EASTERN BRIDGE

IN THE NATIONAL CAPITAL REGION

Planning and Design Principles

Prepared for the National Capital Commission and Public Services and Procurement Canada

National Capital Commission
Commission de la capitale nationale

Public Services and Procurement Canada
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1. INTRODUCTION

The Government of Canada is advancing the planning and design of the Eastern Bridge Project, a new interprovincial transportation corridor crossing the Ottawa River connecting the City of Ottawa and the Ville de Gatineau in the National Capital Region. The project corridor is situated along Montée Paiement and Aviation Parkway between Autoroute 50 in Gatineau and Highway 417 in Ottawa.

1.1 Vision, objectives, and phases

The project is **envisioned to create a transformative new interprovincial crossing of the Ottawa River that prioritizes multi-modal design, public value and stakeholder engagement—leaving a legacy of economic vitality, functionality, and civic pride for the National Capital Region.** Moreover, the new interprovincial transportation corridor is being implemented to achieve the following objectives:

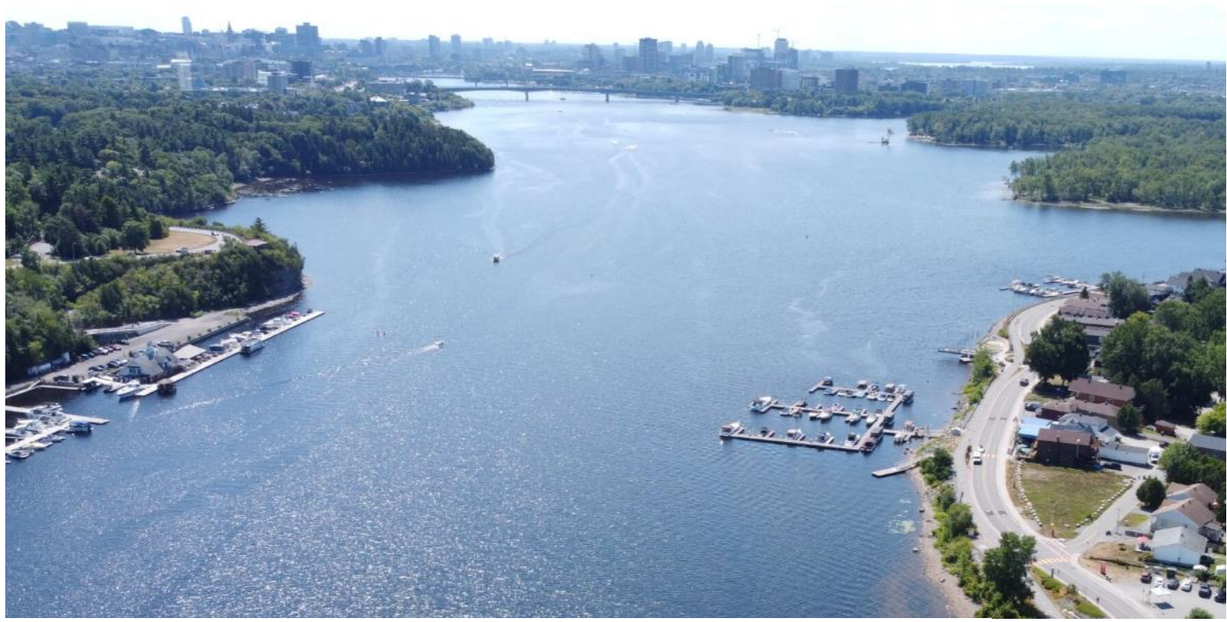
- **Address regional population growth by enhancing interprovincial connectivity aligned with long-term transportation plans.**
- **Reduce downtown truck traffic, improve the public realm and enable urban housing developments.**
- **Support multi-modal transportation by providing additional interprovincial connections for pedestrians, cyclists, and public transit.**
- **Stimulate economic growth while creating jobs and fostering opportunities for collaboration with Indigenous peoples.**
- **Improve network resiliency, facilitating emergency response capabilities during climatic or security-related events and major rehabilitation works on other interprovincial bridges.**

The integrated project team (IPT) responsible for the project is comprised of staff from Public Services and Procurement Canada (PSPC) and the National Capital Commission (NCC). PSPC is the project proponent and responsible for the overall project planning and delivery, which includes the design, procurement and construction of the bridge. The NCC provides support with transportation planning, impact assessment and engagement activities.

The NCC is also the federal planning and coordinating agency for the National Capital Region, its role is to protect the character and national significance of the Capital while striving to improve the Capital experience for residents and visitors. The Eastern Bridge Project is also subject to the federal approval process and requirements under the NCC's federal land use, design and transaction approval (FLUDTA). As the first part of this sequential approval process, this Planning and Design Principles document is subject to the FLUDTA.

The project will be undertaken in four phases as shown in Figure 1. The impact assessment process and the approach to the construction program could influence the implementation timeline.

Figure 1: Project process overview and timeline



Looking west from the future Eastern Bridge general area Source: Adham Badran

1.2 Purpose of this document

This document provides a framework for the planning and design of the corridor to guide the Eastern Bridge Project as it moves into subsequent phases of design development. This framework contains planning and design themes and principles that highlight project commitments and directions shaped by existing plans, policy, standards, engagement, and best practices.

Furthermore, the project corridor, as seen in Figure 2, is divided into segments based on road classifications, jurisdictions and land uses. Unique design opportunities and demonstrative applications are presented for each segment to reflect local context. The design opportunities demonstrate how the principles could be applied at a more granular scale to create a high-quality corridor. Nonetheless, the design opportunities and applications are not prescriptive and will be further developed and adjusted as the Eastern Bridge design process evolves.

This Planning and Design Principles document:

- communicates the intents and purposes of the project as well as the planning and design imperatives and commitments that will inform next design stages.
- provides consolidated information highlighting relevant policies, plans, guidelines and standards as well as context-specific considerations along the corridor.
- establishes design opportunities and potential applications that will be considered and expanded upon as the project progresses through the early design stages.

During the project's planning and design phase, performance criteria will be developed to guide the project toward a FLUDTA. These criteria will be based on existing NCC policy and design guidance as well as project commitments and technical studies, including this document. The performance criteria will contain a more prescriptive list of design requirements focused on the NCC`s regulatory requirements, while leaving the design methodology, style and engineering solutions to the project delivery team. The broader federal regulatory requirements for the project, such as those for the Impact Assessment Agency, will not be included in the performance criteria.

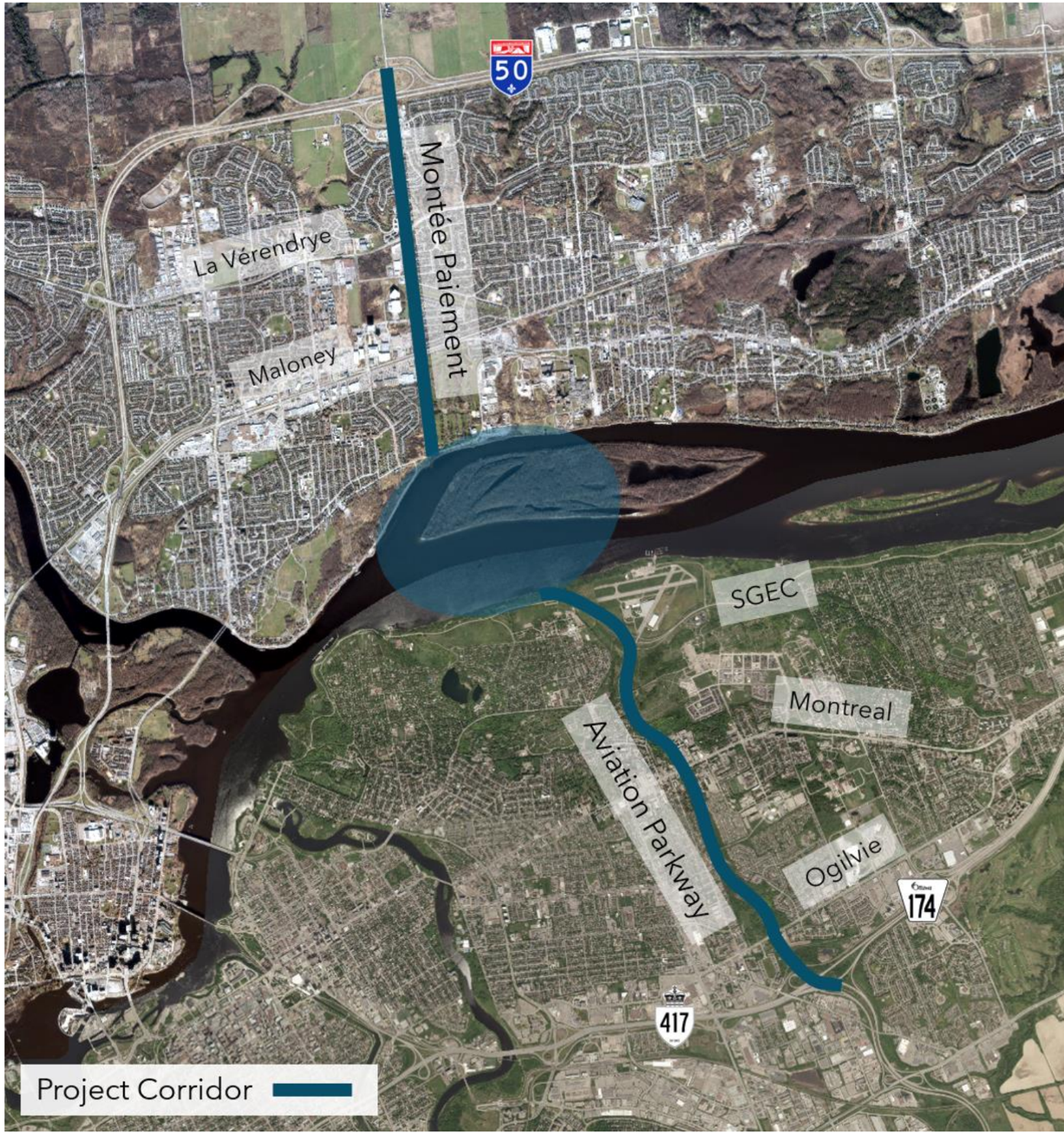


Figure 2: Eastern Bridge Project corridor

1.3 Engagement

Engagement activities undertaken to support the Eastern Bridge Project have informed this document, including engagement conducted prior to the initiation of this study and throughout its development. Feedback received through earlier engagement activities has been considered and, where appropriate, reflected in the preliminary design work and concepts presented herein.

This document was developed through engagement with several organizations and interest groups. These activities were led by the IPT and supported by technical information available at the time and included public outreach through an online survey, public advisory group (PAG) meetings with community representatives and interest groups, and presentations to stakeholders which are on-going. This engagement focused on providing updated information on the project's direction and gathering input to help inform these planning and design principles and themes. Figure 3**Error! Reference source not found.** illustrates the engagement process and key milestones that supported this work.

Figure 3: Overview of project-specific engagement activities

Engagement context and considerations

The National Capital Region is situated on the traditional territory of the Algonquin Anishinabe Nation. This foundational context guides how the project team will plan, design, and deliver this project in Canada's Capital, including a commitment to fostering welcoming public spaces and advancing respectful relationships.

As the Eastern Bridge Project progresses, engagement activities will be undertaken consistent with the Government of Canada's approach and broader reconciliation objectives. This includes early and ongoing dialogue with communities, on a variety of areas of interest. Feedback gathered will be carefully considered and will help inform decision-making and design development during each phase of the project.

Key themes that emerged…

The key themes summarized below represent frequently raised input from the public, PAG meetings, and stakeholders engaged throughout the development of these planning and design principles. Where possible and appropriate, they have been incorporated into the planning and design principles.

Planning and design considerations raised by participants included:

- recognition of important cultural features within the study area.
- integration with future transit, with an emphasis on accommodating higher-order transit over time.
- suggestions to consider potential modifications to the proposed alignment, as well as interest in exploring additional interprovincial crossings west of the downtown core in the longer term.
- clarification of the bridge's primary purpose, particularly the distinction between truck diversion and broader regional connectivity.
- limiting additional vehicle capacity and placing a stronger emphasis on sustainable transportation.
- articulating environmental health more clearly or as a standalone theme.
- a preference for efficient design that supports congestion relief and improved mobility.

Engagement process observations included:

- interest in enhanced approaches to notification and participation, such as mailed notices, additional time for surveys, broader promotion, and increased transparency around how input is considered.
- requests for clearer information on previous studies and analyses completed to date, and how this work informs ongoing decision-making.

Contextual and future considerations raised by participants included:

- interest in how the project could help address existing traffic challenges and improve active transportation (AT) connectivity across the river.
- the need to consider future development pressures and how transportation design could support connectivity and manage increased travel demand.
- questions regarding the financial implications of the project and the nature of commitments associated with advisory group participation

2. PLANNING BACKGROUND

This section provides an overview for the region's interprovincial mobility before looking into transportation planning requirements for the project. Further context is then provided detailing local government stakeholders and their policy directions regarding the accommodation of growth in the coming decades.

