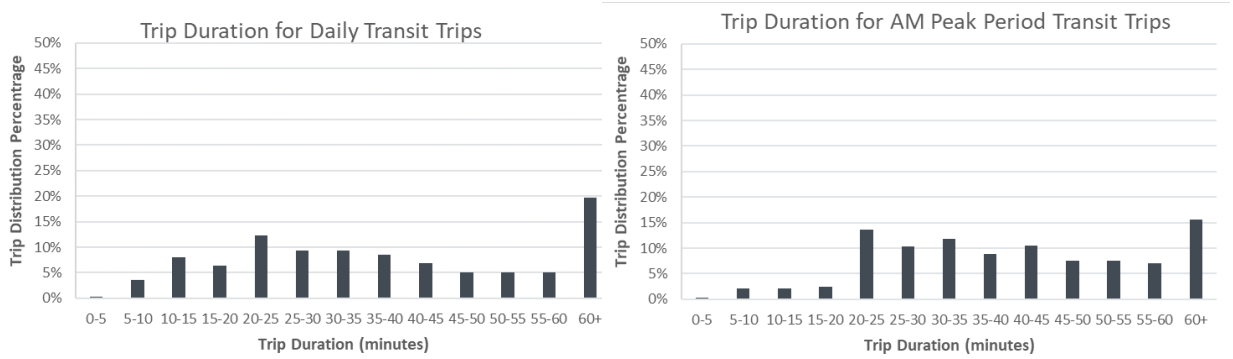


Figure 47: Transit Trip Duration – Findlay Creek

3.2.5 Internal Trips

The internal trips within Findlay Creek were analyzed to understand the intra-zonal activities within the community. As previously mentioned, the proportion of internal trips has implications to a community's ability to connect people with activities within the community itself – an indicator of self-containment which leads to fewer long-distance trips. A community that can support more internal trips is an indication that its residents are able to complete their daily travel including work, shop, school, without making long-distance trips.

3.2.5.1 Auto

The characteristics of the internal trips within Findlay Creek was examined to identify additional patterns and travel behaviours. Majority of the internal trips has travel time of 10 minutes (or less) within Findlay Creek - 42% and 35% for daily and AM peak period, respectively. The travel times summarized in **Figure 48** are consistent with the findings of the OD patterns discussed in **Section 3.2.1**, whereby a high percentage of trips are destined to neighbourhoods adjacent to Findlay Creek such as Alta Vista and Hunt Club).

Based on **Figure 49**, approximately 29% of the daily trips within the Findlay Creek are home-based-work (HBW) trips which indicates that about one-third of the residents has a job within the local neighbourhood. A higher percentage (35%) of HBW trips can be observed for the AM peak period.

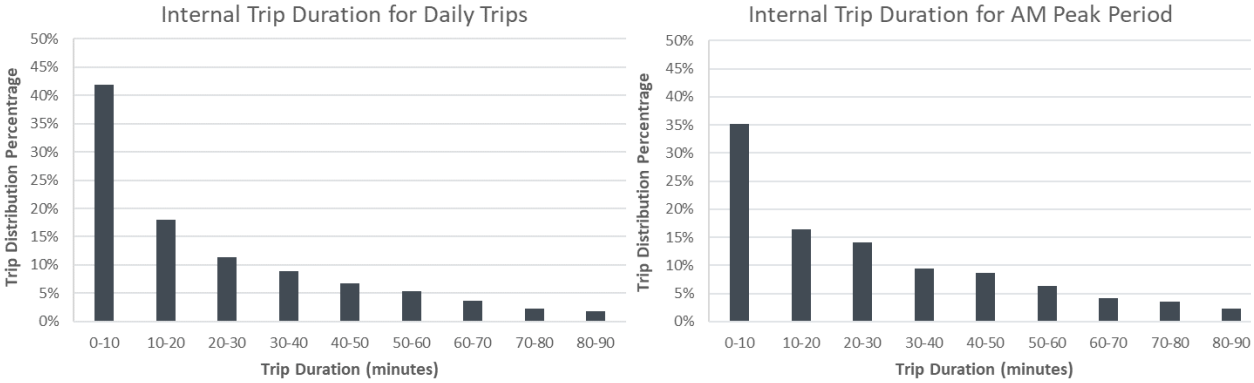


Figure 48: Internal Auto Trip Duration – Findlay Creek

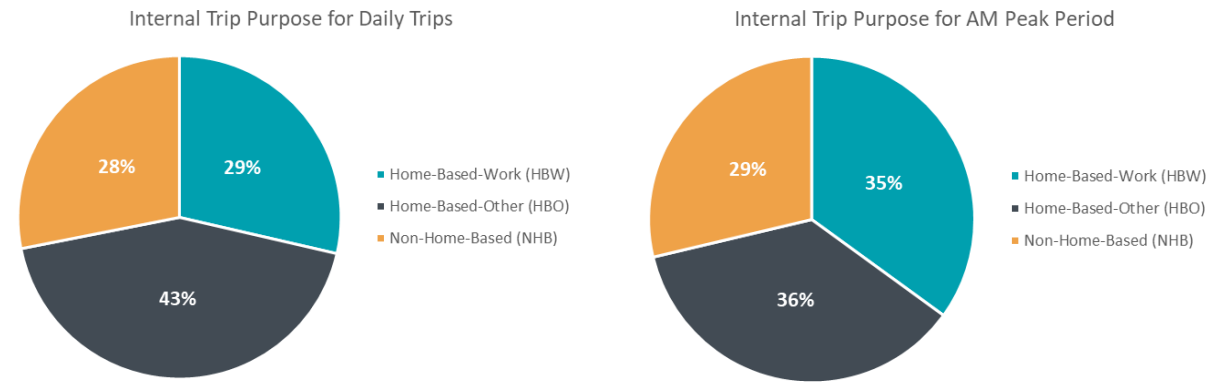


Figure 49: Internal Auto Trip Purpose – Findlay Creek

3.2.5.2 Transit

The characteristics of the internal transit trips within the Findlay Creek community was further examined to identify other patterns and travel behaviours. As shown in **Figure 50**, trips that take 15 minutes or less account for approximately 80% of the internal daily transit trips within Findlay Creek. The AM peak period transit trips 15 minutes or less account for 85% of the internal transit trips.

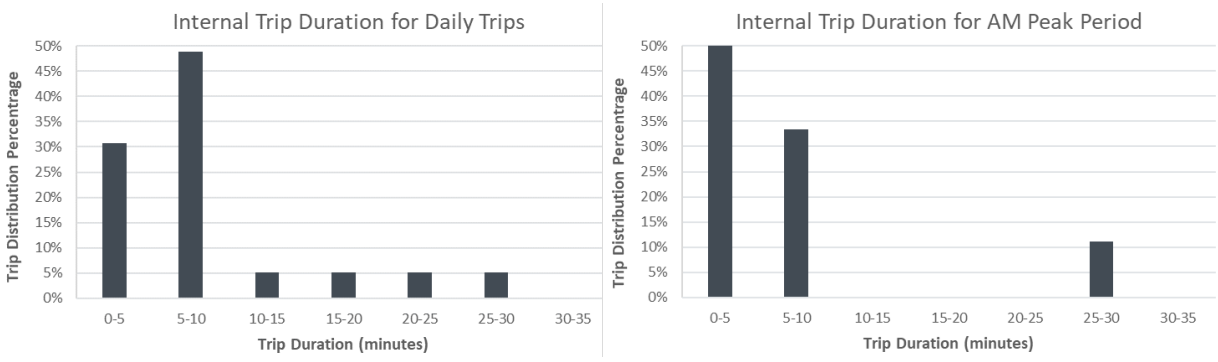


Figure 50: Internal Transit Trip Duration – Findlay Creek

3.2.5.3 Active Modes

The active transportation modes (i.e., walking and cycling) were further examined for the internal trips to gather additional insights on travel patterns. The analyses revealed that residents in Findlay Creek are more likely to walk when the trips can be completed within 15 minutes. As shown in **Figure 51** and **Figure 52**, both walking and cycling demands start to decline when the trip takes more than 15 minutes.

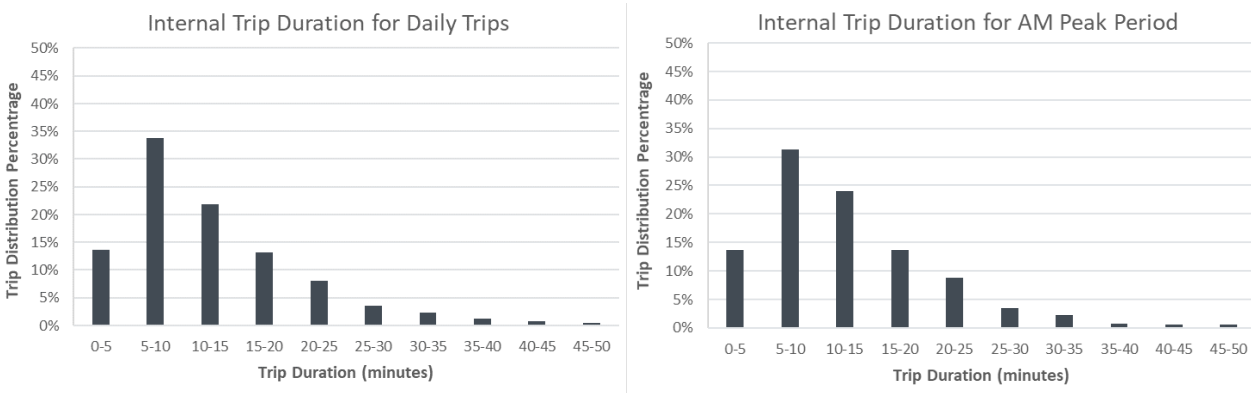


Figure 51: Internal Trip Duration for Walking – Findlay Creek

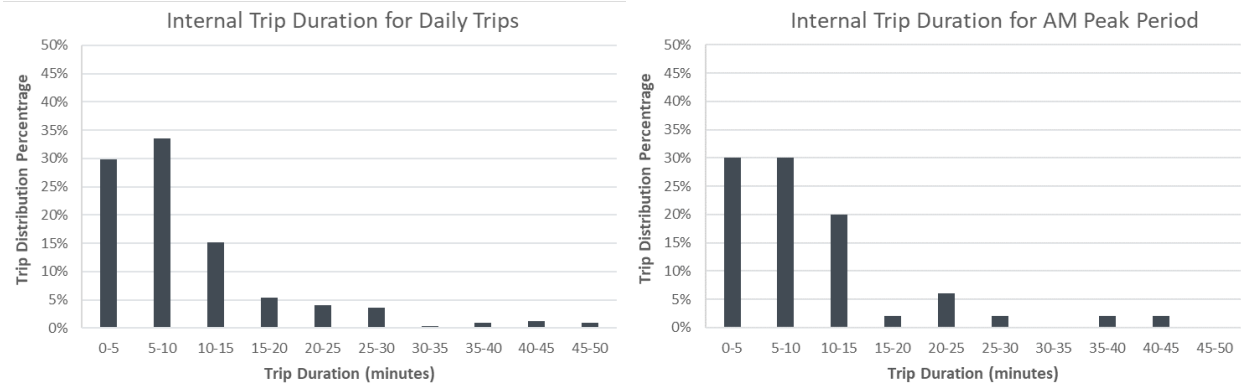
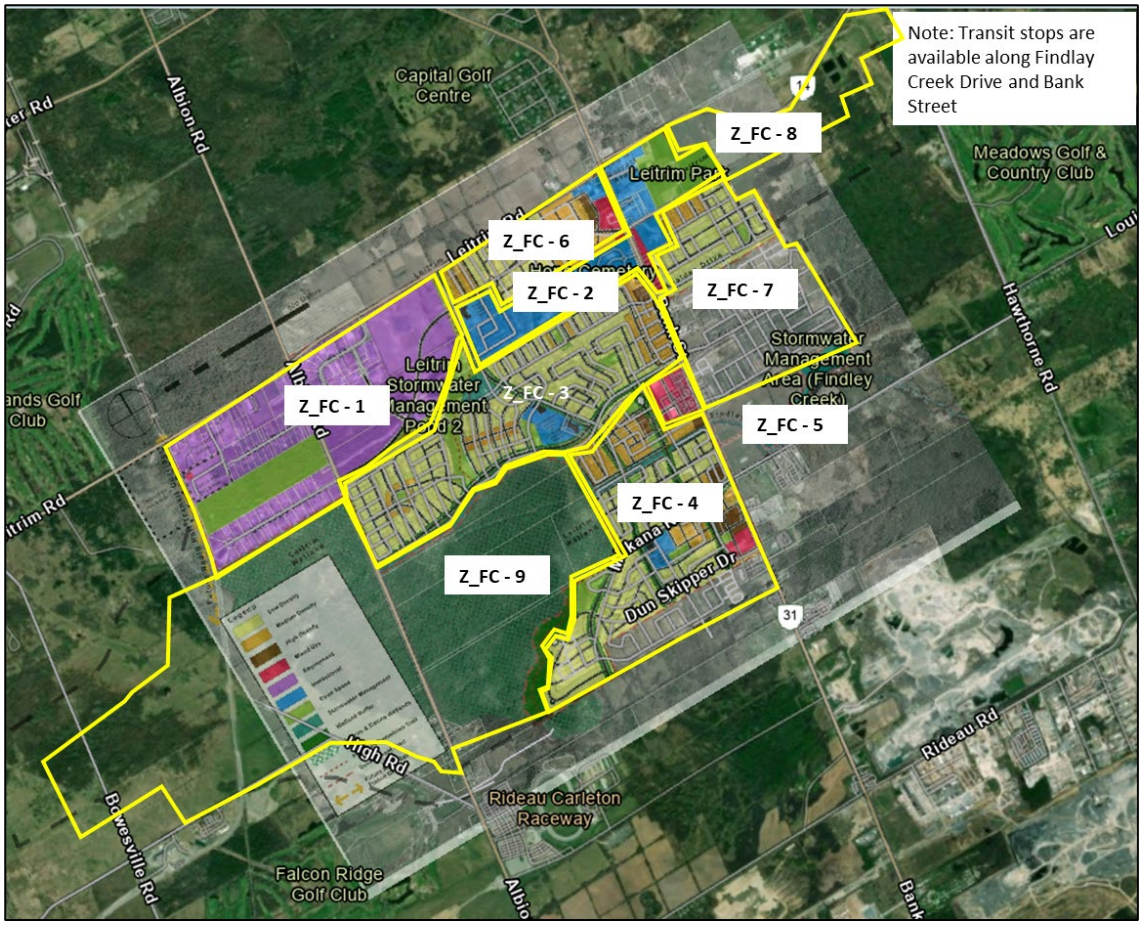


Figure 52: Internal Trip Duration for Cycling – Findlay Creek

The StreetLight Data zone representing the Findlay Creek South community was disaggregated into nine sub-zones by land use as shown in **Figure 53** for further analysis to understand the influence of land use on active transportation travel patterns.

The disaggregated zones considered the transportation network and land uses such as residential, commercial areas, school, parks, and access to transit. The internal travel patterns between different zones by land use are summarized in **Section 3.2.5.3.1** and **Section 3.2.5.3.2** for walking and cycling trips, respectively.



Z_FC - 1: Employment zone	Z_FC - 6: Residential community (undeveloped)
Z_FC - 2: Commercial and institutional zone	Z_FC - 7: Residential community (undeveloped)
Z_FC - 3: Residential community with school, park and access to transit	Z_FC - 8: No development
Z_RC - 4: Residential community with park and access to transit	Z_FC - 9: No development
Z_FC - 5: Commercial zone	

Figure 53: Findlay Creek Disaggregated Zones by Land Use

3.2.5.3.1 Walking Trip Patterns

The key origins and destinations for walking trips internal to the Riverside South community using StreetLight Data were identified. As shown in **Figure 54**, almost 54% of daily internal trips by walking originated in the two most dense residential zones with school and park (Zones 3 and 4), and 20% of daily walking trips originate from the commercial Zone 5. During the AM peak period, 54% of internal walking trips originated from the two residential zones (Zones 3 and 4) and 18% in another residential zone (Zone 7) as showing in **Figure 54**.

The two most dense residential zones (Zones 3 and 4) have over half the destinations for internal daily walking trips (56%) with the commercial Zone 5 the destination for 17% of the internal daily as shown in **Figure 56**. During the AM peak period, three residential zones (Zones 3, 4 and 7) are the destinations for almost 75% of the walking trips as shown in **Figure 57**. Over 70% of daily and AM peak period internal walking trips are home-based as shown in **Figure 58** which is similar to Riverside South.

Figure 54: Key Origins for Findlay Creek Internal Walking Trips (Daily)

Figure 55: Key Origins for Findlay Creek Internal Walking Trips (AM Peak Period)

Figure 56: Key Destinations for Findlay Creek Internal Walking Trips (Daily)

Figure 57: Key Destinations for Findlay Creek Internal Walking Trips (AM Peak Period)

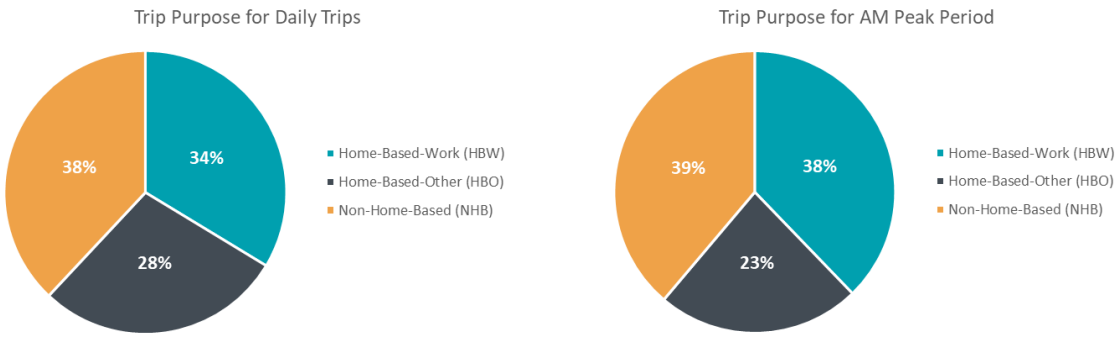


Figure 58: Internal Walking Trip Purpose – Findlay Creek

3.2.5.3.2 Cycling Trip Patterns

The key origins and destinations for cycling trips internal to the Findlay Creek community using StreetLight Data were identified. As shown in **Figure 59**, almost 64% of daily internal trips by cycling originated in the two most dense residential zones with school and park (Zones 3 and 4), and 23% of daily cycling trips originate from the commercial Zone 5. A similar trend for cycling trips origins was observed during the AM peak period as shown in **Figure 60**.

The two most dense residential zones (Zones 3 and 4) have approximately 64% of the destinations for internal daily cycling trips with the commercial Zone 5 the destination for 19% of the internal daily trips as shown in **Figure 61**. During the AM peak period, two residential zones (Zones 3 and 4) are the destinations for almost 62% of the cycling trips and the commercial and institutional Zone 2 is the destination for 14% of the internal cycling trips as shown in **Figure 62**.

Over 75% of the daily internal cycling trips and 67% of the AM peak period internal cycling trips in the Findlay Creek community are home-based shown in **Figure 63**.

Figure 59: Key Origins for Findlay Creek Internal Cycling Trips (Daily)

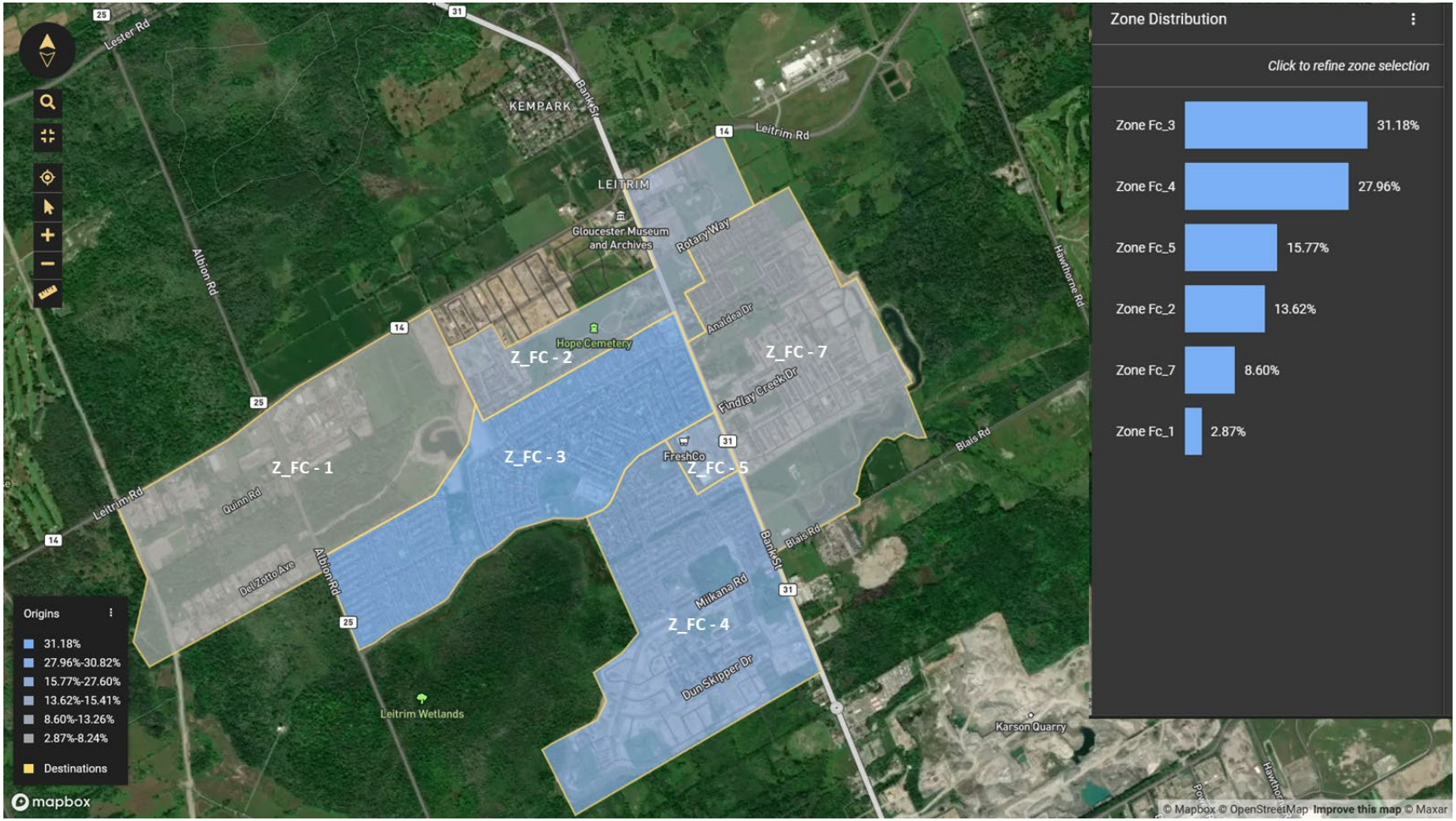


Figure 60: Key Origins for Findlay Creek Internal Cycling Trips (AM Peak Period)