2.1 Planning context, regional growth and imperatives

The long-standing human presence in the National Capital Region can be attributed to its geographic location, the meeting point of three major river systems (Ottawa River, Rideau River and Gatineau River). The first interprovincial bridge constructed in the region was over Chaudière Falls in 1828, connecting Hull and Ottawa as they were beginning to grow.

The region's significance as the capital of Canada was being established and planning efforts began to evaluate how the region should grow to serve future needs and showcase the area's natural beauty while enhancing its transportation and goods movement systems. This led to the construction of five additional interprovincial bridges, the last of which being Portage Bridge, which opened in 1973. Since then, the region's population has more than doubled across its three municipalities of the City of Ottawa, the Ville de Gatineau and Les Collines-de-l'Outaouais Regional County Municipality. The National Capital Region's population is expected to increase to 1.9 million people by 2050.

Looking East over the Ottawa River and the National Capital Region's core area Source: NCC

Population has a direct impact on the way in which transportation systems operate and the need for land use and transportation planning integration. The NCC's Long-Term Integrated Interprovincial Crossings Plan (LTIICP), initially approved in 2022 and updated in November 2025, establishes a vision for supporting well-connected sustainable travel options while also respecting the region's natural environment and cultural heritage. As part of the strategic planning process, the following transportation challenges are identified which may be improved or addressed through the Eastern Bridge Project:

- **Goods movement**: Interprovincial goods movement in the National Capital Region is limited to two crossings, neither of which connects directly to the Ontario provincial highway system. Instead, trucks must travel along indirect routes through dense neighbourhoods. This causes challenging truck driving conditions, safety concerns and other negative impacts such as noise, vibration and increased congestion in these areas. A new interprovincial crossing that permits heavy vehicle movements will reduce the truck volume travelling through downtown neighbourhoods.
- **Location of crossings**: Five of the existing six crossings, including a dedicated link for AT, are in the core area. This generates indirect and inefficient travel routes, with tens of thousands of private vehicles passing through the core area daily and unnecessarily. The Eastern Bridge Project is anticipated to reduce the travel time and trip distances for east end trips, making transit and AT modes more attractive.
- **Growth and sustainable transportation**: The LTIICP recognizes that the existing crossings and road networks in the region are at capacity during peak periods in the peak direction, and the projected population growth by 2050 must be accommodated and prioritized through transit and AT modes. The plan supports allocating more interprovincial lanes for transit and high-occupancy vehicles (HOV), particularly in the core area where demand is greatest. To continue encouraging sustainable interprovincial transportation, the total number of lanes as well as those dedicated to transit and HOV must be carefully managed.

In the long term, this project has the potential to support and help accelerate local government's areas of planned growth. These include mixed-use and transit-oriented development nodes, including De La Cité Rapibus station in Gatineau and O-Train stations in Ottawa. Other industrial developments such as l'Aéroparc in Gatineau and adjacent to the Highway 417 corridor in south-east Ottawa could also benefit from additional interprovincial connectivity in the east of the National Capital Region for job access and goods movement.

Transportation planning imperatives

The following transportation planning imperatives have been developed for the Eastern Bridge Project to realize the regional transportation benefits envisioned by the LTIICP while mitigating impacts on surrounding communities and the natural environment.

a. **The new interprovincial crossing of the Ottawa River will be designed to accommodate four vehicle lanes, prioritizing HOV and transit in the peak direction during peak commuter periods. The crossing must additionally accommodate heavy commercial vehicles and provide high quality AT facilities.**

b. **To minimize circuitous travel, particularly important for AT modes, the corridor will seek to provide a direct route across the Ottawa River while respecting environmental, cultural, social and economic interests and minimizing the impacts on the shorelines of the Ottawa River and Kettle Island, including the surrounding lands and views of the Ottawa River.**

c. **According to imperative a above, widening beyond the existing four through lanes on Montée-Paiement as part of the Eastern Bridge Project must align with the LTIICP and relevant stakeholder plans and policies while demonstrating significant benefits relative to environmental, social, and economic impacts.**

d. **According to imperative a above, the corridor within Aviation Parkway must be limited to four through lanes and permit heavy commercial and transit vehicles. The corridor must continue to express its character as a parkway and minimize the footprint of the roadway to maximize opportunities for impact mitigation and improvements to the public realm or natural environments.**

e. **Identify and implement measures to prevent vehicles from accessing the Sir George-Étienne Cartier (SGEC) Parkway from the bridge during peak times.**

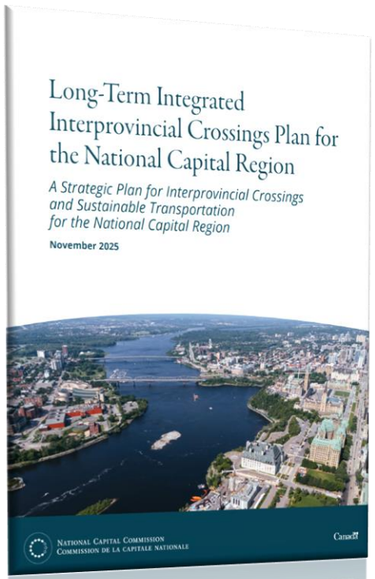
Looking south from Montée Paiement towards the Ottawa River, Kettle Island, and Ottawa Source: Adham Badran

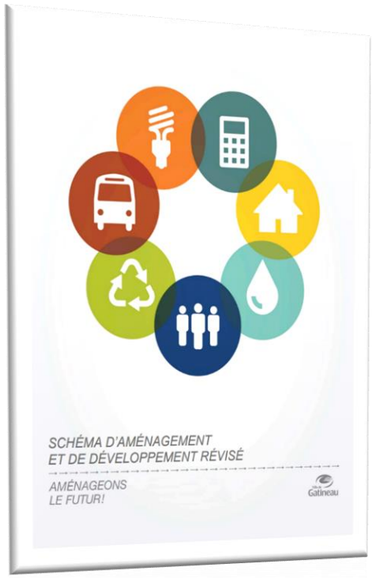
2.2 Stakeholders and existing documents

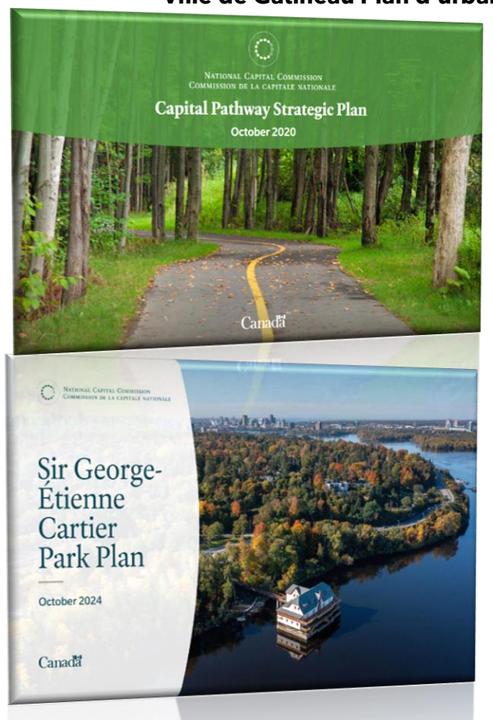
There are several levels of government as well as agencies that have jurisdiction in and around the Eastern Bridge study area, and each is being engaged throughout the project's development. This includes the federal government (including members of the IPT), the provincial governments of Ontario and Quebec, the City of Ottawa (including OC Transpo, its transit agency), the Ville de Gatineau and the Société de transport de l'Outaouais (STO). These organizations have some degree of jurisdiction within the study area and have developed and adopted policies, plans, guidelines and standards that will influence the corridor's planning. Many of these plans also provide guidance on growth in the National Capital Region over the next 10, 20 or 50 years.

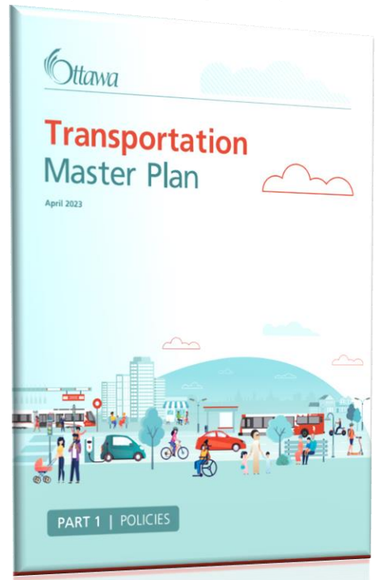
While the following list does not include the broad range of engineering and technical design guidelines and standards that will apply to this project, it offers a summary of some of the most pertinent planning documents which serve as the foundation for this work.

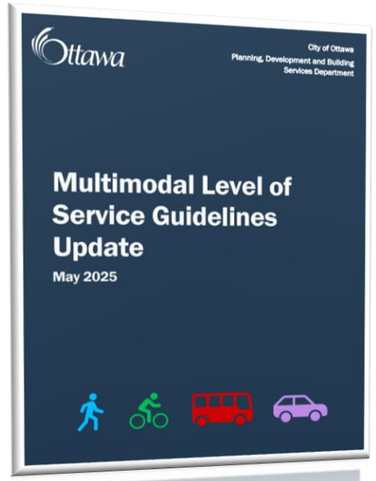
- **NCC Plan for Canada's Capital (2017-2027)**
- **Capital Urban Lands Plan (2015)**
- **NCC Sir George-Étienne Cartier Park Plan (2024)**
- **Cultural Landscape Study (2022)**
- **NCC Capital Pathway Strategic Plan (2020)**
- **NCC Long-Term Integrated Interprovincial Crossings Plan for the National Capital Region (2025)**
- **NCC Accessibility Plan (2023 – 2026)**
- **NCC Capital Illumination Plan (2017)**
- **NCC Sustainable Development Strategy (2023)**
- **NCC Forest Strategy (2021-2026)**
- **NCC Capital Design Guidelines (2023)**
- **NCC Parkway Planning and Design Guidelines (under revision)**
- **City of Ottawa Protected Intersection Design Guide (2021)**
- **City of Ottawa Multi-Modal Level of Service (MMLOS) Guidelines (2025)**
- **City of Ottawa Transportation Master Plan**
- **City of Ottawa Official Plan (2022)**
- **Ville de Gatineau Schéma d'aménagement et de développement (Land Use and Development Plan; 2024)**
- **Ville de Gatineau Plan d'urbanisme (Urban Plan ; 2020)**
- **Ville de Gatineau Plan Stratégique Municipal (Strategic Municipal Plan; 2021)**
- **Ville de Gatineau Plan des déplacements durables (Sustainable Travel Plan ; 2011)**
- **Ville de Gatineau Plan Directeur du Réseau Cyclable (Cycling Plan; 2018)**
- **Ville de Gatineau Route de camionnage (Truck Routes; under revision)**
- **Ville de Gatineau Politique Rues Conviviales (Complete Streets Policy; 2021)**
- **Ville de Gatineau Plan directeur des infrastructures récréatives, sportives et communautaires (2022)**