Figure 61: Key Destinations for Findlay Creek Internal Cycling Trips (Daily)

Figure 62: Key Destinations for Findlay Creek Internal Cycling Trips (AM Peak Period)

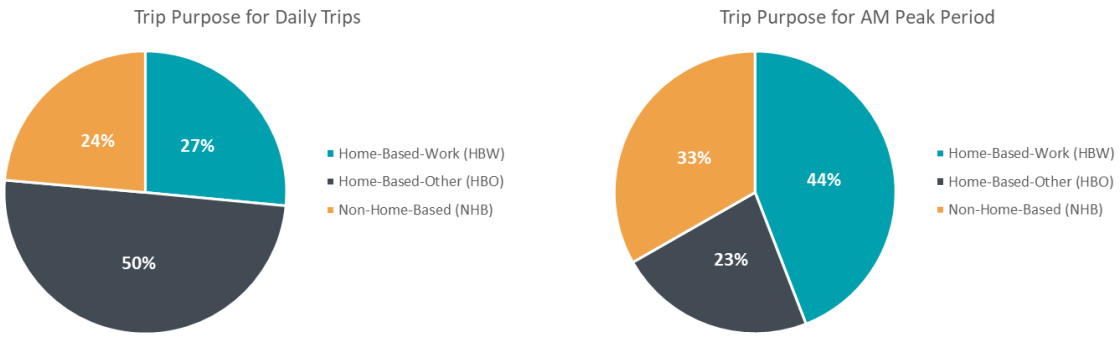


Figure 63: Internal Cycling Trip Purpose – Findlay Creek

3.3 Tewin Community

The review of the transportation context for Riverside South and Findlay Creek serves as a benchmark for the Tewin community by informing the likely regional trip patterns for Tewin and its role as part of the SEOTN as well as the wider road network. While there is no trip data that currently exist for Tewin, a link analysis was conducted on Highway 417, a key corridor to support regional trips traveling from and into Tewin in the future.

3.3.1 Select Link Analysis

A select link analysis was conducted using segment analysis in StreetLight Data to understand the current auto trip patterns and estimated volumes along Highway 417. The segments zones were set up between the Anderson Street and Boundary Road ramp terminals in StreetLight Data, as depicted in **Figure 64**.

Figure 64: Select Link (Segment) Analysis for Highway 417

The analysis confirmed that northbound and southbound are the peak directions for AM and PM peak periods, respectively, as shown in **Figure 65**.

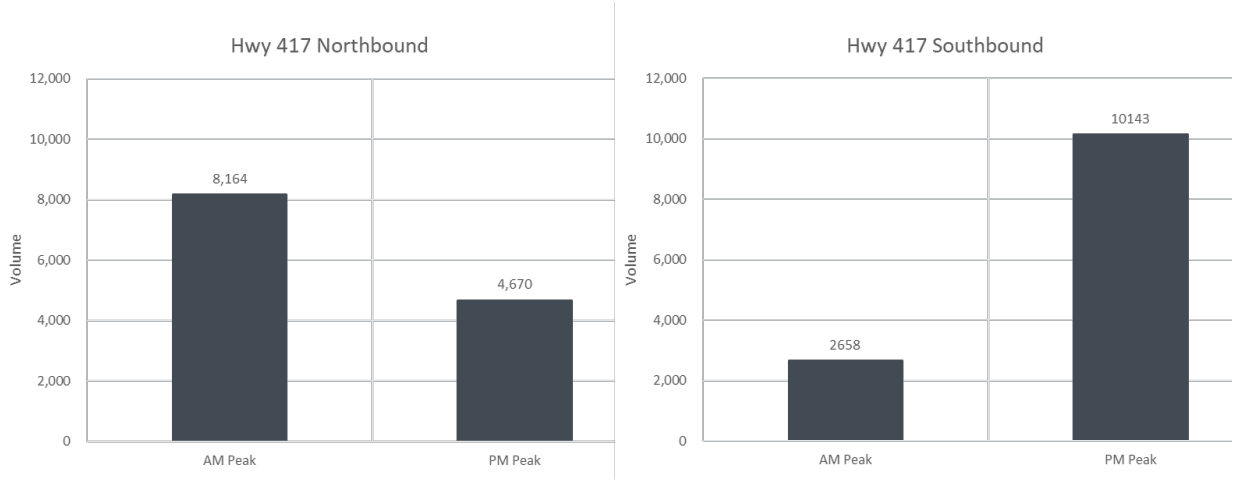


Figure 65: Average Weekday Volumes for Highway 417

StreetLight Data provides estimated travel speeds in percentiles (50th and 85th). As shown in **Table 1**, the 85th percentile speeds for both peak periods exceed the posted speed of 100 km/hr which indicates that the identified segment is likely operating below capacity and not experiencing congestions during the commuter's peak periods.

Table 1: Percentile Speeds by Direction and Peak Periods along Highway 417

	Bidirectional		NB		SB	
	85th	50th	85th	50th	85th	50th
AM Peak Speeds (km/h)	112	83	112	82	113	86
PM Peak Speeds (km/h)	115	85	115	85	115	86

To further analyze the congestion levels along the Highway 417 segment, StreetLight Data also estimates vehicle-hour-delay (VHD) which measures the amount of time vehicles spend in congestion versus travel time in free-flow conditions. The higher the number, the higher the delays that drivers are experiencing. Reading **Table 1** in conjunction with **Table 2**, the congestion level in the AM peak direction of travel (VHD of 89 in the northbound direction) is more significant than the PM peak direction of travel (VHD of 51 in the southbound direction).

Table 2: Vehicle-Hour-Delay (VHD) by Direction and Peak Periods along Highway 417

	Bidirectional	NB	SB
AM Peak VHD	101	89	12
PM Peak VHD	71	20	51

3.3.2 Auto Origin and Destinations

An origin-destination (OD) with middle filter analysis was completed to further determine where auto trips are going to and coming from along the Highway 417 corridor. Middle filters were created before and after the Anderson Street ramp terminals to capture bidirectional traffic patterns along Highway 417, as shown in **Figure 66**.

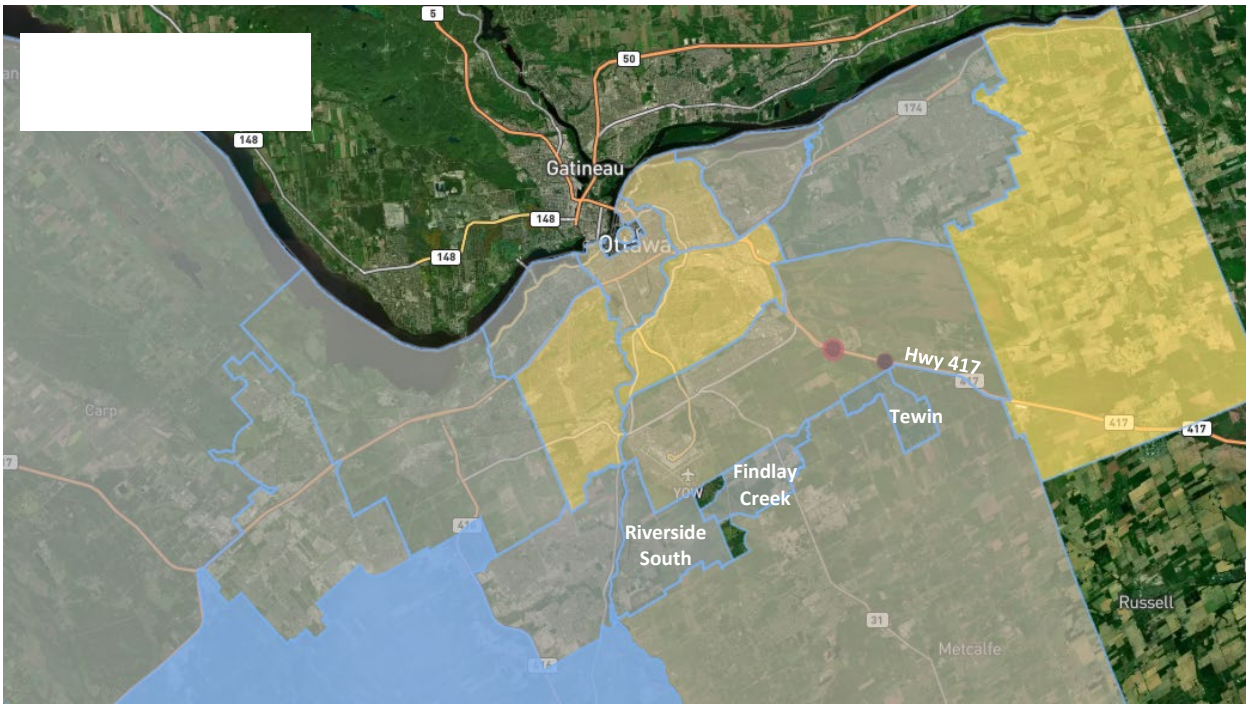
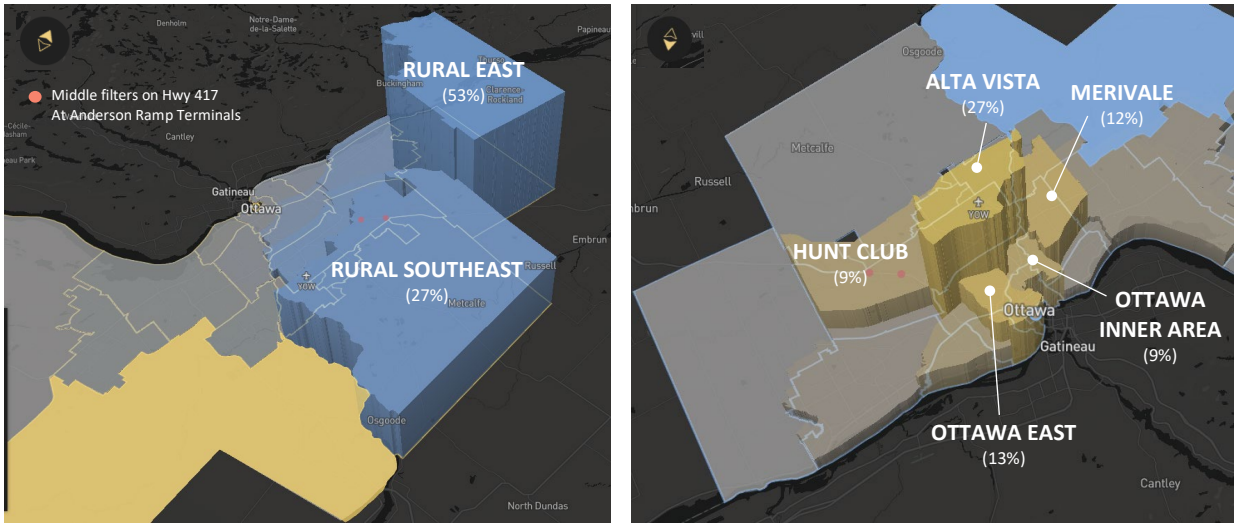


Figure 66: Origin-Destination Analysis for Highway 417

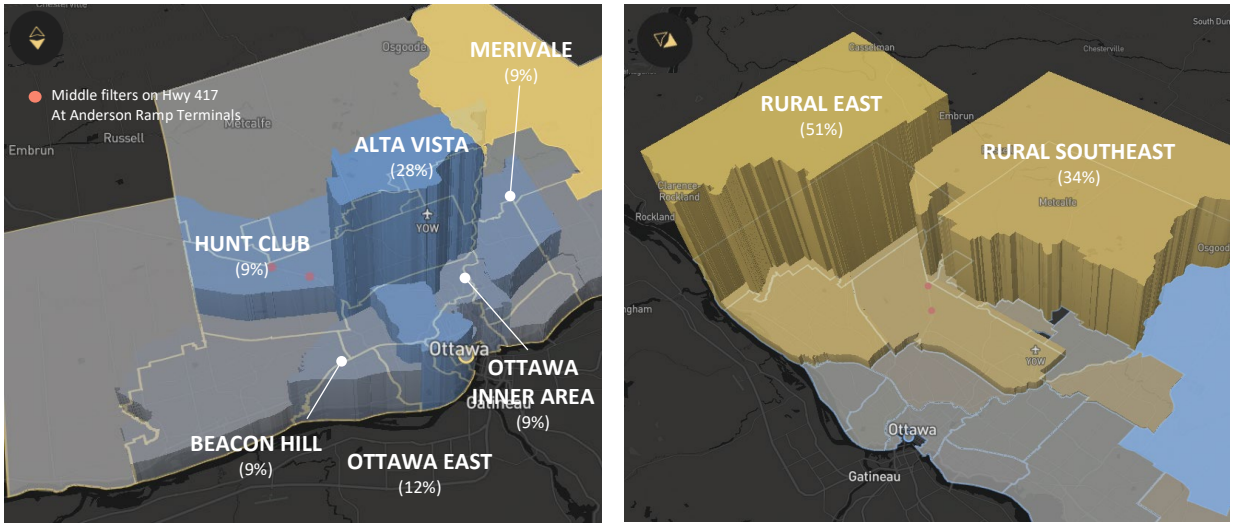
The origin and destination zones by traffic direction are illustrated in **Figure 67** and **Figure 68**, respectively. The heights of the zones are proportional to the percentage of traffic passing through the middle filters on Highway 417.

Based on the OD analysis results, a large proportion of northbound trips passing through the Anderson Street terminals are traveling between rural east, rural southeast regions to inner suburbs (i.e., Alta Vista, Hunt Club) and Ottawa's inner areas. The origin and destination pairs for southbound traffic is the reversed. Southbound trips along Highway 417 are mainly traveling from Ottawa inner areas, inner suburbs (Alta Vista, Hunt Club) to the Rural East and Rural Southeast Regions, as illustrated in **Figure 68**.



Origin Zones | Destination Zones

Figure 67: Origins and Destinations for Northbound Trips on Highway 417 – Daily Trips

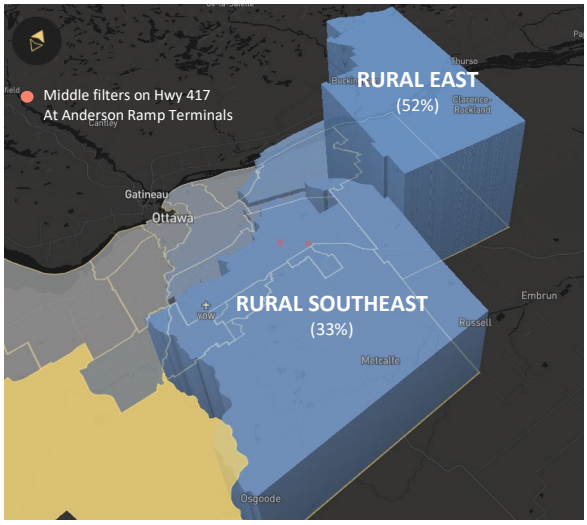


Origin Zones | Destination Zones

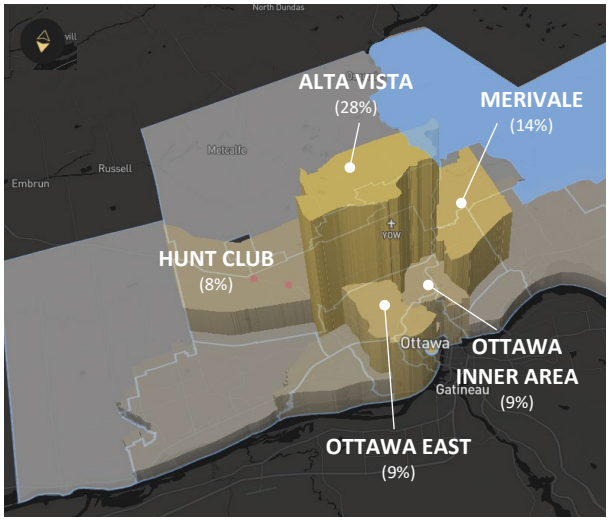
Figure 68: Origins and Destinations for Southbound Trips on Highway 417 – Daily Trips

The OD patterns along Highway 417 was also analyzed for AM peak period and the results are shown in **Figure 69** and **Figure 70**. The AM travel patterns for northbound trips are very similar to the daily trip patterns. For southbound trips, the results showed that approximately 80% of the trips are destined to

Rural East region which is significantly higher than what was observed in daily trips. The key origins for southbound trips also include Bayshore / Cedarview (12%) and Beacon Hill (7%) in addition to Ottawa East and the inner suburb areas.

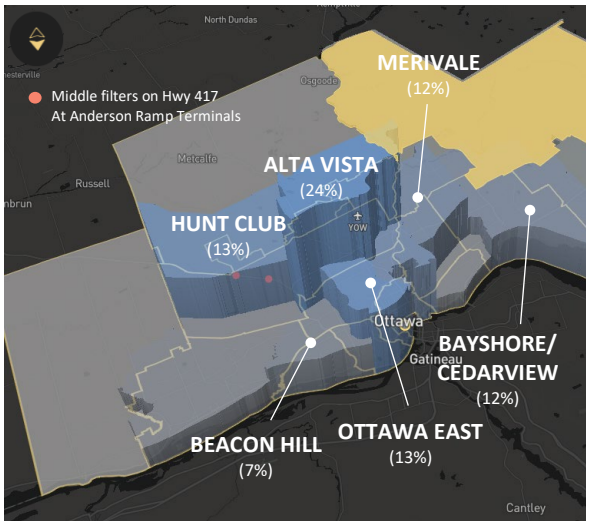


Origin Zones

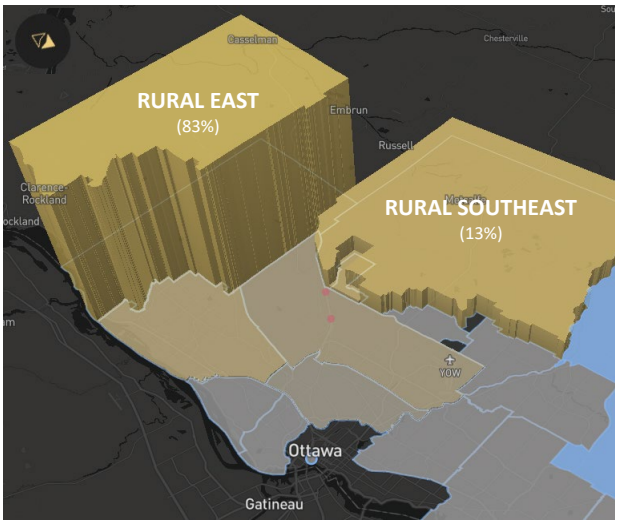


Destination Zones

Figure 69: Origins and Destinations for Northbound Trips on Highway 417 – AM Peak Period



Origin Zones



Destination Zones

Figure 70: Origins and Destinations for Southbound Trips on Highway 417 – AM Peak Period

Based on the select-link and OD analyses completed for Highway 417, this provincial highway is a key linkage between the rural communities in the southern part of the city and the inner suburbs as well as Ottawa's inner areas. It is worth noting that Highway 417 is not a desired route for residents of Riverside South and Findlay Creek mainly due to its distance from these communities. However, it is expected that similar patterns and distribution for regional traffic discussed above can be observed for Tewin given the direct access to the Highway 417 interchange at Anderson Street. Nonetheless, the adaption of a "15 minutes" community design with more dynamic land use and integrated mobility strategies will influence daily and peak periods travel patterns on regional trips compares to what is observed today.

3.3.3 Existing Transit Service

The existing bus route serving the Tewin area is in **Figure 71**. There is no available StreetLight Data for this bus route.

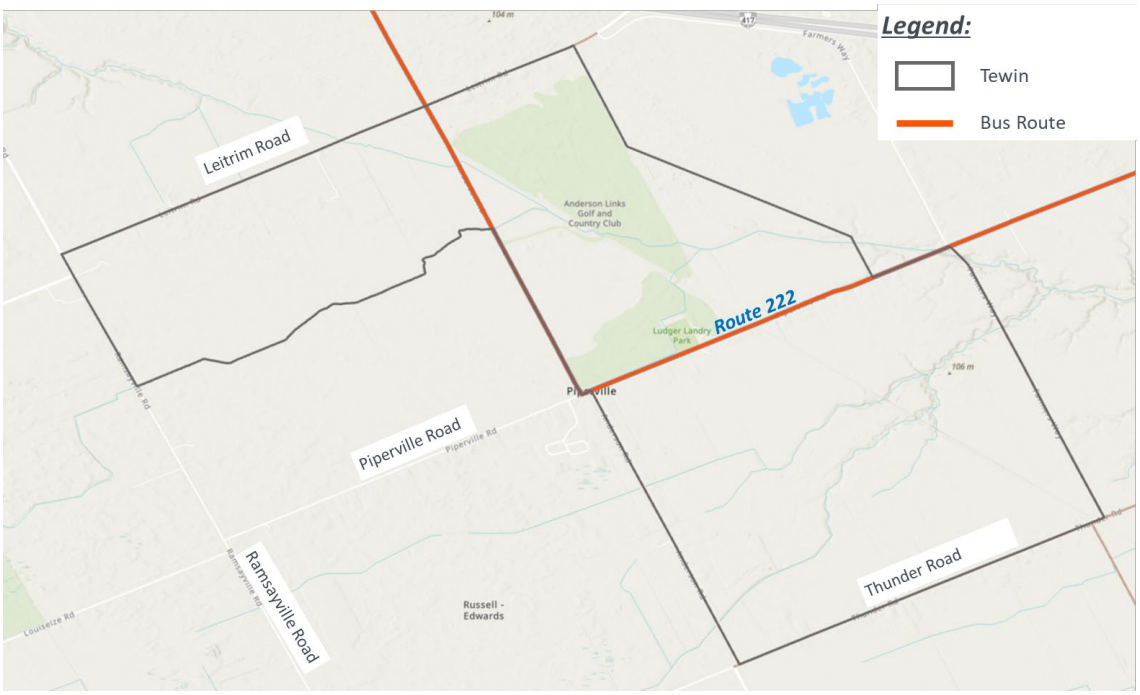


Figure 71: Tewin Existing Bus Route

4.0 Conclusions

This report documented the findings from the existing transportation analysis, completed as part of the first phase of the Transportation Studies. The intent was to gather all information that exists for the Tewin Secondary Plan study area to inform the Tewin Secondary Plan process, identify information gaps and opportunities, and to serve as a springboard to address issues affecting the future Tewin community.

The study area of the existing transportation analysis focused on the South-East Ottawa Transportation Network (SEOTN) while acknowledging the land use and travel patterns in the regional network will affect transportation within Tewin. The SEOTN study area is consist of three communities: Riverside South, Findlay Creek and Tewin. Tewin is currently a greenfield located in the south-east region of Ottawa and is part of SEOTN. Currently, there are no planned rapid transit within the proximity of Tewin; however, a comprehensive transit strategy will be developed for Tewin to provide a seamless transportation network both internally within Tewin as well as externally connecting the community with the adjacent road network.

Since Tewin is an undeveloped area with no existing data, a benchmarking analysis of the two existing communities within SEOTN (Riverside South and Findlay Creek) was completed to establish an understanding of existing land use, network characteristics and key travel trends and influences.