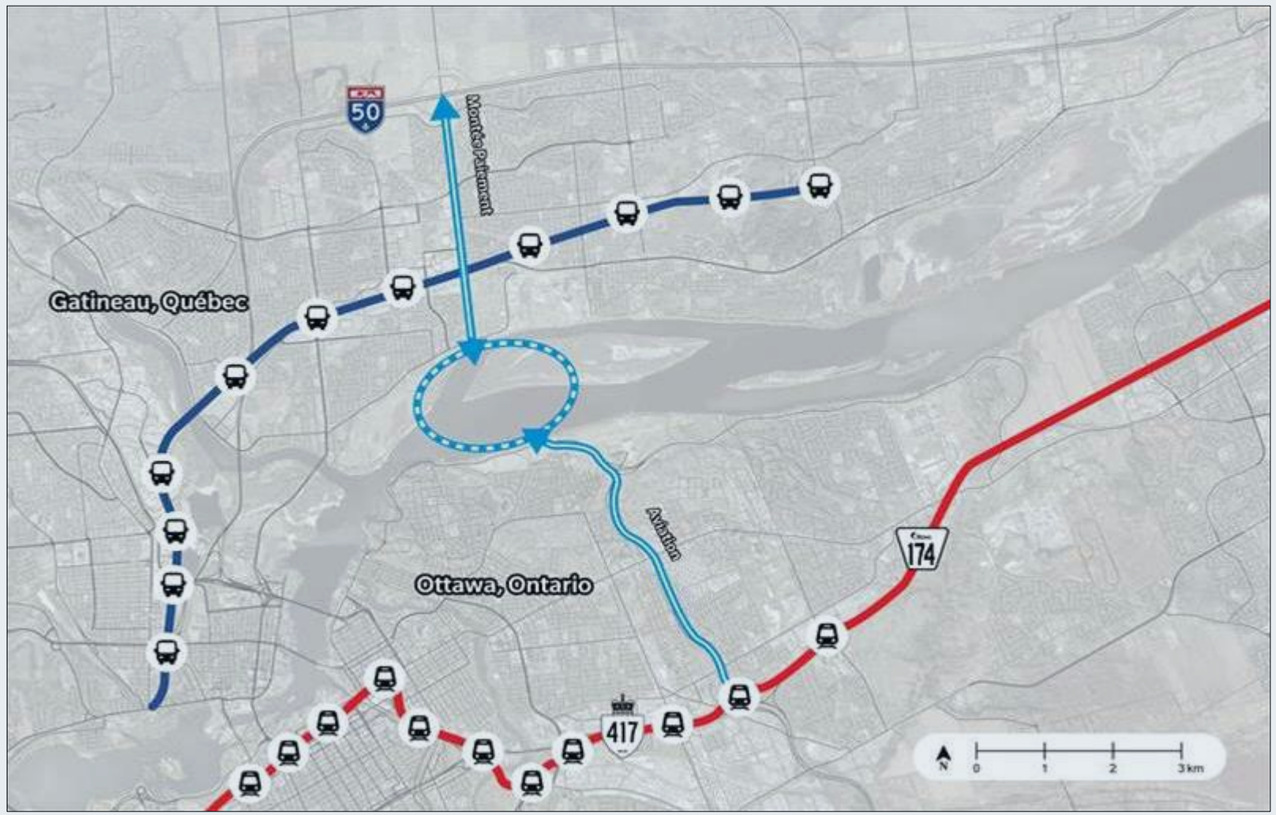






2.3 Corridor and segments

The study area is approximately 11 kilometres long, extending southerly along Montée Paiement from Autoroute 50 in the Ville de Gatineau, across the Ottawa River in the vicinity of Kettle Island and reaching Highway 417/Ottawa Road 174 (OR 174) in the City of Ottawa, through the Aviation Parkway. The corridor is a direct link between the rapid transit corridors of the O-Train in the City of Ottawa and Rapibus in the Ville de Gatineau. An assessment of the Montée Paiement – Aviation Parkway corridor was undertaken considering the land use, community characteristics, existing and future planning framework and transportation features. An assessment identified of five distinct segments, as seen on the right in Figure 4, which are covered in Chapter 4.



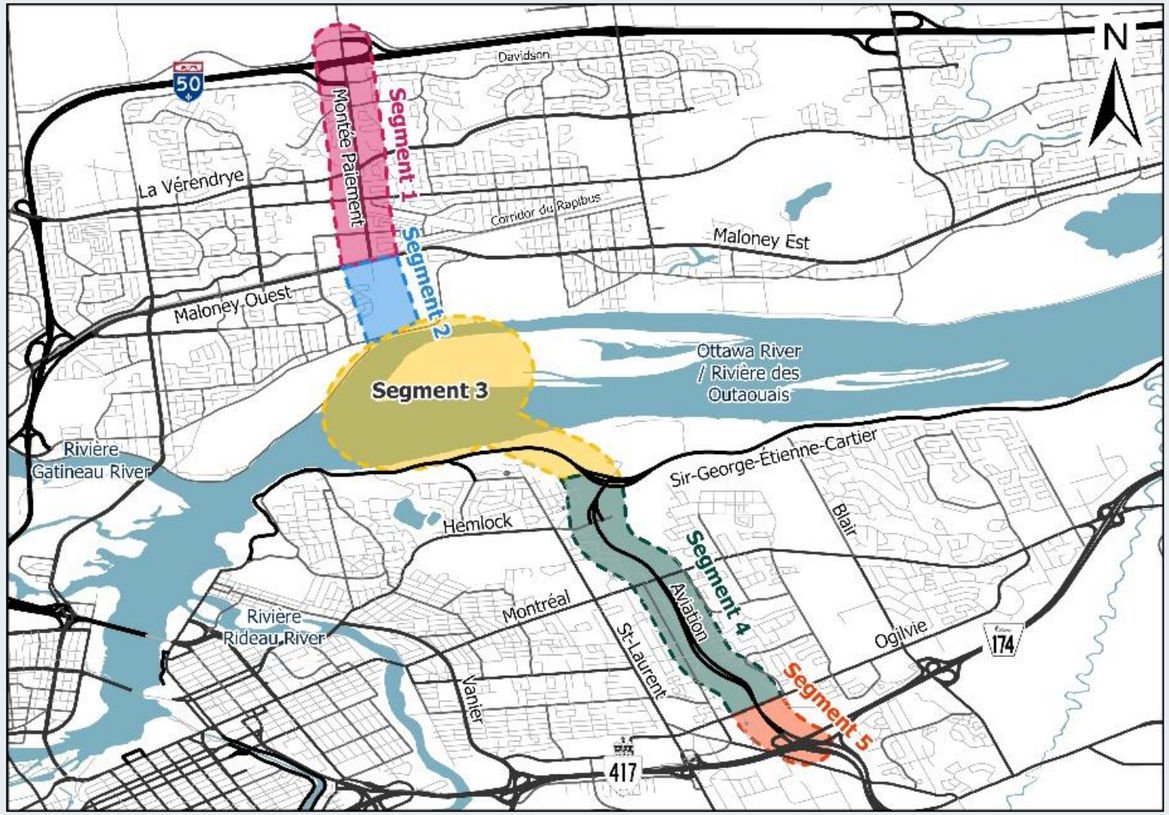


Figure 4: Overview of the corridor, segments, and connectivity to rapid transit corridors

3. THEMES AND PRINCIPLES

3.0 Planning and design principles overview

Planning and design principles, grouped under four broad themes, represent the commitments that shape the desired outcomes of the Eastern Bridge Project.

As summarized in Chapter Two, the principles have been developed based on the existing planning and design framework and guidelines in addition to internal and external consultation with the NCC, PSPC and other stakeholders, interest holders and groups.

Given the variety of contexts and environments along the project corridor, Chapter 4 provides guidance on how these principles could be applied.

As the project progresses, new information, technology, or planning and design practices may emerge, which should be incorporated as needed. This may include future engagement and consultation with stakeholders and audiences in addition to technical and engineering work.

Connected locally and regionally

Sustaintable and resilient

Safe and equitable

Public realm

3.1 Connected locally and regionally

The Eastern Bridge will improve overall connectivity between Ottawa and Gatineau. For goods movement, this crossing will be designed to reroute interprovincial trucking by diverting vehicles not destined for the downtown core.

This new interprovincial crossing should be thoughtfully integrated and connected with the existing transportation system by exploring opportunities along the corridor to optimize connectivity and accommodate mobility needs while encouraging sustainable transportation.

The principles and commitments under this theme aim to ensure that the Eastern Bridge corridor is designed to:

- **ACCOMMODATE INCREASED TRAVEL DEMAND.**
- **PROMOTE EFFICIENT MOVEMENT OF TRUCKS AND GOODS.**
- **EXPAND ACTIVE TRANSPORTATION NETWORKS.**
- **IMPROVE PUBLIC TRANSIT OPERATIONS AND CONNECTIVITY.**
- **ANTICIPATE AND ADAPT TO FUTURE MOBILITY TRENDS.**

Looking north towards SGEC Parkway, the Ottawa River and Gatineau Source: Adham Badran

3.1.1 Accommodate increased travel demand

The LTIICP sets out a vision for the movement of people and goods between Ontario and Québec in the National Capital Region. In 2022, over 35,000 interprovincial trips were made during the average morning peak period. This number is projected to increase by 50 percent by 2050 due to population growth, exacerbating pressure in the peak direction. Vehicular capacity must be managed effectively to encourage a shift toward sustainable mobility. In keeping with the LTIICP and existing municipal plans, the Eastern Bridge corridor will:

1. **PRIORITIZE THE MOVEMENT OF TRUCKS, TRANSIT VEHICLES AND AT MODES WHILE ACCOMMODATING THE MOVEMENT OF ALL VEHICLES.**
2. **PROTECT SURROUNDING COMMUNITIES BY LIMITING VEHICULAR CUT-THROUGH TRAFFIC.**

Portage Bridge, NCR Source: Google Streetview

3.1.2 Promote efficient movement of trucks and goods

The movement of goods in the National Capital Region underpins the region's economy. Currently, only two interprovincial crossings allow commercial vehicles: the Chaudière Crossing and the Macdonald-Cartier Bridge. Both crossings are in the core area, with most trucks using the Macdonald-Cartier Bridge. A key objective of the Eastern Bridge Project is to strengthen regional and interprovincial movement of goods and to relocate truck traffic away from the dense, urban downtown core, which is not conducive to heavy truck movement due residences and commercial buildings fronting closely on city streets. Following the completion of the new interprovincial crossing, the NCC intends to authorize truck access on Aviation Parkway to provide a more efficient and direct route for goods movement not destined for downtown.

In alignment with the LTIICP, the Eastern Bridge Project will:

3. **PROVIDE AN ATTRACTIVE AND CONVENIENT CORRIDOR FOR TRUCK MOVEMENT.**

Montée Paiement looking south near rue Davidson and Autoroute 50 access, Gatineau Source: Adham Badran

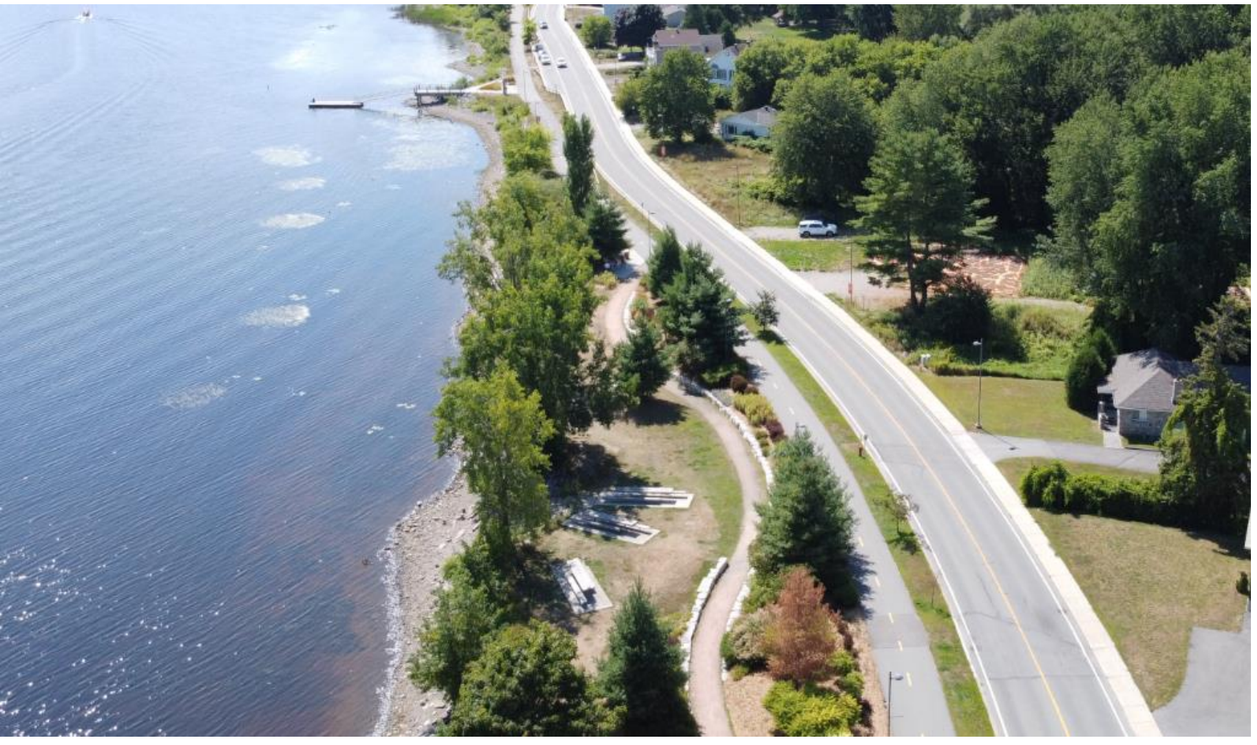
3.1.3 Expand active transportation networks

The project corridor parallels and intersects many existing and planned walking and cycling routes, including the Capital Pathway, la Route verte, and cycling networks of Ottawa and Gatineau. Both municipalities and the NCC aim to expand pedestrian and cycling networks: the NCC LTIICP seeks to strengthen interprovincial AT connections, the City of Ottawa Transportation Master Plan intends to improve and expand the AT network by addressing major barriers such as waterways and highways, and the Ville de Gatineau proposed numerous cycling links that directly connect with the corridor in their *Plan Directeur du Réseau Cyclable (2018)*.

Aligning with existing plans, the Eastern Bridge corridor will:

4. PROVIDE HIGH-QUALITY PEDESTRIAN AND CYCLING FACILITIES.

5. PROTECT FOR FUTURE CONNECTIONS TO THE NEW CORRIDOR TO IMPROVE COHESION IN THE PEDESTRIAN AND CYCLING NETWORKS.



La Route verte and rue Jacques Cartier, Gatineau Source: Adham Badran

3.1.4 Improve public transit operations and connectivity

Transit is a critical component of the region's sustainable transportation system. Numerous public transit trips between Gatineau and Ottawa are facilitated through the rapid-transit and high-frequency routes crossing the Ottawa River in the downtown areas. Both cities have high-order transit service expansion projects, with the O-Train extensions under construction and the planned Tramway Project connecting the west of Gatineau to downtown under review.