4.1 Summary of Transportation Analysis

Using StreetLight Data, a series of analyses were carried out to determine travel characteristics, trip patterns and demographic attributes of the two existing communities within SEOTN: Riverside South and Findlay Creek. More specifically, analyses were undertaken to examine trip patterns for all-vehicles. Active transportation modes were also analyzed to examine travel patterns for internal trip activities. The 24-hour and AM-peak periods were assessed to determine both the daily and commuters' travel patterns for weekdays (Tuesday to Thursday).

4.1.1 Riverside South Community

Streetlight Data analyses revealed the following key findings on existing travel patterns for Riverside South:

Daily Auto-Trip Patterns

- Internal trips within Riverside accounts for 24% of total daily trips.
- The most popular origins and destinations for Riverside South are Barrhaven and Merivale which accounted for 17% and 10% of total daily trips destined and originating from the community, respectively.
- For daily trips, approximately 61% of the daily trips originating from Riverside South belong to short-distance trips (30 minutes).
- Home-Based-Work (HBW) trips only accounts for 27% for daily trips since daily travel generally include other types of trips throughout a typical day such as shopping or school.
- There is a high percentage (approximately 50%) of home-based-other (HBO) trips within Riverside South, suggesting that half of its residents complete their daily non-work-related activities within the local community, such as shopping or school.

- A review of active modes showed that people are more likely to walk if the trip is within 15 minutes where both walking and cycling demands are observed to decline when the travel time exceeds this threshold.
- Active transportation modes of walking and cycling for internal travel are significant in zones with established neighbourhoods and nearby commercial areas.

AM Peak Trip Patterns

- The most popular destinations for Riverside South are Alta Vista and Merivale which accounts for 14% and 13% of total AM trips originating from the community, respectively.
- During the AM peak period, approximately 48% of trips that originate from Riverside South belong to short distance trips (30 minutes). The range of travel speed is similar to daily trips which is between 20 km/hr and 40 km/hr.
- The AM peak period has observed a higher percentage of home-based-other (HBO) trips of 43% which aligns with typical commuter's traffic patterns.
- Approximately 15% of the AM peak period trips are internal trips. Overall, the internal trip patterns during the AM peak period are similar to the daily trip patterns.
- Active transportation modes of walking and cycling for internal travel are significant in zones with established neighbourhoods and nearby commercial areas.

4.1.2 Findlay Creek Community

Streetlight Data analyses revealed the following key findings on existing travel patterns for Findlay Creek:

Daily Auto-Trip Patterns

- The most popular origins for travel to Findlay Creek are Hunt Club and Alta Vista which accounted for 18% and 14% of total daily trips destined to the community, respectively.
- Other than internal trips (20%), the most popular destinations for Findlay Creek are its adjacent neighbourhoods, with 16% and 14% of total daily trips traveling to Hunt Club and Alta Vista, respectively.
- Approximately 60% of the daily trips originating from Findlay Creek are short-distance trips (30 minutes).
- The range of travel speed is between 20 km/hr and 40 km/hr which aligns with the road network of Findlay Creek as the community is comprises of mainly local roads with only two major arterials (Bank Street and Albion Road).
- Home-based-other (HBO) made up 47% of the daily trip activities. A review of local demographics within Findlay Creek also showed that about 50% of the households in Findlay Creek have children. Given the household type and limited commercial and institutional uses within the local community, residents are likely traveling to neighbouring communities for school and shopping.
- The most popular routes for people traveling out of Findlay Creek to other communities are via Bank Street or Conroy Road. Similar routes choices can be observed for trips traveling into Findlay Creek with a higher distribution of northbound traffic along Bank Street coming from the south in the South Gloucester area. Other intuitive routes are Leitrim Road (east-west direction) and Albion Road (north-south direction).
- Approximately 42% of internal trips are short-distance trips that have travel times of 10 minutes or less.

- Active transportation modes of walking and cycling for internal travel are significant in zones with established neighbourhoods and nearby commercial areas.

AM Peak Trip Patterns

- The most popular origins for travel to Findlay Creek are the Rural Southeast and Hunt Club which accounted for 13% and 11% of total AM trips destined to the community, respectively.
- Alta Vista is the community attracts the most morning trips from Findlay Creek (20% of all AM peak period trips). Based on land use, Alta Vista has several sub-neighbourhoods with schools and shopping malls which are key trip attractors. Other key destinations include the internal Findlay Creek community (13%) and Hunt Club (13%).
- For AM peak period, home-based-work (HBW) and home-based-other (HBO) trips account for a totalled of 80% of all morning trips (40% HBW, 40% HBO).
- The routes choices in the AM are similar to daily trip patterns.
- Approximately 35% of internal trips are short-distance trips that have travel times of 10 minutes or less.
- Active transportation modes of walking and cycling for internal travel are significant in zones with established neighbourhoods and nearby commercial areas.

4.1.3 Tewin Community

While there is no trip data that currently exist for Tewin, a select link analysis was conducted on Highway 417, a key corridor to support regional trips traveling from and into Tewin in the future. The results can be summarized as follows:

- The analysis confirmed that northbound and southbound are the peak directions for AM and PM peak periods.
- The 85th percentile speeds for both peak periods exceed the posted speed of 100km/hr which indicates that the identified segment is unlikely to be experiencing congestions during the commuter's peak periods.
- The estimated level of congestion on the selected Highway 417 link in the AM peak is more significant than the PM peak, whereby the segment experiences a VHD of 89 and 51 in northbound and southbound directions respectively.
- The key origin and destination pairs for using the selected links on Highway 417 are between rural east or rural southeast regions and Ottawa East or inner suburbs (Alta Vista and Hunt Club).

4.2 Next Steps

The transportation analysis documented in this report is meant to provide a high-level overview of the existing transportation context for the City's road network, particularly within the SEOTN study area. The regional trip patterns and activities will further be examined using the TRANS Model which will be documented in a separate report.

Even though that the Tewin Community will have similar planning principles as Riverside South and Findlay Creek, Tewin's vision is also to become a "15-minute Community" that will incorporate new mobility concepts and strategies.

In summary, the next steps will involve undertaking screenline capacity analysis for arterial roadways in SEOTN using existing traffic counts provided by the City and assumed lane capacity used in the TRANS Model. Moreover, the TRANS Model will be used to test different land use scenarios and identify the

types of model outputs and metrics to measure / compare alternatives. This will be a separate report with validation of the SEOTN study area using existing counts and the 2019 updated TRANS Model, and the future 2046 ultimate buildout of Tewin to support the City's Transportation Master Plan update.

Appendix B

Ottawa's Suburban Context

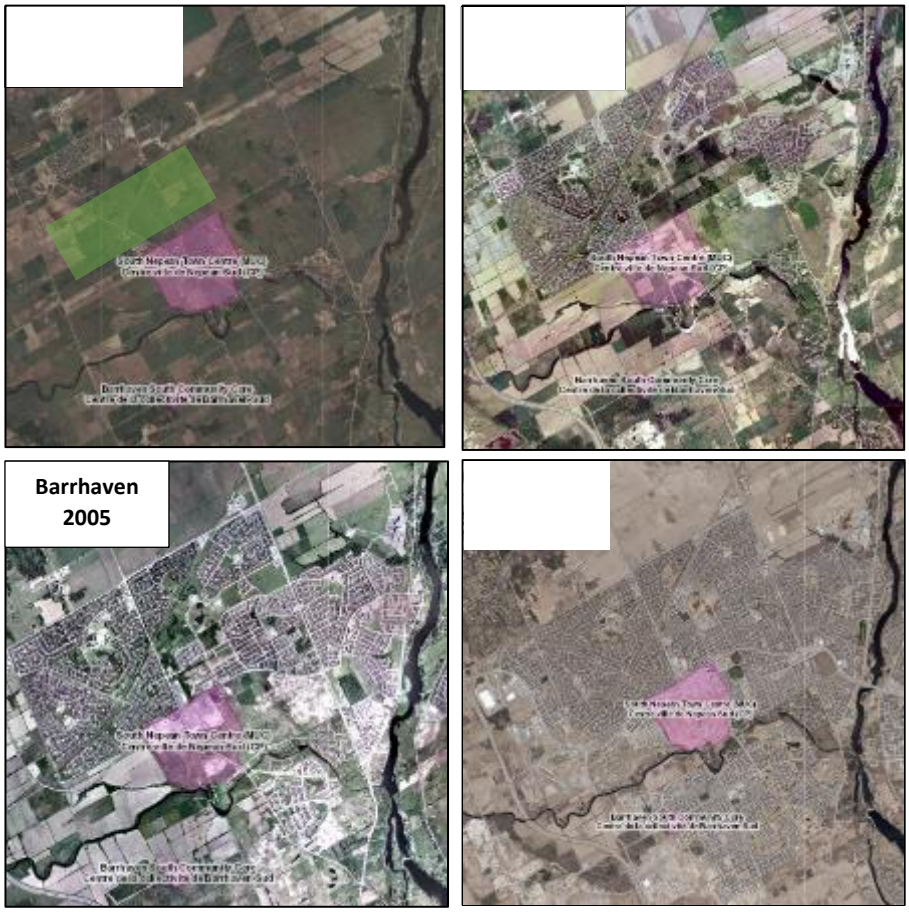
The following document has been assembled as part of the Tewin Transportation Mobility Strategy to provide a succinct look at Ottawa's suburban development history. While there are planning success stories found in each neighbourhood (e.g. higher density and affordable housing, park and recreation space, relatively high regional transit modal shares), the suburban areas 'grew up' battling car dependance and the ebbs and flows of land use phasing and delays, such as lagging school construction and food deserts.

The elements of 15-minute communities are contained in these neighborhoods, however the 15-minute community is not realized. The result is primarily due to the phasing and implementation of the communities' building blocks.

This document provides some reasons behind the results and is intended to inform the Mobility Strategy and Tewin's development as a whole, so that the new community will achieve its intended goals, particularly from a transportation perspective.

South Nepean/Barrhaven

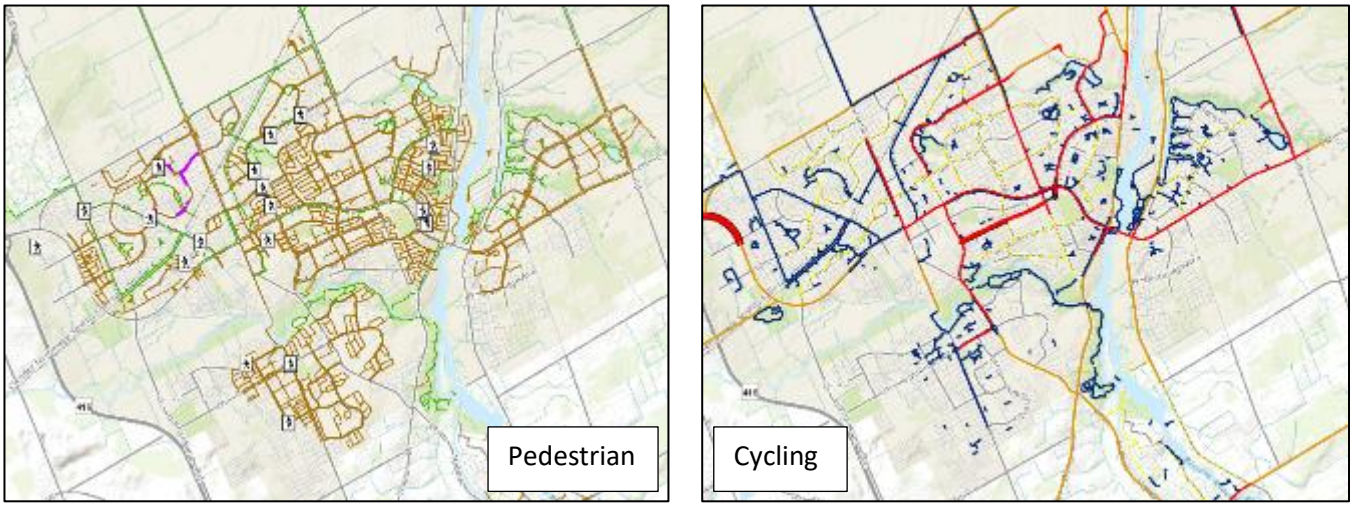
Before amalgamation in 2001, Barrhaven was a small community on the southern end of the City of Nepean. After amalgamation, Barrhaven experienced rapid growth and development in the early 2000s.



Most retail services are located at Barrhaven town centre, at the intersection of Strandherd Drive and Greenbank Road. Other large retail generators can be found on the periphery of the community. Barrhaven is primarily residential without many neighbourhood commercial retailers to provide for daily errands by way of walking or cycling trips. While some commercial generators exist, many other services are available in nearby communities or within the larger, metropolitan area, most easily accessed by single vehicle auto trips. OC Transpo services Barrhaven by both BRT and individual regional routes. The primary transit hub is located at Barrhaven Town Centre which means transit stations and

connections aren't as easily accessed by walking and cycling trips from some of the outer residential communities. The following figures illustrated the existing pedestrian and cyclist facilities in Barrhaven.

Figure 1: Pedestrian and Cyclist Networks in Barrhaven

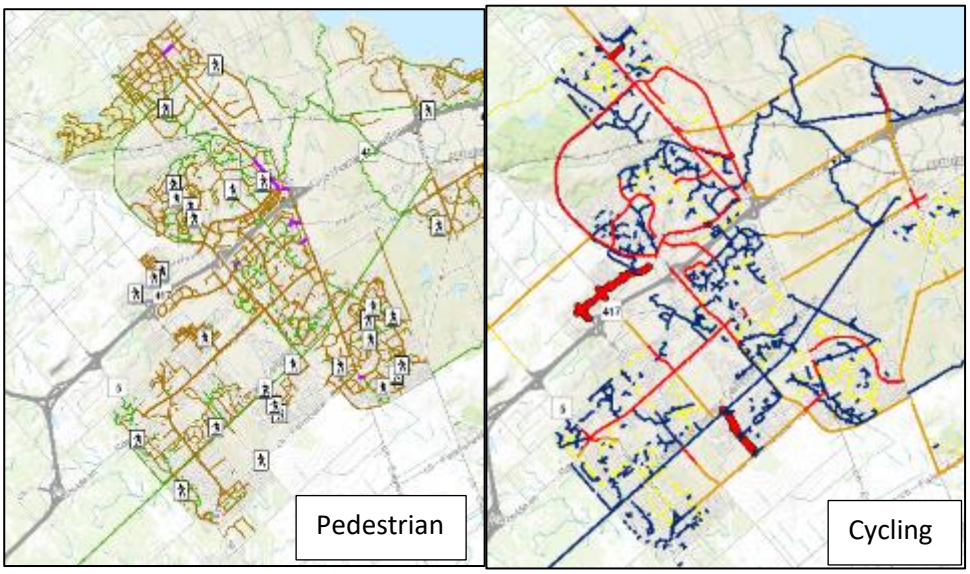


Areas of Barrhaven to the south and east of the rivers aren't as well connected to the community's town centre by way of pedestrian and cycling means, though many areas are equidistant to the town centre which can encourage walking and cycling trips.

Kanata-Stittsville

Kanata-Stittsville is a western Ottawa community that was part of the pre-amalgamated Township of March. Kanata consisted of ten communities in total; one of which (Kanata North) was built and referred to as the "Silicon Valley of North". Kanata North attracted private businesses, federal government divisions and technology companies such as Nokia, Blackberry and Cisco. Larger commercial hubs are found accessible by the arterial road network at Stittsville Main Road and Carp Road as well as on Hazeldean Road on the periphery of the community and at Terry Fox Drive north of the 417. Land uses in Kanata and Stittsville are more dispersed and less centralized than that of Barrhaven.

Cyclist infrastructure is more prevalent in Kanata than Stittsville. The Transportation Master Plan indicates plans to expand current cyclist infrastructure in Kanata and Stittsville to encourage more residents to use active modes of transportation when commuting.



Kanata and Stittsville are at the western most boundary of the City of Ottawa. Access to public transit services within Kanata-Stittsville is not as readily available as the area is not serviced by BRT nor LRT. Existing modal shares within the region indicate that vehicle trips are the preferred travel-mode within and out of Kanata-Stittsville.

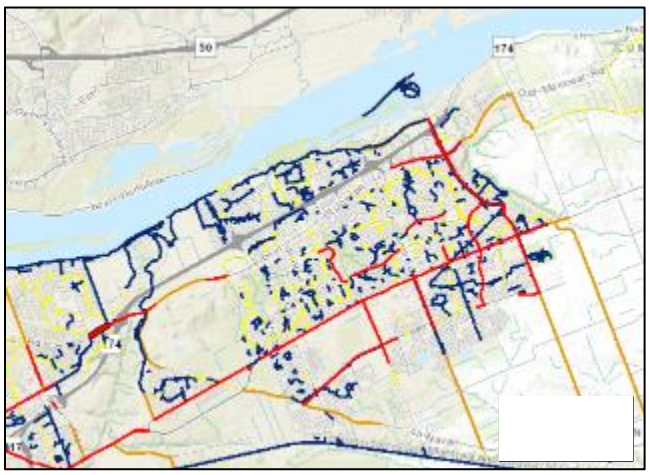
Further, the commercial hubs, particularly along Hazeldean Road, the Queensway and further into Kanata North, are not easily walkable because of distance between them and the residential areas. As a result, the overall walkability of the community is lower than that of Barrhaven. However, it is important to note that several Park & Ride stations exist to bridge the gap between walkability and placement of transit stops.

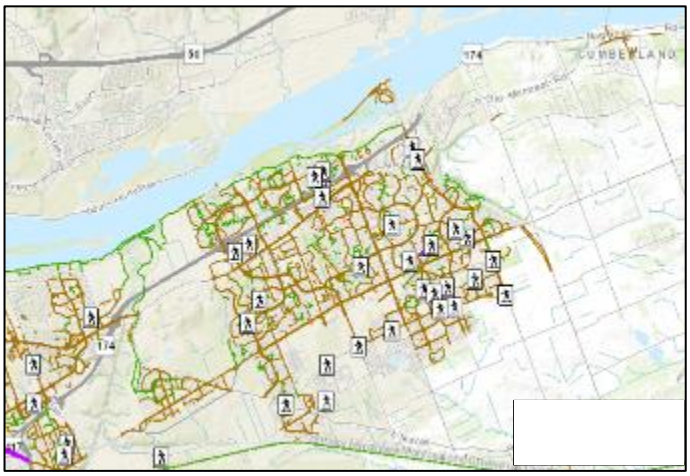
Orleans

Orleans is the easternmost built-up area in the City of Ottawa and was part of the former City of Cumberland and City of Gloucester. It is served by BRT and LRT with other local routes distributed throughout the community. 2

Orleans is primarily residential in nature, with commercial services available near the Innes Road/Tenth Line Road intersection, and along St. Joseph Boulevard. Land uses are more dispersed in Orleans than other communities, which affects walkability, specifically in south Orleans. As the area grows in population, road widening projects will include infrastructure for active modes. Additionally, efforts such as the Pedestrian Friendly Street Program are also implemented in the area to encourage more sustainable travel by walking and cycling. The area is serviced by several local pathways that connect residential areas to major roadways and commercial generators.

Compared to other suburbs that have been previously discussed, public transit within Orleans is supported by the LRT and is in the process of expanding its existing LRT line. Local and regional bus routes also services the area.





Ana**lysis and Comparison**

The three communities have developed over time per the plans laid out 20 and 30 years ago. The mode shares for each are below (as derived from the 2011 TRANS O-D Survey:

Regional Mode Shares	Stitsville/Kanata			Orleans			South Nepean/Barrhaven		
Time Period	AM Peak	PM Peak	24-Hour	AM Peak	PM Peak	24-Hour	AM Peak	PM Peak	24-Hour
Auto Driver	45%	57%	57%	38%	54%	55%	34%	46%	49%
Auto Passenger	17%	23%	20%	20%	23%	20%	19%	21%	19%
Transit	4%	2%	3%	7%	3%	4%	4%	4%	3%
Bicycle	1%	1%	1%	2%	1%	1%	2%	1%	1%
Walk	19%	12%	13%	16%	11%	12%	17%	20%	16%
Other	15%	6%	7%	17%	7%	8%	24%	9%	12%

All of the components are there for a 15 minute community now, but there are some key reasons why they aren't:

- The town centres developed last. As an example, those that moved to Barrhaven in the 80's and 90's needed to drive outside of Barrhaven for their shopping and civic needs.
- The town centres contain density. Approximately 40 years after growth took off, the town centres now have high rise housing options that do provide walking and cycling connectivity to shopping and services.
- The Transitway is an excellent service for regional transit trips, but there is no demand or resultant service for local transit trips within Barrhaven.
- School construction lagged population growth. Barrhaven was attractive to new residents and young families, as it provided affordable housing options. However, without schools for kids to walk and bike to, bussing outside of the community was required resulting in additional regional trips and pressure on the external transportation network.

- Covid-19 just happened. The idea of teleworking isn't new, but society didn't really embrace it until it had to. Not everyone can work from home, or travel virtually, but as society pivoted, people made use of the internet's connectivity for work and education.
- Opportunities to mix uses were lost. Kanata has a world renowned technology hub, however the land use is single purpose. Employees drive to the campus style offices with sprawling parking lots.
- Federal government is the largest employer in Ottawa and the Transitway facilitated employees' living choice. While federal employees reside throughout Ottawa and in Gatineau, Orleans developed as a cluster of those working at federal government offices downtown. As more employees commuted using the Transitway, OC Transpo would increase the capacity of the system to meet the demand, which in tern would make it more attractive for employees to move to Orleans. However, similar to Barrhaven and Kanata, the supporting land uses such as shopping, schools and recreational centres lagged, creating more car tips both locally and regionally.

Conclusion and Opportunity

Barrhaven, Orleans and Kanata are great places to live, work and play. But those living there have transportation and mobility challenges. While they were planned to include many of the contemporary 15 minute land uses and facilities for all modes, as they reach their build out, they are not meeting the sustainability goals and are generally car based places.

However, neighbourhoods can thrive when integrating land uses is at the core of community design and development. For the purposes of this analysis, Barrhaven, Kanata/Stittsville and Orleans have been reviewed and qualitatively evaluated on land use allocation, transit availability, pedestrian and cycling infrastructure and connections as well as mode shares. Of the three communities, Barrhaven has the most centralized local commercial and transit hub. Local transit routes loop around the residential areas and connect residents with many of their commercial and service needs.

Stittsville and Kanata have developed in a linear way, alternating predominantly residential land uses with commercial/industrial parks but without centralized access to local and regional transit. To bridge the gap, several park and rides are provided to try and encourage transit ridership. Geographically, Stittsville is the farthest bedroom community from the metropolitan centre, and as such, single vehicle auto trips maintain the highest modal share.

Orleans has concentrated bands of commercial retail and service providers, intertwined with larger, predominantly residential areas. The area is well services by LRT and BRT service, and future plans to increase service are already in the works. Similar to both Barrhaven and Stittsville, few small commercial generators within the residential suburbs are available to obtain daily and weekly needs by walking and cycling.