All levels of government in the National Capital Region have a shared objective to encourage sustainable mobility in the region. The Eastern Bridge Project is an opportunity for new transit connectivity, including connecting communities east of the Gatineau and Rideau Rivers without transfers downtown.

Aligning with sustainable transportation plans, the Eastern Bridge corridor will:

6. ACCOMMODATE A RAPID (EXPRESS OR LIMITED-STOP) TRANSIT SERVICE TO CONNECT TRANSIT HUBS ON THE EAST SIDES OF GATINEAU AND OTTAWA.

7. SUPPORT EXISTING AND PLANNED STO AND OC TRANSPO TRANSIT SERVICES USING THE CORRIDOR.

STO bus in Ottawa Source: Michel Aspirot/CBC

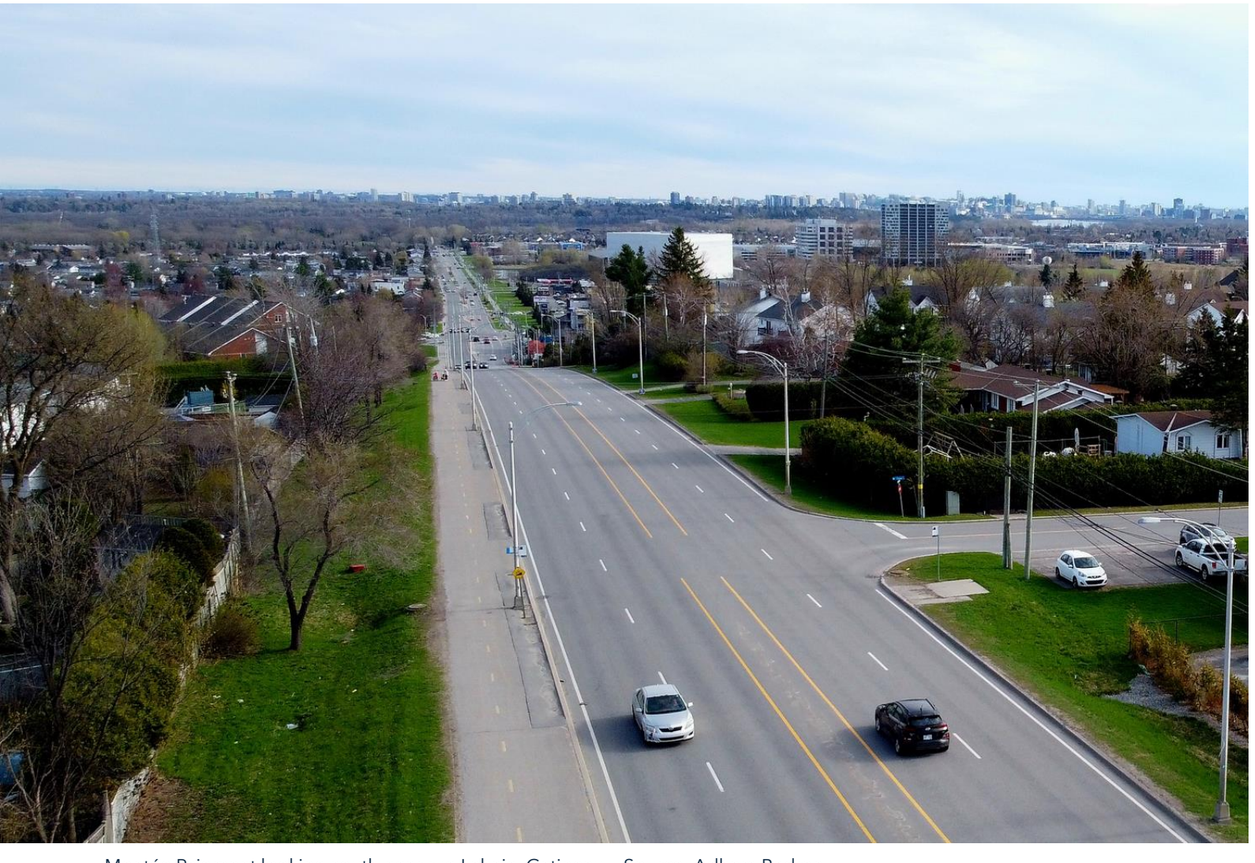
3.1.5 Anticipate and adapt to future mobility trends

Transportation technology continues to evolve at a significant pace. Consequently, the LTIICP outlines initiatives that prioritize reducing greenhouse gas emissions and embracing new mobility options for a more sustainable, efficient and accessible transportation network that is resilient and responsive to change.

The corridor planning and design must prioritize multi-modal travel options and anticipate changes in travel behaviour and technologies that will impact how individuals travel. For example, intelligent transportation systems can include sensors—advanced communication systems to support autonomous cars and trucks which could have significant impacts on movement patterns.

According to the LTIICP, the Eastern Bridge corridor infrastructure will be:

8. DESIGNED TO SUPPORT INNOVATION IN INTELLIGENT TRANSPORTATION SYSTEMS.



Montée Paiement looking south near rue Lahaie, Gatineau Source: Adham Badran

AI-generated rendering of an autonomous truck on a roadway

3.2 Sustainable and resilient

The interprovincial corridor will have a service life which will span decades. Evaluation and decision-making must consider the impacts on natural and environmental features and facets during the lifecycle of the infrastructure.

Infrastructure sustainability is associated with construction activities and materials, interaction with the existing ecosystem, and the capacity to adapt to future needs.

The focus is a resilient transportation facility providing strong function and operation to support climate change targets and community needs.

The principles and commitments under this theme strive to ensure that the Eastern Bridge corridor:

- **IS DESIGNED FOR THE LONG-TERM AND MITIGATES RISK.**
- **MINIMIZES ENVIRONMENTAL IMPACTS.**
- **ADAPTS FOR FUTURE OPERATIONAL REQUIREMENTS.**

Looking south toward Kettle Island and Ottawa Source: Adham Badran

3.2.1 Design for the long-term and mitigate risk

Key decisions during the design stage determine the durability of the infrastructure and facilitate maintenance while considering cost effectiveness. Where possible, the design will comply with the NCC's Sustainable Development Strategy (SDS; 2023–2027), which provides guidance on asset management and risk. Furthermore, the design must be developed to mitigate climate risks on infrastructure and its usage, including but not limited to extreme weather events, seasonal fluctuation of river levels and freeze-thaw cycles. Complying with sustainable development plans and strategies, the Eastern Bridge corridor will:

9. MINIMIZE CLIMATE VULNERABILITY.

10. BALANCE DURABILITY, EASE OF MAINTENANCE AND COST EFFECTIVENESS.

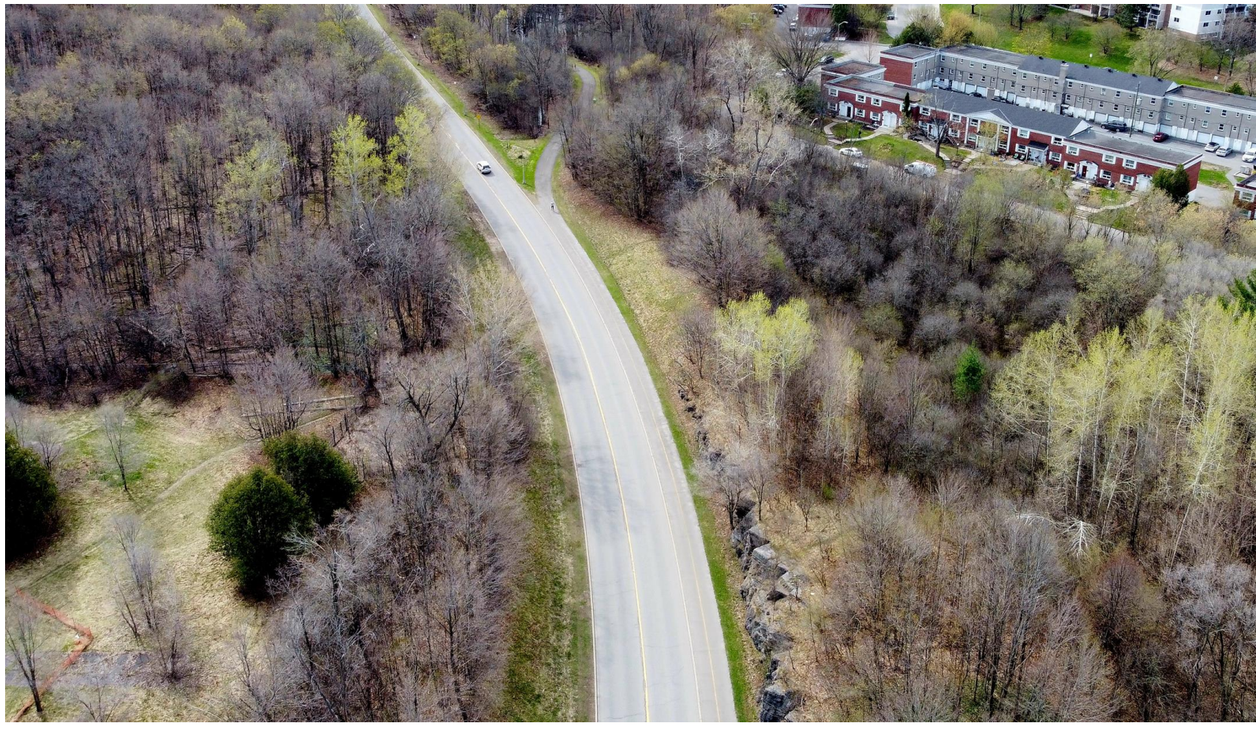
Ottawa River looking west Source: Adham Badran

3.2.2 Minimize environmental impacts

Environmental protection will be part of the process when evaluating and confirming design solutions for the project. Temporary and permanent impacts both need consideration. These include the aquatic, shoreline and terrestrial biophysical environments; species at risk and migratory birds' presence and habitat; vegetation; slope stability; and geotechnical conditions. Although the potential for environmental impact is highest in undisturbed areas, environmental impacts must be considered throughout the corridor through careful planning, design and in construction specifications.

Considering the environmental protection commitments, the Eastern Bridge corridor will:

11. AVOID OR MINIMIZE AND MITIGATE ENVIRONMENTAL IMPACTS.



Aviation Parkway looking south from Hemlock Road Source: Adham Badran

3.2.3 Adapt for future operational demands

The corridor will require rehabilitation throughout its lifecycle. Infrastructure and systems should be in place to minimize impacts to the corridor's core function of moving people and goods during construction. Access management principles and practices should also be prioritized to provide sufficient access to vehicles using the corridor for economic purposes and daily travel. Minimizing impacts to adjacent communities and maintaining the corridor's character must also be a priority when planning for these future conditions.

Considering future operational demands, the Eastern Bridge corridor will be designed to:

12. MAINTAIN CORE FUNCTIONALITY DURING REHABILITATION WORKS.

Highway 417 and Ottawa Regional 174 interchange south of Aviation Parkway Source: Adham Badran

Montée Paiement corridor looking south from Autoroute 50 interchange, Gatineau Source: Adham Badran

3.3 Safe and equitable

Preserving individual, community and societal health and safety is a priority for all levels of government. In the context of transportation and mobility, commitments to safety should provide clear direction and prioritization of quantifiable safety measures for people in addition to influencing factors of the built environment on perceived safety and comfort.

Safety must be balanced and complemented by an understanding of those who are most vulnerable or who require additional support. Equitable treatment means implementing interventions and efforts for those who require or need additional support to facilitate their participation.

The principles and commitments under this theme aim to ensure that the Eastern Bridge corridor:

- **IS DESIGNED FOR PERSONAL SAFETY AND SECURITY.**
- **IS DESIGNED FOR ALL AGES AND ABILITIES.**
- **MINIMIZES IMPACTS TO RESIDENTS.**

SGEC Parkway, Ottawa Source: NCC

3.3.1 Design for personal safety and security

Putting safety first, the corridor should be designed to minimize the risk of collisions and the severity of injuries in the event of a collision. This is particularly important in locations along the corridor where vulnerable road users use the same space as vehicles. Different solutions will be required to reduce potential conflicts along the corridor, including in the design itself as well as through safety reviews. Moreover, the built environment has a significant influence on personal security, and the corridor's new infrastructure should be integrated with the existing environment to align with the principles of Crime Prevention Through Environmental Design (CPTED). Including lighting has been identified as a means of creating safer and more comfortable environments for users with a specific focus on low- to no-light times of the day. The NCC's Capital Illumination Plan (2017–2027) aims to enhance the nighttime environment and visitor experience by focusing on sustainable and safe lighting, particularly given the dark sky designation of the Ottawa River. Based on these ideas, the Eastern Bridge Project will:

13. PROVIDE SAFE AND COMFORTABLE INFRASTRUCTURE FOR ALL USERS, WITH AN EMPHASIS ON PROTECTING VULNERABLE USERS.

Boulevard Maloney and Montée Paiement intersection Source: Adham Badran

3.3.2 Design for all ages and abilities

All ages and abilities (AAA) is an international best practice for implementing facilities and design solutions that are safe, comfortable and equitable for most people no matter their age or ability. To achieve this, the design reflects the needs of vulnerable road users such as young children, older individuals and people with disabilities (e.g. sight loss, using mobility devices, reduced stamina, cognitive disabilities, and hearing loss). Various local standards such as the City of Ottawa's Transportation Master Plan and the Ville de Gatineau's Politiques des Rues Conviviales adopt elements of this approach due to its ability to attract more active users.