From this review of communities outside the Greenbelt, there are opportunities to shift the contemporary development model in such a way that much greater emphasis can be placed on 15-minute neighbourhood ideology. This means moving away from large, dedicated residential areas, and integrating commercial, employment, education and recreational land uses into the larger development landscape to encourage and support transit and sustainable active mobility mode shares. With population increase, comes increased traffic congestion on city streets. Instead of focusing on building wider roadways, greater investment should go into redistributing modal shares to encourage transit ridership, walking and cycling as a viable means of conducting errands and getting to and from work and school. For Tewin to be

successful, and to stand-out, we must decide and provide the key building blocks to shape the community over the development story timeline.

Appendix C

Technical Memorandum

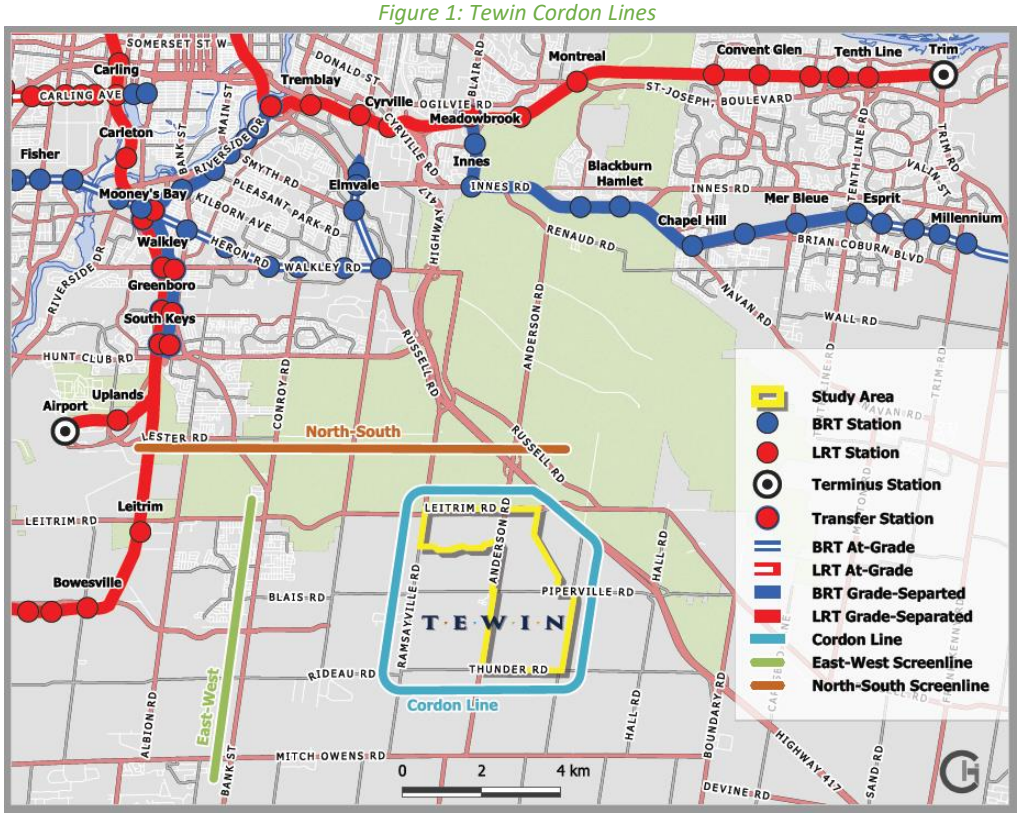
To:	Tewin Landowners Group	Date:	2023-05-10
Cc:			
From:	CGH Transportation Inc.	Project Number:	2021-053

Tewin Roadway ROW Protection

This memo was assembled as part of the Tewin Mobility Strategy and forms part of the transportation existing conditions for the project. The source of the information contained herein is the City of Ottawa's 2022 Official Plan.

Tewin is located within the Southeast Ottawa Transportation Network Study (SEOTNS) area and borders the greenbelt. See below location map.

Figure 1: Tewin Cordon Lines



To describe the transportation corridors to and from the new development area, north-south, east-west and cordon lines are included in the charts below. See Figure 1 for the north/south and east/west cordon lines and screen lines

The City of Ottawa sets provisions for the protection of rights-of-way for the development of the transportation network. This involves identifying where lands will be acquired for new rights-of-way or the widening of existing rights-of-way.

As part of the new Ottawa Official Plan, the following chart (Figure 2) define the right-of-way requirements for arterial and collector roadways that intersect the screen and cordon lines for Tewin.

Figure 2: Road Right-of-Way Protection

Road	ROW to be Protected
Arterials in the Rural area (as shown on Schedules C9 and C10 of the Official Plan)	**30 metres** ROW unless otherwise indicated in Table 1 or in a Local Plan or environmental assessment
Arterials that define the boundary of the Urban and Rural areas on either side (as shown on Schedule A of the Official Plan)	**37.5 metres** ROW unless otherwise indicated in Table 1 or in a Local Plan or environmental assessment
Collectors and Major Collectors in the Rural area and Villages (as shown on Schedules C9 and C10 of the Official Plan)	**26 metres ROW** unless otherwise indicated in Table 1 or in a Local Plan
Locals in the rural area and villages	ROW to be protected is **20 metres** unless otherwise indicated in a Local Plan

Source: https://documents.ottawa.ca/sites/documents/files/schedule_c16_op_en.pdf Accessed: January 31, 2023

As a part of Tewin's existing conditions, a summary of the transportation corridor infrastructure is provided in the charts in the following section.

1 Roadway Descriptions

1.1 Urban and Rural Roads

Table 1 summarized the north/south screenlines, and Table 2 summarizes the east/west screenlines proposed for Tewin.

Table 1: Road Right-of-Way Protection North/South

Road	To	From	Description/Comments	Classification	Sector
Anderson Road	Innes	Leitrim	Greenbelt Two-lane arterial	Arterial	Urban
Boundary Road	Russel Road	South boundary of Carlsbad Springs	23 Two-lane arterial	Arterial	Village
Boundary Road	South boundary of	HWY 417	35.5	Arterial	Urban

Road	To	From	Description/Comments	Classification	Sector
	Carlsbad Springs		Note: An additional 5.0 m on the rural side may be required to construct a rural cross-section. Two-lane arterial		
Conroy Road	Walkley	Greenbelt Boundary	44.5 Two-lane arterial, four-lane after intersection at Hunt-Club	Arterial	Urban
Conroy Road	Greenbelt Boundary	Bank	Greenbelt Two-lane arterial, signalized intersection at Bank Street	Arterial	Urban
Hawthorne Road	Leitrim Road	Rideau	34 Two-lane arterial	Collector	Urban
Highway 417	South Limit of Ottawa	North Limit of Ottawa	Varies 4-lane, grass median separated, Freeway	Freeway	MTO owned
Ramsayville	Walkley	Leitrim	Greenbelt Two-lane arterial	Arterial	Urban
Russel Road	Hawthorne	Greenbelt Boundary	30 Two-lane arterial	Arterial	Urban
Russel Road	Greenbelt Boundary	Ramsayville	Greenbelt Two-lane arterial	Arterial	Urban
Russel Road	Leitrim	Greenbelt Boundary	Greenbelt Two-lane arterial	Arterial	Urban
Russel Road	Greenbelt Boundary	Carlsbad Springs Western Boundary	37.5 Two-lane arterial	Arterial	Urban
Russel Road	Western Boundary of Village of Carlsbad Springs	Eastern Boundary of Village of Carlsbad Springs	23 Two-lane arterial	Arterial	Village

Road	To	From	Description/Comments	Classification	Sector
Walkley	Heron	Greenbelt Boundary	44.5 Four-lane arterial, signalized intersection at Heron	Arterial	Urban
Walkley	Greenbelt Boundary	Ramsayville	Greenbelt Two-lane arterial	Arterial	Urban

Table 2: Road Right-of-Way Protection East/West

Road	To	From	Description/Comments	Classification	Sector
Bank Street	Rideau	Mitch Owens	40 Two-lane arterial	Arterial	Rural
Blais	Bank	Hawthorne	30 Two-lane collector, signalized intersection at Bank Street	Collector	Rural
Hunt Club	Conroy	Hawthorne	44.5 Note: Subject to unequal widening: South side 44.5m, measured from north ROW limit. In addition, a further 5.0m may be required from the south side.	Arterial	Urban
Hunt Club Extension	Hawthorne	HWY 417	42.5-50m varies as per Innes-Walkley-Hunt Club Road Connection Transportation Environmental Study Report	Arterial	Urban
Leitrim Road	Bank Street	Hawthorne Road	Greenbelt Four-lane, reduction to two-lane arterial, signalized intersection at Bank Street and Hawthorne Road	Arterial	Urban

Road	To	From	Description/Comments	Classification	Sector
Leitrim Road	Hawthrone Road	HWY 417	35.5 Two-lane arterial	Arterial	Urban
Mitch Owens	River	Bank	34 Two-lane arterial, signalized intersection at River and Bank Street	Arterial	Rural

1.2 Public Transit Alignments

Table 3 summarizes the existing Public Transit Alignments

Table 3: Public Transit Alignments

Route	From	To	Headway
Trillium Line 2	Bayview Station	Limebank Station	N/A
#93	Leitrim Station	Greenboro/Hurdman	15-30 min
#222	Blair	Vars	28 min
#294	Hurdman	Findlay Creek	30 min
VIA Rail Corridor	Ottawa	Montreal	N/A
New York and Ottawa Railway Corridor	Ottawa	Tupper Lake, NY	N/A

1.3 Pedestrian Facilities

Table 4 summarizes the existing pedestrian facilities.

Table 4: Pedestrian Facilities

Road	Existing Sidewalks and Paths	Existing Multi-Use Pathway	None	Future Work
Bank Street		X		
Blais		X At Blais and Bank St		
Boundary Road			X	Suggested Route from Boundary Road and Piperville

Road	Existing Sidewalks and Paths	Existing Multi-Use Pathway	None	Future Work
Hawthorne Road	X At intersection Leitrim and Hawthorne			
Leitrim Road	X At intersection Leitrim and Hawthorne			
Mitch Owens			X	Proposed and existing paved shoulder network from Bank St and Mitch Owens to Ramsayville Road and Mitch Owens
Ramsayville			X	Suggested Route from Ramsayville Road and Mitch Owens to Ramsayville and Thunder Road
Piperville			X	Suggested Route from Farmers Way and Piperville to Boundary Road and Piperville
Farmers Way			X	Suggested Route from Farmers Way and Ramsayville to Farmers Way to Piperville
Thunder Road			X	Suggested Route from Ramsayville and Thunder Road to Farmers Way and Ramsayville

1.4 Cycling Facilities

Table 5 summarizes the existing cycling facilities.

Table 5: Existing Cycling Facilities

Road	Spine Route	Paved Shoulder	Cross-Town Bikeway	None	Suggested Route	Future Work
Bank Street	**X** Northbound from intersection at Findlay Creek	**X**	**X** Northbound from intersection at Findlay Creek			
Conroy Road	**X**	**X**				Cycling facility in progress north of Bank St
Hawthorne Road	**X** Northbound from intersection at Leitrim and Hawthorne					
Leitrim Road	**X** From intersection at Leitrim and Hawthorne, west towards Bank St	**X** From intersection at Leitrim and Hawthorne, west towards Bank St				Cycling facility in progress from westbound intersection at Leitrim and Bank St
Mitch Owens	**X**	**X**			Proposed and existing paved shoulder network from Bank St and Mitch Owens to Ramsayville	

Road	Spine Route	Paved Shoulder	Cross-Town Bikeway	None	Suggested Route	Future Work
					Road and Mitch Owens	
Ramsayville				X	Suggested Route from Ramsayville Road and Mitch Owens to Ramsayville and Thunder Road	
Farmers Way				X		Suggested Route from Farmers Way and Ramsayville to Farmers Way to Piperville
Piperville				X		Suggested Route from Farmers Way and Piperville to Boundary Road and Piperville
Thunder Road				X		Suggested Route from Ramsayville and Thunder Road to Farmers Way and Ramsayville

2 Maps from 2022 Official Plan

Figure 3: Active Transportation Network | Annexe C3

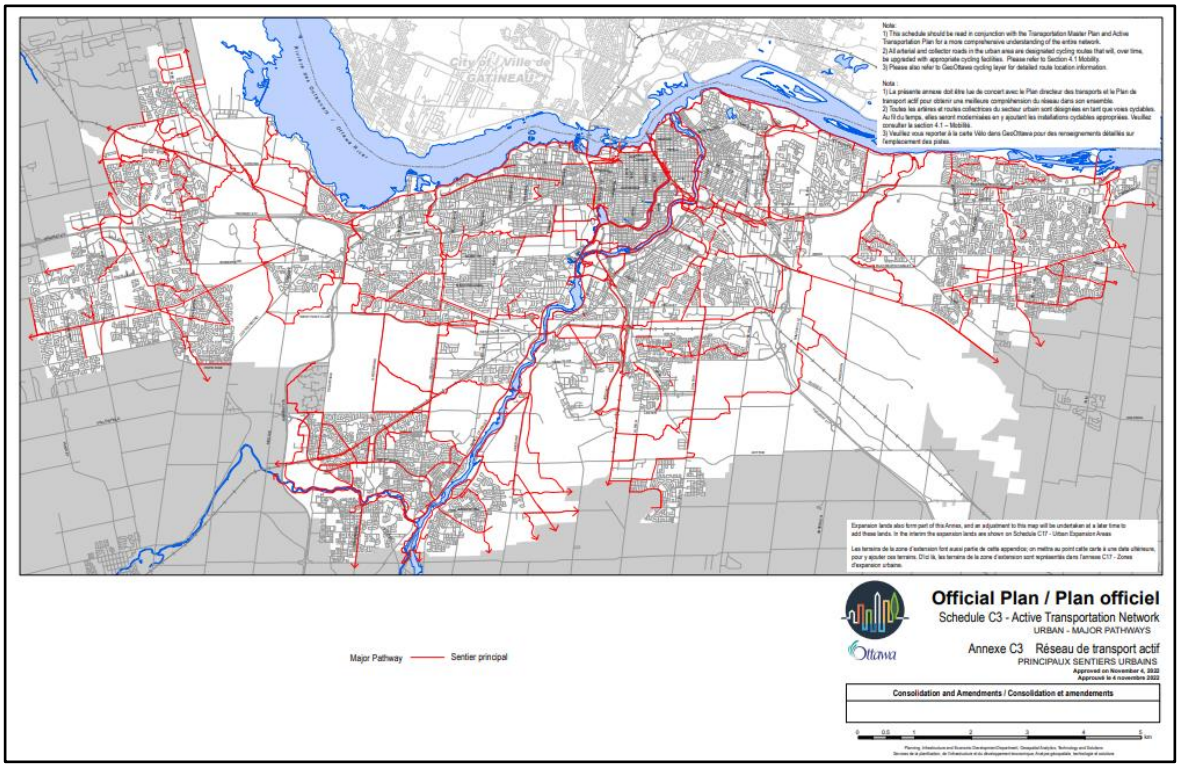


Figure 4: Active Transportation Network RURAL CYCLING ROUTES | Annexe C8

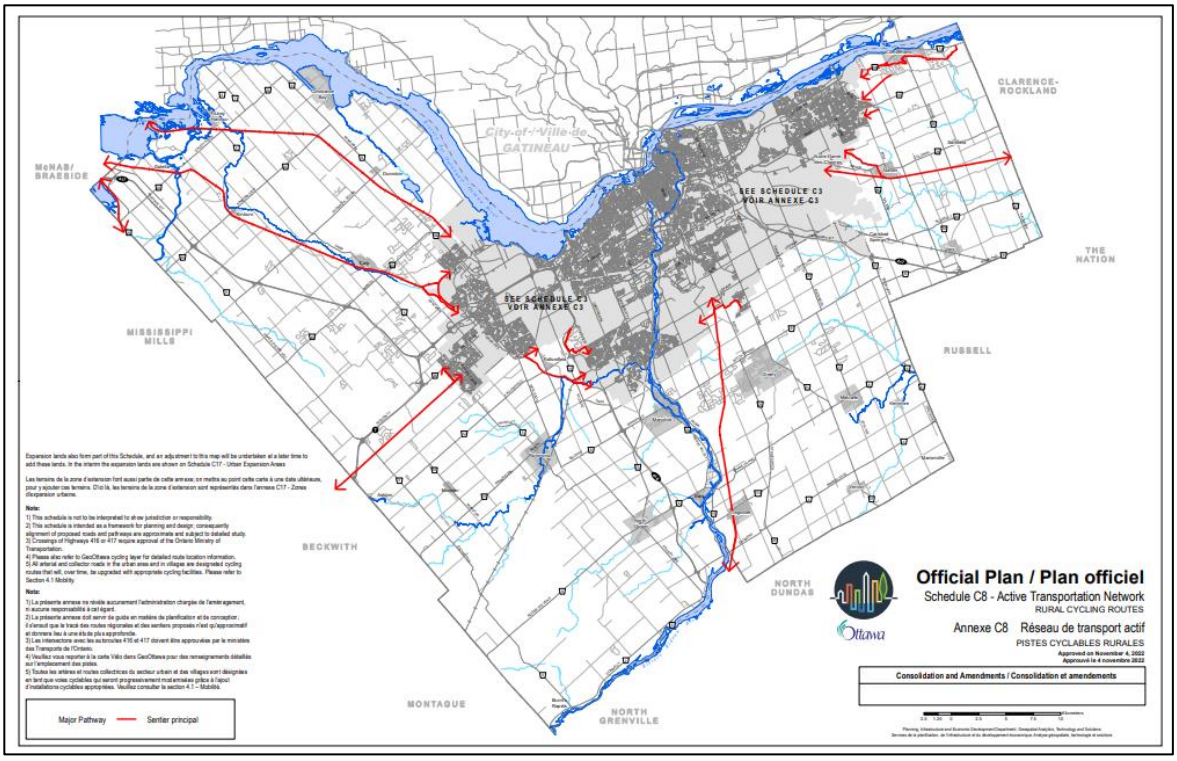


Figure 5: Rural Active Transportation Network - TMP

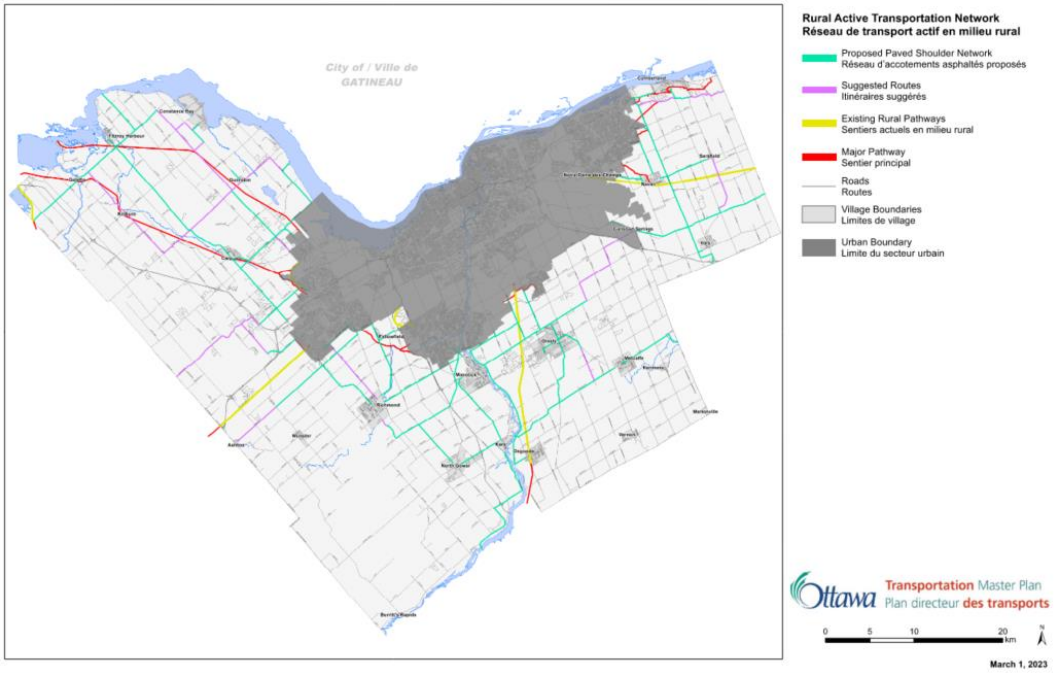


Figure 6: Schedule C17 - Urban Expansion Areas | Annexe C17

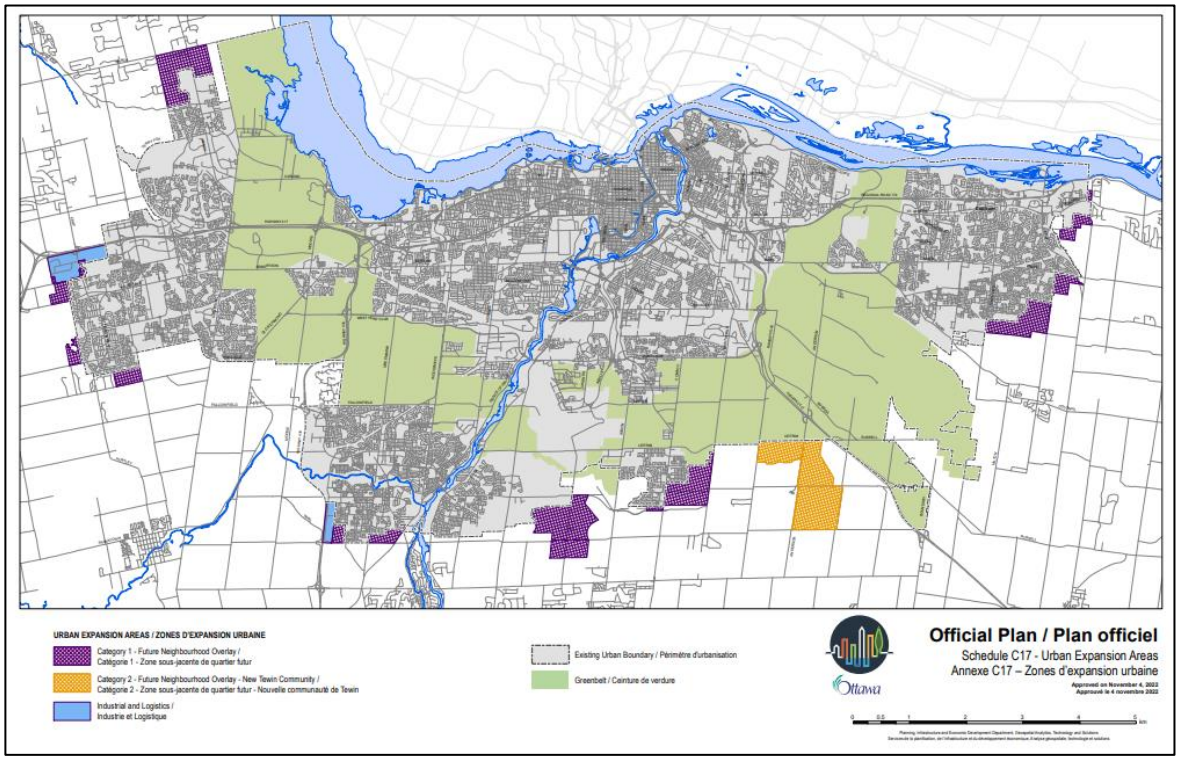


Figure 7: Rural Road Network | Annex C9