Following applicable accessibility standards, the Eastern Bridge corridor will:

14. PROVIDE DIRECT AND BARRIER-FREE ROUTES AND AMENITIES FOR PEOPLE OF ALL AGES AND ABILITIES.

People walking Source: NCC

3.3.3 Minimize impacts to residents

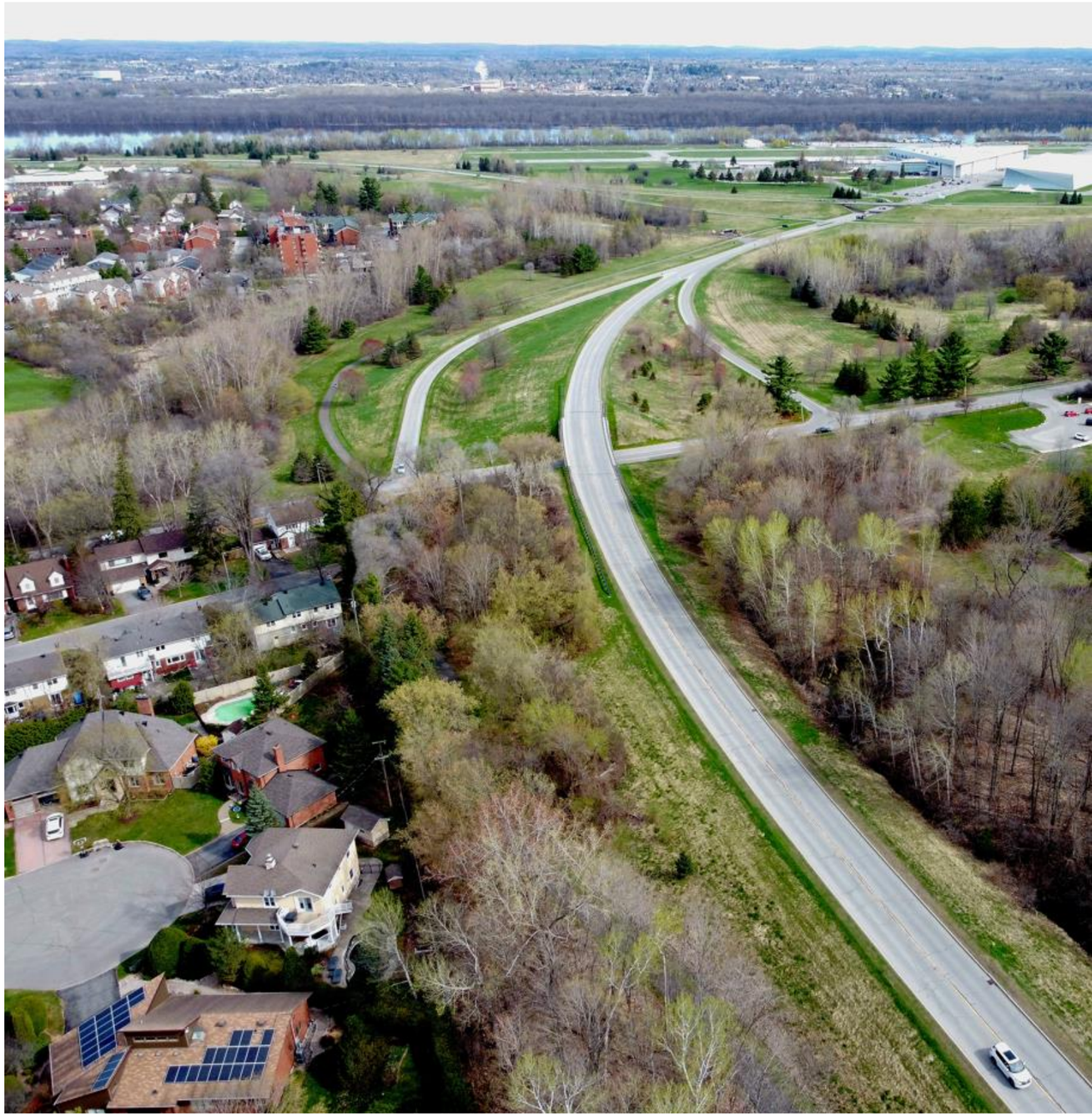
The range of impacts resulting from this project could be positive, negative, intended and unintended. New transportation infrastructure can lead to changes in factors such as noise, air and water quality, lighting and access, which all contribute to human health and quality of life.

These impacts could be experienced differently by individuals, whether they reside in or interact with the corridor. Studying and understanding these differentials is critical to corridor design. The planning and design of the corridor should aim to reduce or mitigate various negative impacts along the corridor and in the immediate areas of the corridor while optimizing benefits and should establish regular communication with those impacted.

To consider differing benefits and impacts, the Eastern Bridge Project will:

15. INCLUDE APPROPRIATE MITIGATION STRATEGIES TO ADDRESS IDENTIFIED IMPACTS TO HUMAN HEALTH.

Residential and commercial properties abutting Montée Paiement, Gatineau Source: Adham Badran



Residential areas in proximity of Aviation Parkway, Ottawa Source: Adham Badran

3.4 Public realm

The Eastern Bridge Project is an interprovincial transportation corridor that links many neighbourhoods and areas within the National Capital Region. Cities are dynamic entities that evolve over time to accommodate new needs while celebrating their heritage.

This theme highlights the importance of integrating the Eastern Bridge Corridor with the existing natural and historic features while creating new opportunities that provide considerable economic and social benefits for individuals and the community.

From this perspective, the principles under this theme highlight the commitment of the Eastern Bridge Project to:

- **ENHANCE PUBLIC REALM AND PLACEMAKING.**
- **ADAPT TO CONTEXT-SPECIFIC CONDITIONS.**
- **RESPECT NATURAL RESOURCES.**
- **CELEBRATE ARCHAEOLOGY, HERITAGE AND CULTURE.**

Ottawa River and shoreline marinas Source: Adham Badran

3.4.1 Enhance public realm and placemaking

The public realm refers to all exterior spaces accessible to the public including but not limited to streets, parks, plazas and other public areas. The Eastern Bridge Project will have a considerable long-term impact on how people interact with space and will be a key part of the built environment. The project has an opportunity to deliver positive public realm impacts to the region, including new spaces created in and along the corridor. The NCC's Plan for Canada's Capital provides guidance on the design of space where form and function meet. Other plans also highlight the need to identify, protect and enhance viewpoints and viewsheds of importance, namely the SGEC Park Plan.

Considering existing plans, the Eastern Bridge corridor will:

16. ENHANCE USER EXPERIENCE THROUGH THE DESIGN OF AN ENGAGING PUBLIC REALM.

Looking west to rue Jacques-Cartier marinas and Quai-des-Légendes Source: Adham Badran

3.4.2 Adapt to context-specific conditions

Fit, scale and context matter. Each segment of the project corridor offers varied complexity and uniqueness in how the built form and natural form exist. The planning and design of the corridor shall merge with existing conditions and claim, confront and surround its context through the concept of context-sensitive design (CSD). The Capital Urban Lands Plan includes directions related to context-sensitive planning that ensure use compatibility and fit.

The Ottawa River is a Canadian Heritage River and along the corridor are other contextually significant features, such as environmental, cultural, social and so on. When identifying context-specific conditions and features, consideration should be given to environment, user demographics, cultural features and the visual impact of the new infrastructure on its surroundings, particularly the bridge. The Eastern Bridge corridor will:

17. INTEGRATE APPROPRIATELY INTO DIVERSE CONDITIONS.

Land use context along Montée Paiement Source: Adham Badran

3.4.3 Respect natural resources

Canada's Capital is known as a picturesque and natural capital achieved through its green space network, waterways and shorelines. These natural assets protect biodiversity, secure ecological corridors and the natural environment, and create links between the Capital green space network and broader ecological networks.

The preservation of natural resources in the National Capital Region and beyond are a priority for environmental health and quality of life. In 2023, the NCC adopted its SDS, which aims to demonstrate national leadership in achieving an environmentally sustainable and climate-resilient National Capital Region by combining the NCC's corporate vision for sustainability with the principles and actions of the Federal Sustainability Development Strategy.

Aligning with sustainable development strategies, the Eastern Bridge Project will:

18. PRESERVE OR INCREASE THE TREE CANOPY WITHIN THE CORRIDOR THROUGH THE USE OF NATIVE PLANTINGS.

Landscape feature Source: NCC

3.4.4 Celebrate archaeology, heritage and culture

The study area and broader National Capital Region have a rich and deep history reflecting the settlement of the land. There are considerable opportunities to highlight the archaeological, historical and cultural features found along or within proximity to the corridor. These can be specific sites where an event occurs or a larger geographic area that represents an element of history that was significant to the establishment of Canada.

Historical and cultural features should be identified, assessed, conserved and enhanced in the immediate study area and its proximity. Additionally, the protocols for co-management of archaeological resources and other requirements should be considered to ensure engagements with Indigenous communities during archaeological assessments and where related project impacts are possible.

The SGEC Cultural Landscape Study has identified and assessed cultural heritage sites in the vicinity including the parkway itself, Ottawa River shoreline, Rideau River, Rideau Hall, Ottawa New Edinburgh Club, Pine Hill, Ottawa Rockcliffe Airport, the pathway and trails system and the Greenbelt terminus. Furthermore, the NCC's Plan for Canada's Capital encourages the provision of opportunities to explore the natural and built environment as well as ongoing awareness and acknowledgement of the potential archaeological needs and impacts that may arise when constructing and maintaining the bridge and corridor.

Aligning with the current plans and priorities, the Eastern Bridge corridor will:

19. ENSURE THAT CULTURAL, ARCHAEOLOGICAL, AND HERITAGE ASPECTS OF THE CORRIDOR AND ITS SURROUNDINGS ARE APPROPRIATELY INTEGRATED.

Some cultural heritage sites in the corridor, including the Ottawa River Source: Adham Badran

4. CONTEXT SPECIFIC APPLICATION

Section overview

The planning and design themes and principles must be applied based on the local context, while striving for continuity throughout the corridor.

The corridor has been divided into five distinct segments based on the local context. The defining features of each segment are documented below, including but not limited to existing and previously planned transportation facilities and services, cultural heritage sites, and environmentally sensitive areas. In response to these features, design opportunities have been identified and presented for each segment of the Eastern Bridge corridor from north to south.

Demonstrative design opportunities will be used as examples to highlight the potential and scale of modifications that may be developed as part of the project and to illustrate how potentially competing principles may be combined to develop a high-quality corridor.

The information presented in this section is intended to provide preliminary concepts to guide the project as it moves into the design phase. The opportunities and demonstrative design applications are neither prescriptive nor comprehensive. However, as the project progresses through design stages, concepts must reflect the planning and design principles for each segment.

Each segment sub-section includes:

- segment limits and context specific conditions and considerations.
- design opportunities including potential applications in specific locations.
- illustration of the design opportunities and their location on the corridor.
- visuals of demonstrative design concepts where applicable, including cross-sections.

Ottawa River and NCC River House Source: Adham Badran

Segment 1 – Context and considerations

This segment spans Montée Paiement from the Autoroute 50 interchange to just north of Maloney Boulevard. Montée Paiement is a municipal four-lane arterial road with an established low-rise urban built environment.

Considerations

- Adjacent lands primarily contain low-rise residential and commercial uses. Direct access from Montée Paiement is provided to these land uses and local streets.
- Connection to the provincial Autoroute 50 is provided. A new northbound to eastbound on-ramp north of Davidson Street is planned by the Ministère des transports et de la mobilité durable (MTMD) to replace the current configuration.
- Existing truck routes intersect the corridor on Saint-René Boulevard and La Vérendrye Boulevard.
- Major AT linkage is crossed at La Vérendrye Boulevard.
- Intensification and increased mix of land uses are planned along Montée Paiement.
- The National Archives and Library Preservation Centre is a cultural heritage landscape due to the building's modern character and surrounding wetlands.
- The lands surrounding the National Archives and Library Preservation Centre are environmentally sensitive due to the presence of species at risk.

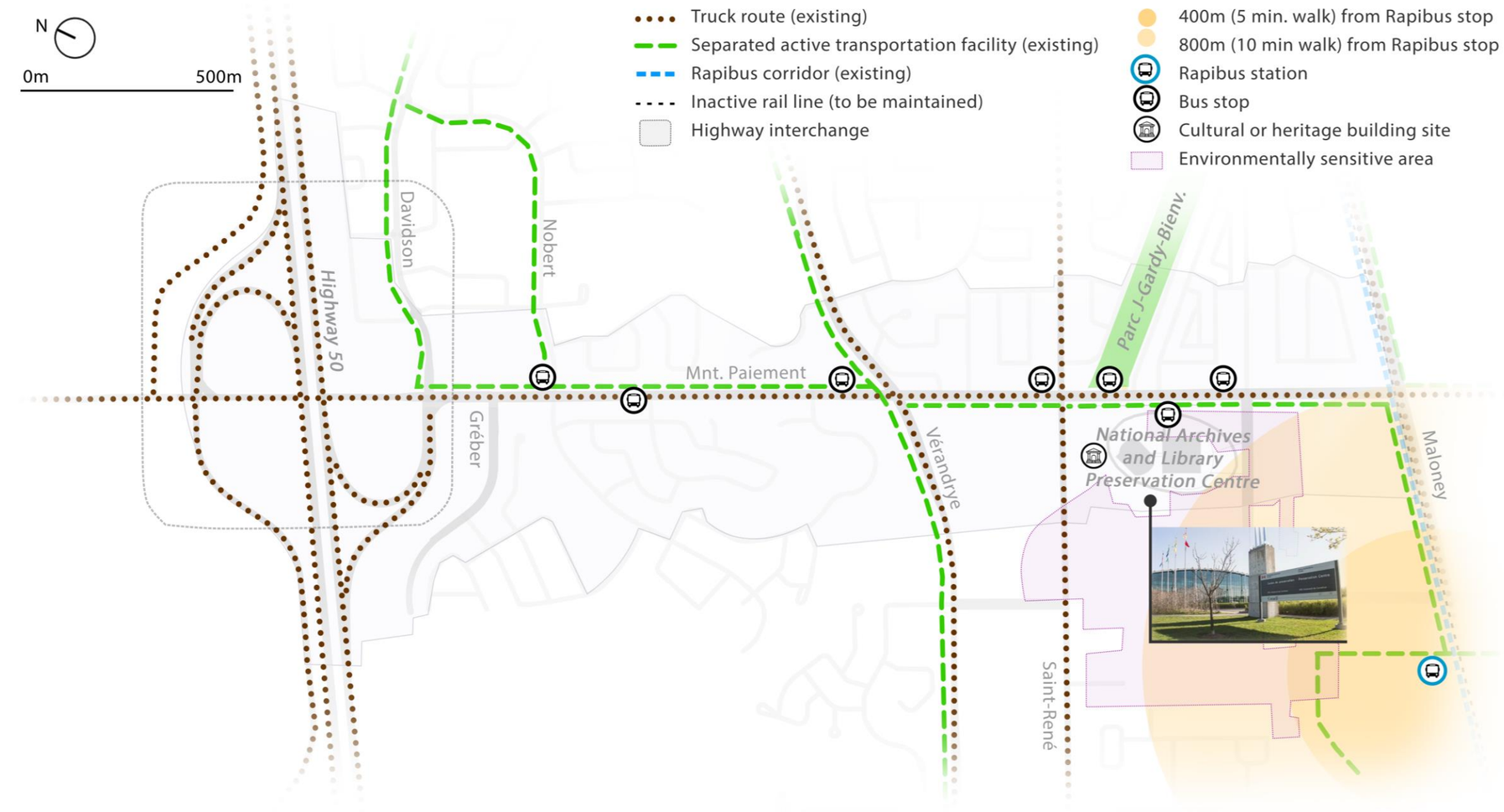


Figure 5: Segment 1 context and considerations

Segment 1- Demonstrative design opportunities and applications

Connected locally and regionally

- **Adapt the Autoroute 50 interchange to future corridor demand by:**
  - widening the existing bridge over Autoroute 50 to two lanes per direction.
- **Reduce conflicts for all road users by reducing the number of potential conflict points on Montée Paiement by:**
  - implementing a window street for blocks containing residential frontage.
  - closing direct vehicle access to local roads with modifications to accommodate diverted traffic.
  - limiting access to a right-in, right-out only at some intersections.
- **Improve AT connectivity along and connecting to the corridor by:**
  - providing dedicated pedestrian and cycling facilities.
  - enhancing safety, comfort and accommodation of vulnerable road users at intersections.
  - increasing corridor permeability with additional pedestrian crossings.
- **Facilitate commercial goods movement along the corridor and at intersections with truck routes.**
- **Provide transit infrastructure to support sustainable mobility by:**
  - reviewing bus stop locations to coordinate transit service with pedestrian access.
- **Optimize intersection operations to provide acceptable levels of service for all modes by:**
  - adding turn lanes to accommodate increased demand and separating AT movements.
  - incorporating transit queue jump lanes or transit signal priority measures where justified to reduce delays.

Sustainable and resilient

- **Use existing roadways and bridges instead of constructing new infrastructure by:**
  - using/rehabilitating elements of the existing Autoroute 50 interchange, where possible.
- **Construct new infrastructure to be durable and sustainable by:**
  - using high quality and durable materials and elements to reduce long-term maintenance costs.
  - using green building practices in construction.
  - minimizing encroachment of new infrastructure onto the existing stormwater management pond at the Gatineau Preservation Centre.
- **Design new infrastructure for efficiency during construction by:**
  - using prefabricated elements where possible.
  - allowing for traffic staging that minimizes detours.

Safe and equitable

- **Increase separation between vulnerable road users and vehicular traffic by:**
  - providing dedicated pedestrian and cycling facilities on both sides of Montée Paiement.
  - providing ample boulevard space between active users and motor vehicles.
  - physically or temporally separating AT users from turning vehicles at intersections.
  - consolidating access to adjacent properties and local streets to reduce potential conflicts.
- **Reduce and mitigate impacts on residents by:**
  - including noise attenuation measures where required.
  - avoiding barriers that eliminate permeability.
- **Accommodate AAA in the corridor by:**
  - adjusting the profile for AT modes to reduce grades north of la Vérendrye Boulevard.
  - adding rest areas at intersections (at least one per street side) and throughout the corridor at intervals.
- **Maintain or increase access to cultural landscapes and reduce impacts to these landscapes by:**
  - maintaining the existing wetlands surrounding the National Archives and Library Preservation Centre.

Public realm

- **Increase access to public spaces and amenities adjacent to and along the corridor by:**
  - providing additional connectivity to desirable destinations including Parc Jean-Gardy-Bienvenu, commercial land uses and neighbourhoods.
- **Increase the urban tree canopy by:**
  - planting trees or vegetation and enhancing streetscape at key placemaking locations, including but not limited to both sides of Montée Paiement between Autoroute 50 and la Vérendrye Boulevard, and at the intersection of Parc Jean-Gardy-Bienvenu and Montée Paiement.
  - planting urban and salt-tolerant vegetation with a preference for species of native seed stock.

Segment 1- Demonstrative design opportunities and applications

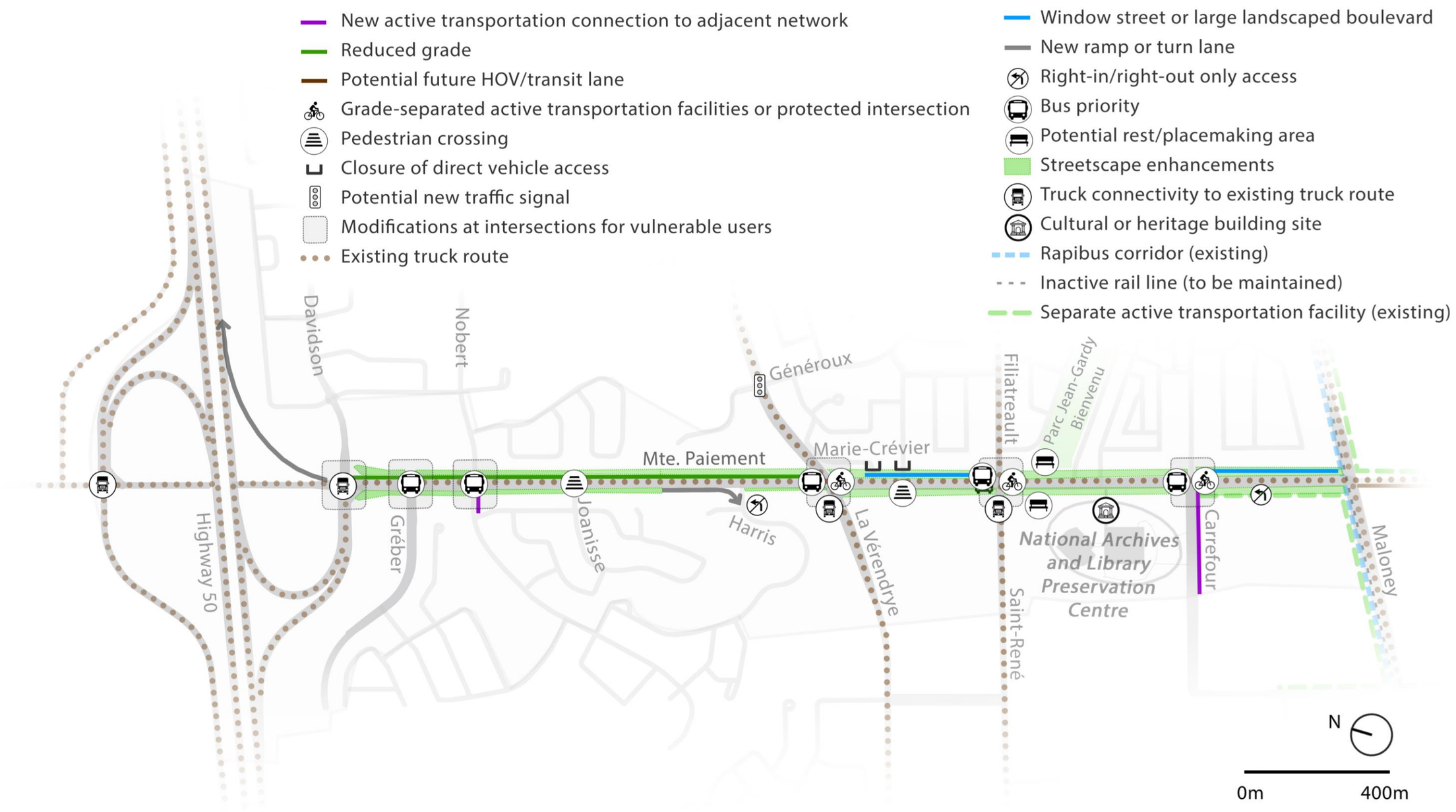


Figure 6: Segment 1 demonstrative design opportunities and applications

Segment 1- Demonstrative Design Concepts

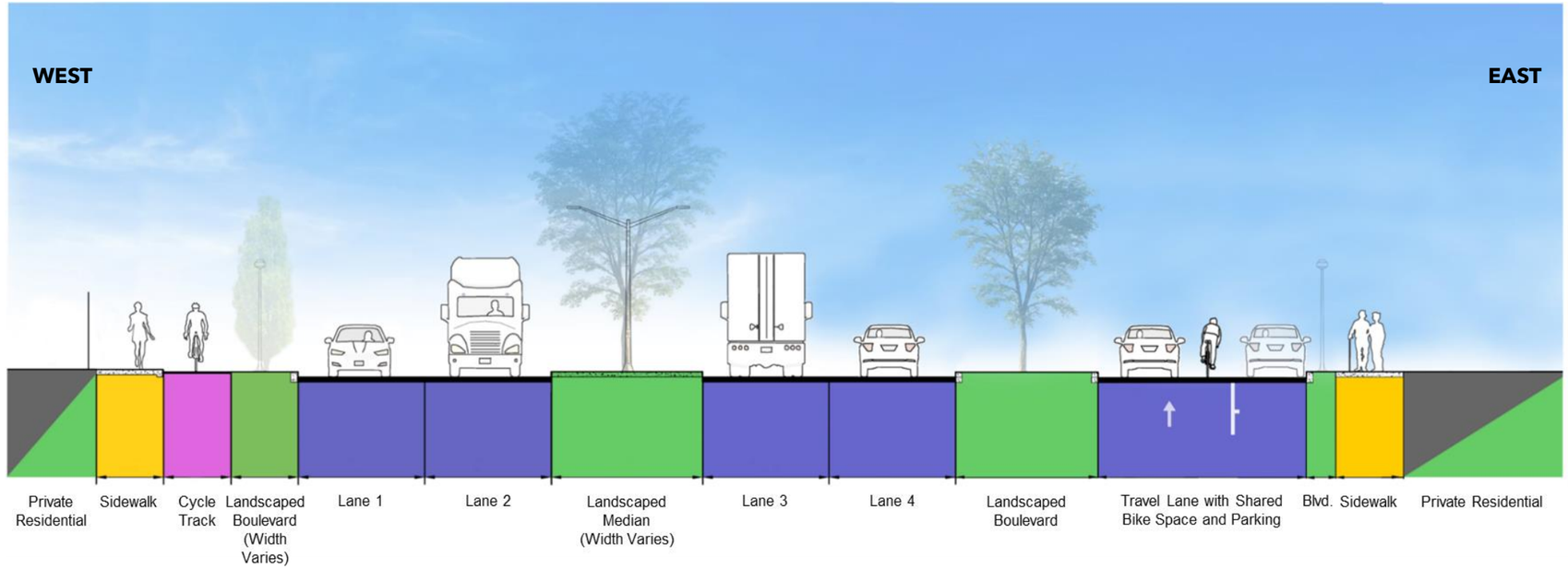


Figure 7: Segment 1 design concept option 1: frontage road (window street)

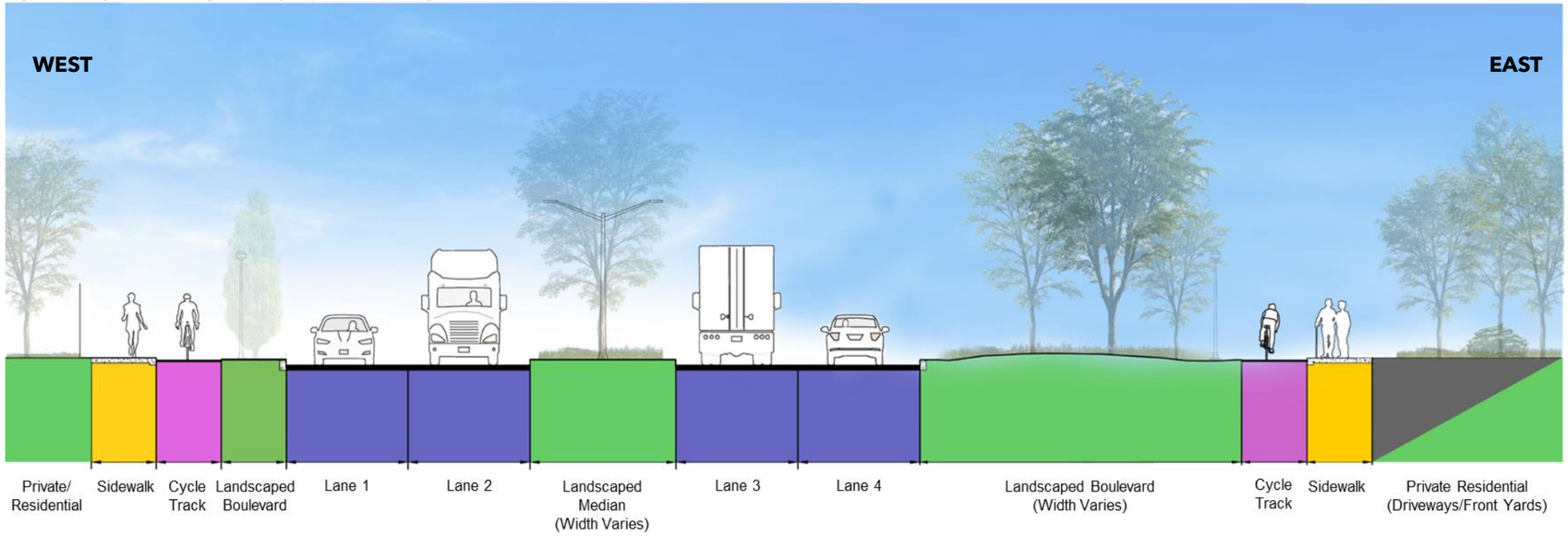


Figure 8: Segment 1 design concept option 2: larger landscaped boulevard

For Segment 1, two demonstrative design concepts have been developed to highlight how alternatives could be developed within the planning and design principles framework. Both assume the existing road is shifted to the west to accommodate new features within the existing right of way.

Option 1- frontage road (window street)

- All residential vehicle access would be shifted to a new parallel one-way local street, reducing the number of vehicle accesses on Montée Paiement. This would shift interactions between vehicles and vulnerable road users to a slower-speed environment and reduces conflicts along the corridor.
- A noise barrier between the new local street and Montée Paiement could be considered to protect residents from noise impacts, but additional measures would be needed to maintain a feeling of safety for users without creating a barrier in the community.
- Northbound cyclists would be separated from high traffic volumes on Montée Paiement, either in mixed traffic along the local street (shown) or in a continuation of the cycle track.

Option 2- larger landscaped boulevard

- A wide landscaped boulevard would offer significant planting opportunities, providing shade and wind protection for pedestrians and cyclists and aesthetic screening from the busy corridor for adjacent properties.
- The wide boulevard could be designed to allow vehicles accessing local properties to enter and exit Montée Paiement in a forward manner, improving visibility and reducing the potential for conflicts.
- Physically protected cycle tracks and sidewalks would be provided consistently in both directions.

Segment 2 – Context and considerations

Montée Paiement transitions from a major intersection at Maloney Boulevard / Rapibus corridor southerly to a local street, then a multi-use pathway (MUP) to Saint-Louis Street. The transitioning transportation corridor and the greenspace along the MUP and adjacent golf course distinguishes it from the segment to the north.

Considerations

- Right-of-way protection exists for an interprovincial crossing south toward Ottawa River.
- Adjacent lands contain low-rise commercial and low-rise residential land uses to the west and a golf course to the east.
- The at-grade intersection with Maloney Boulevard and Rapibus corridor terminates Montée Paiement as an arterial road, resulting in high turning volumes and trucking activity.
- Rapibus corridor crosses the project corridor, connecting eastern Gatineau to downtown Ottawa via exclusive bus lanes.
- A railway line runs east-west along the Rapibus corridor, which must remain accessible.
- De La Cité Rapibus Station is a major hub for transit services, approximately 700 metres west of the segment.
- Transit-oriented mixed-use community is planned for the area surrounding De La Cité Station, including mixed-use hubs at the Maloney Boulevard intersection.
- A short local segment of Montée Paiement provides truck access to a large commercial parcel as well as on-street parking before terminating in a cul-de-sac.
- A MUP corridor connects the southern end of Montée Paiement with Saint-Louis Street and la Route verte parallel to Jacques-Cartier Street.
- No pedestrian/cycling access is currently provided to the adjacent residential neighbourhood.
- The detached dwelling at 571 Saint-Louis Street is a built heritage resource recognized for its architectural features.
- Greenspace at the Tecumseh Golf Club and la Route verte is present, including a known western chorus frog critical habitat.
- Archaeological potential sites are identified along the existing MUP corridor by the Ville de Gatineau.

Figure 9: Segment 2 context and considerations

Segment 2 – Demonstrative design opportunities and applications

Connected locally and regionally

- **Accommodate future interprovincial travel demand by:**
  - designing lanes with sufficient width to contain a dedicated transit/HOV lane in the peak direction during peak periods.
- **Improve connectivity to existing AT facilities by:**
  - connecting la Route verte to the new Eastern Bridge and improving the AT link between Saint-Louis Street and Maloney Boulevard.
- **Enhance transit access and service by:**
  - providing grade separation of the Rapibus corridor at Maloney Boulevard.
  - providing a direct transit connection between the new Eastern Bridge and the Rapibus corridor.
- **Reduce conflicts and delays for users on Montée Paiement by:**
  - providing a right-in, right-out only to access the commercial property south of Maloney Boulevard.
- **Improve operations at the intersection of Maloney Boulevard and Montée Paiement by:**
  - providing grade separation of AT and transit infrastructure.
  - providing sufficient capacity to accommodate interprovincial demand by all modes.

Sustainable and resilient

- **Provide sufficient space on and under the new bridge to accommodate future demand by:**
  - accommodating potential future separated pedestrian and cycling facilities for la Route verte.
  - providing a structure design that allows flexibility for future improvements to the bridge structure.
- **Mitigate the effects of climate change by:**
  - designing the road profile to be resilient during seasonal flooding of the Ottawa River.
  - considering wind effects in proximity to the Ottawa River when designing AT facilities and public space.

Safe and equitable

- **Design for AAA and separate modes where possible for the new roadway and bridge approach by:**
  - designing longitudinal gradients to be no more than five percent for AT facilities.
  - separating pedestrians and cyclists.
- **Provide additional AT connections to and from the new roadway and bridge by:**
  - exploring a connection between Pointe-Gatineau and la Route verte / bridge approach.
  - improving existing at-grade crossings such as la Route verte crossing at Saint-Louis Street.
- **Increase AT safety through the Maloney Boulevard at Montée Paiement intersection by:**
  - including protected intersection elements or grade separation of existing and new facilities.
  - providing a new AT facility to directly connect the corridor with existing facilities.
- **Minimize and mitigate impacts to residents abutting the new roadway and bridge approach by:**
  - landscaping the roadway from the Pointe-Gatineau neighbourhood while considering noise and visual impacts to residences.
- **Provide space for equitable access by all modes to the new roadway and crossing by:**
  - providing dedicated space for Transit and HOV by time-of-day requirements.

Public Realm

- **Provide additional public space to animate the area by:**
  - leveraging the green space and surrounding natural areas for public spaces and placemaking.
  - providing enhanced furnishings and structures to access and appreciate surrounding landscapes.
  - identifying and acknowledging culturally significant features and Indigenous history.
- **Ensure that all facilities remain accessible year-round by:**
  - considering winter maintenance requirements, including snow management areas, to maintain access to la Route verte.
  - landscaping to provide shade to the AT facilities along both the southwest and southeast edges of the pathway(s) to maximize sun protection.
- **Prioritize sightlines to natural areas and the Ottawa River by:**
  - preserving existing sightlines and vantage points where possible.
  - providing new viewpoints made possible by the new roadway and bridge approach.
- **Protect the native flora and fauna in natural areas surrounding the segment and seek opportunities for additional native plantings.**

Segment 2 – Demonstrative design opportunities and applications

Figure 10: Segment 2 potential design opportunities and applications

Segment 2 – Demonstrative design concept

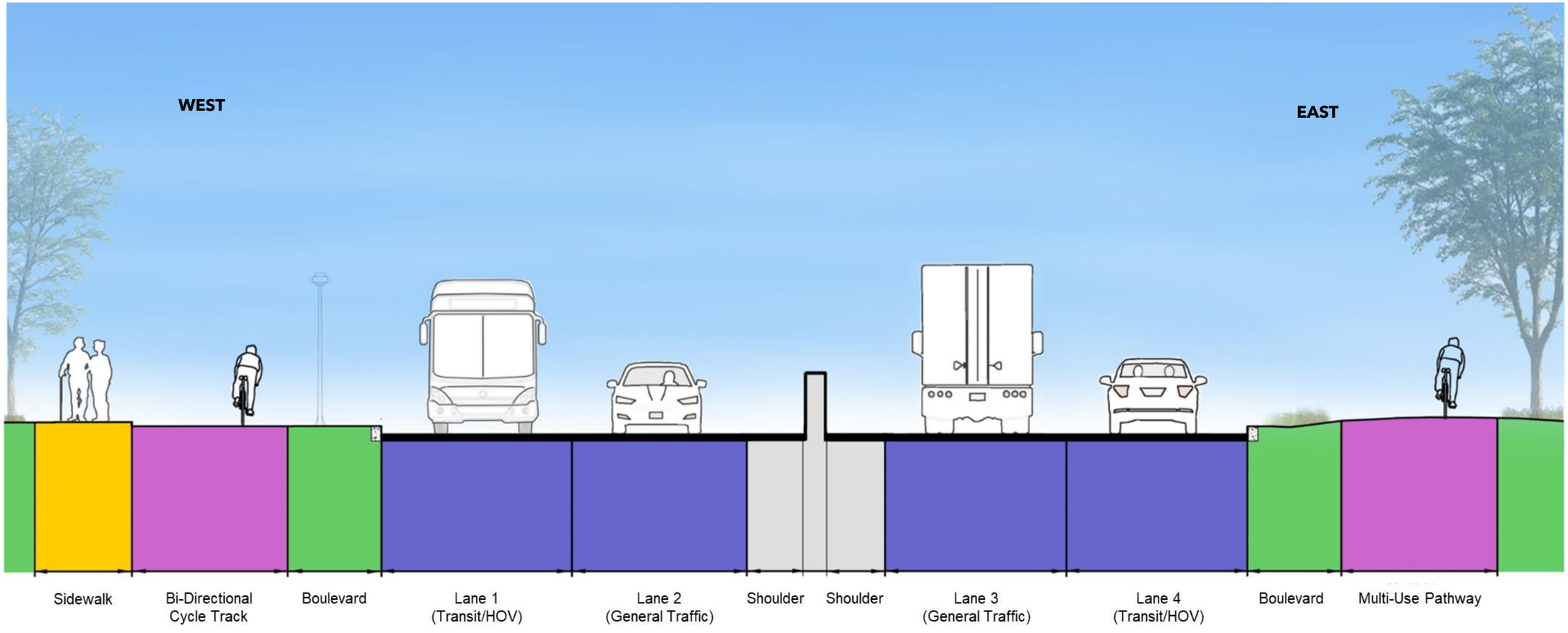


Figure 11: Segment 2 design concept

For Segment 2, a single demonstrative design concept is presented but remains flexible as the design process progresses. The following are highlights of how the themes and principles could potentially be realized in this application:

- Transit/HOV lanes to facilitate fast and reliable transit service during peak commuter periods.
- Bi-directional sidewalk and cycle track on the west side to provide a connection to the existing AT network and the new bridge, and MUP on the east side for additional connectivity to la Route verte.
- Landscaping next to the MUP to provide sun and wind protection and visually screen the adjacent neighbourhood.

Segment 3 – Context and considerations

This segment includes the new interprovincial bridge, and spans from Saint-Louis Street to the intersection of the SGEC Parkway and Aviation Parkway. The Ottawa River and the shorelines on either side have significant ecological, landscape and cultural heritage value and form an interprovincial border, while the interprovincial boundary line is south of Kettle Island.

Considerations

- The Ottawa River is a Canadian Heritage River and is an important ecological, historical and recreational feature in the National Capital Region.
- All of Segment 3 is considered an environmentally sensitive area.
- Shorelines on both sides of the river form part of the NCC's National Interest Land Mass (NILM) and have recognized viewpoints.
- Kettle Island is a privately owned nature reserve, is a NILM with ecological and heritage significance, and contains a registered archaeological site. It is inhabited by species at risk and offers opportunities for scenic views.
- Several cultural heritage landscapes are present along the Ottawa shoreline including SGEC Parkway, Aviation Parkway, Ottawa Rockcliffe Airport, the Canadian Aviation and Space Museum (CASM), and the RCMP National Division Campus and Musical Ride. The manicured landscape, Capital Pathway, topography and scenic views characterize this area.
- La Route verte and the Ottawa River Pathway line the shorelines, providing connections to the broader municipal and NCC AT networks.
- A Ville de Gatineau potable water intake is on the north shore of Kettle Island.
- Public water access is provided at Quai-Belle-Isle, the NCC River House, and Rockcliffe Yacht Club.
- The NCC River House is a recognized federal heritage building.

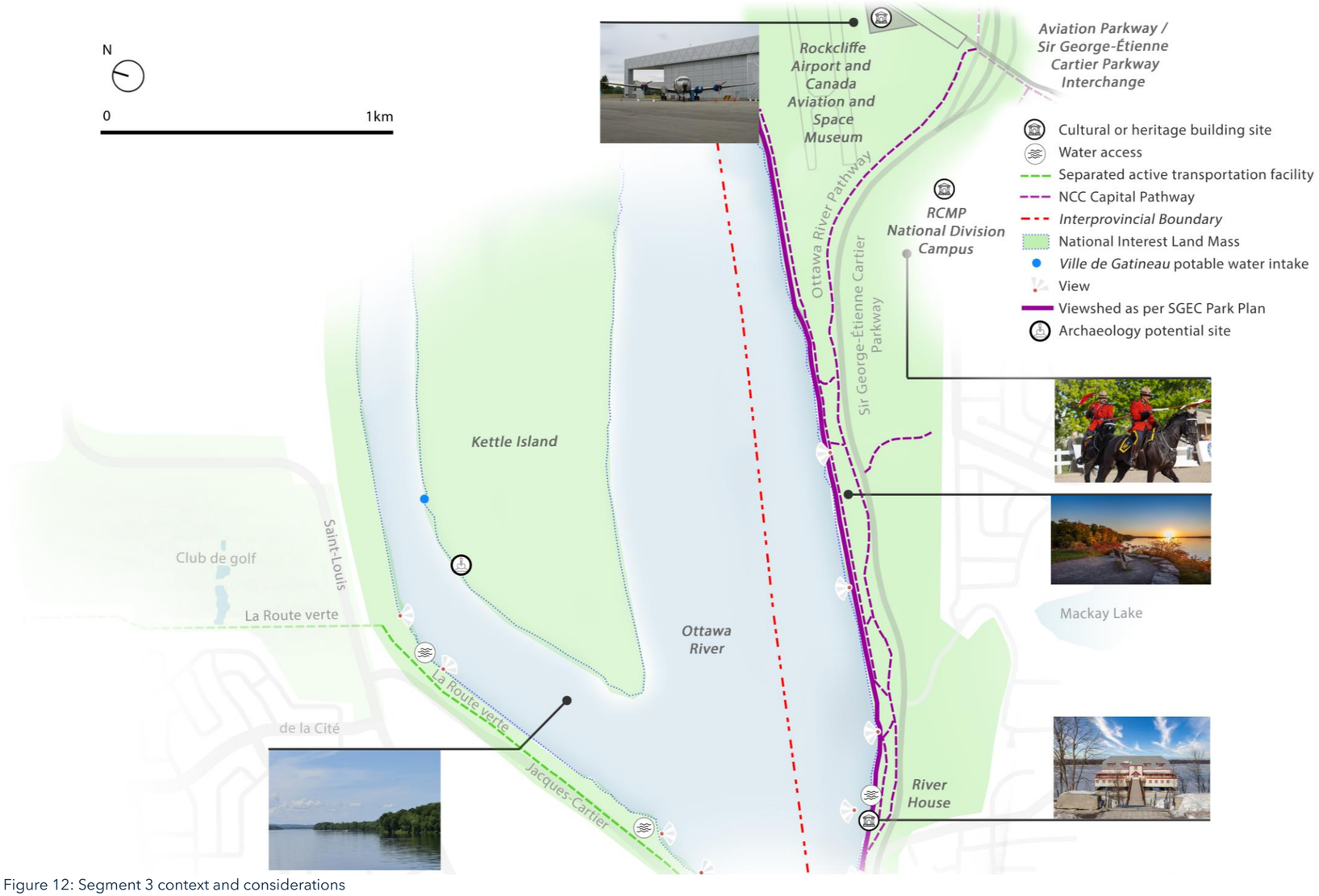


Figure 12: Segment 3 context and considerations

Segment 3 – Demonstrative design opportunities and applications

Connected locally and regionally

- **Accommodate future interprovincial travel demand by:**
  - dedicating lanes to transit and HOV vehicles in the peak direction during peak periods.
- **Provide an attractive alternative to downtown bridges for truck movement.**
- **Design an attractive and scenic interprovincial AT connection between shorelines and existing facilities by:**
  - providing AT facilities on one side of the bridge with sufficient space for passing and rest areas.
  - designing vertical curvature and grades to reduce impact on all users.

Sustainable and resilient

- **Use sustainable construction methods and materials for the bridge by:**
  - selecting climate-resilient materials.
  - using prefabricated elements to reduce impacts related to on-site fabrication.
  - minimizing and mitigating impacts of in-water works required for construction of the bridge.
  - using blue and green infrastructure where possible.
- **Reduce lifecycle costs by:**
  - selecting design features that minimize inspection and maintenance requirements.
  - deploying health-monitoring systems for the new bridge.
  - integrating a cost-effective inspection strategy for elements underneath the superstructure.
- **Minimize the impact of the bridge footprint on the river, natural environment and environmentally sensitive areas by**:
  - using open abutments and pier foundations to accommodate future substructure modifications.
  - setting the substructure back from shorelines with scour protection.
  - including natural vegetation at the shoreline to limit erosion.
- **Mitigate and adapt to climatic and extreme weather impacts on users by:**
  - considering microclimatic design principles to offer AT users comfort from wind and sun through structured shade and wind protection elements.

Safe and equitable

- **Ensure that facilities and amenities along the bridge structure are enjoyable by AAA by:**
  - providing separation for AT users reflecting AAA approaches.
  - improving comfort and awareness of users through appropriate surface treatment as well as signage and wayfinding for connectivity beyond the bridge structure.
  - designing longitudinal gradients to be no more than five percent for AT facilities on or approaching the bridge with direct routing from connecting pathways.
- **Provide adequate public spaces for AT users by:**
  - incorporating rest areas with seating adjacent to the path of travel at selected intervals along the bridge, ensuring that these areas are separated using materials of high tonal contrast.
  - providing a sense of security and safety through the built environment.

Public realm

- **Embrace placemaking along the bridge by:**
  - selecting rest areas to include viewpoints that highlight the natural and built environment features of Kettle Island, westerly views along the Ottawa River and Ottawa Rockcliffe Airport activity.
  - leveraging viewpoints to identify and provide education of archaeological or historical areas along the river or on Kettle Island.
  - providing public art as part of an integrated placemaking strategy.
- **Minimize the impacts of the bridge on natural systems and their usage by:**
  - integrating bird friendly design elements such as material selection and overall structure design to limit risks to bird safety.
- **Design the structure for all-season access by:**
  - identifying a proactive strategy for snow-removal and management.
  - reducing wind impact for AT users through design.
  - locating catch basins and grate design to accommodate drainage during snow and ice conditions.
  - installing de-icing mechanisms on bridge cables, if applicable.

Segment 3 – Demonstrative design opportunities and applications

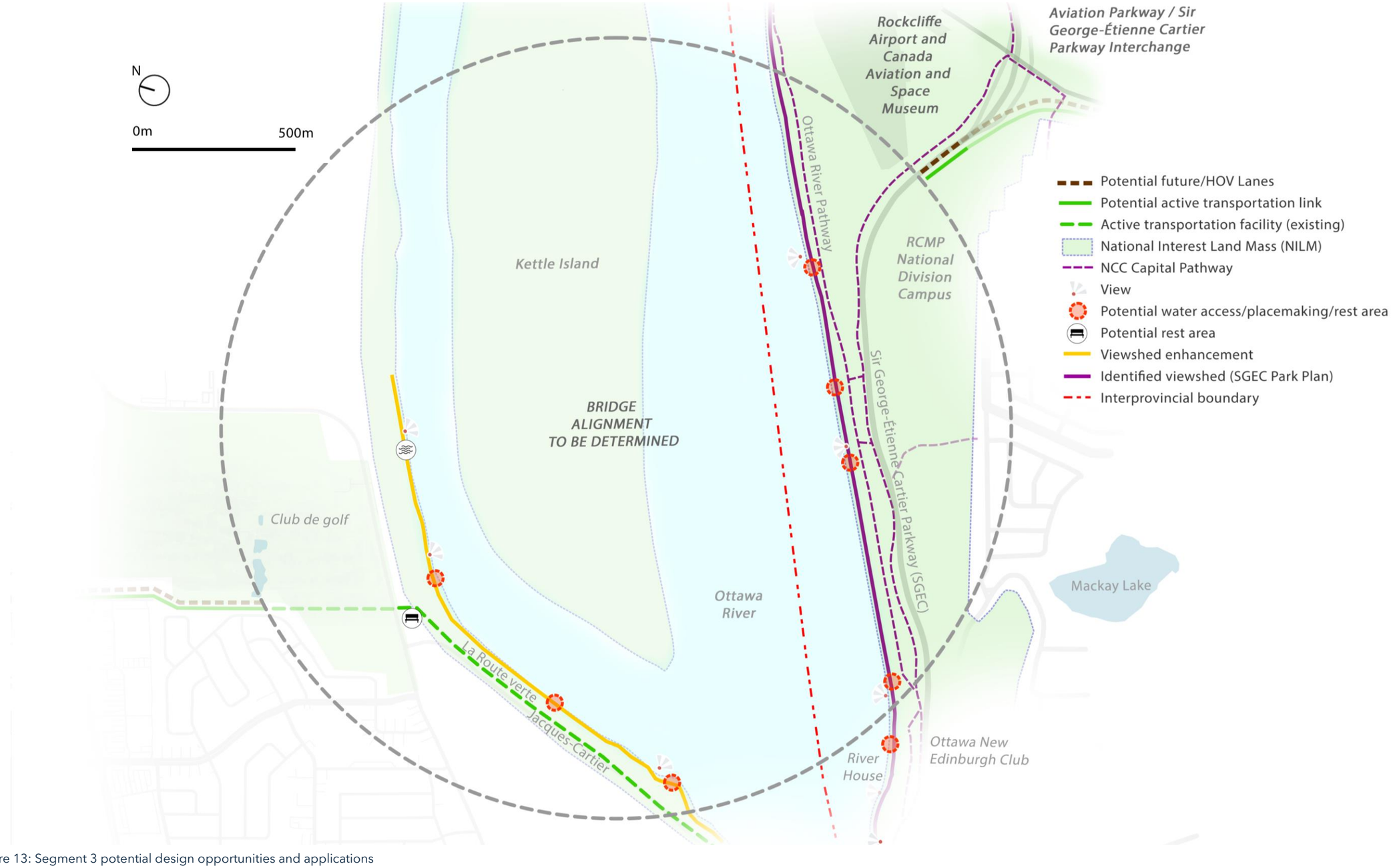


Figure 13: Segment 3 potential design opportunities and applications

Segment 3 – Demonstrative design concept

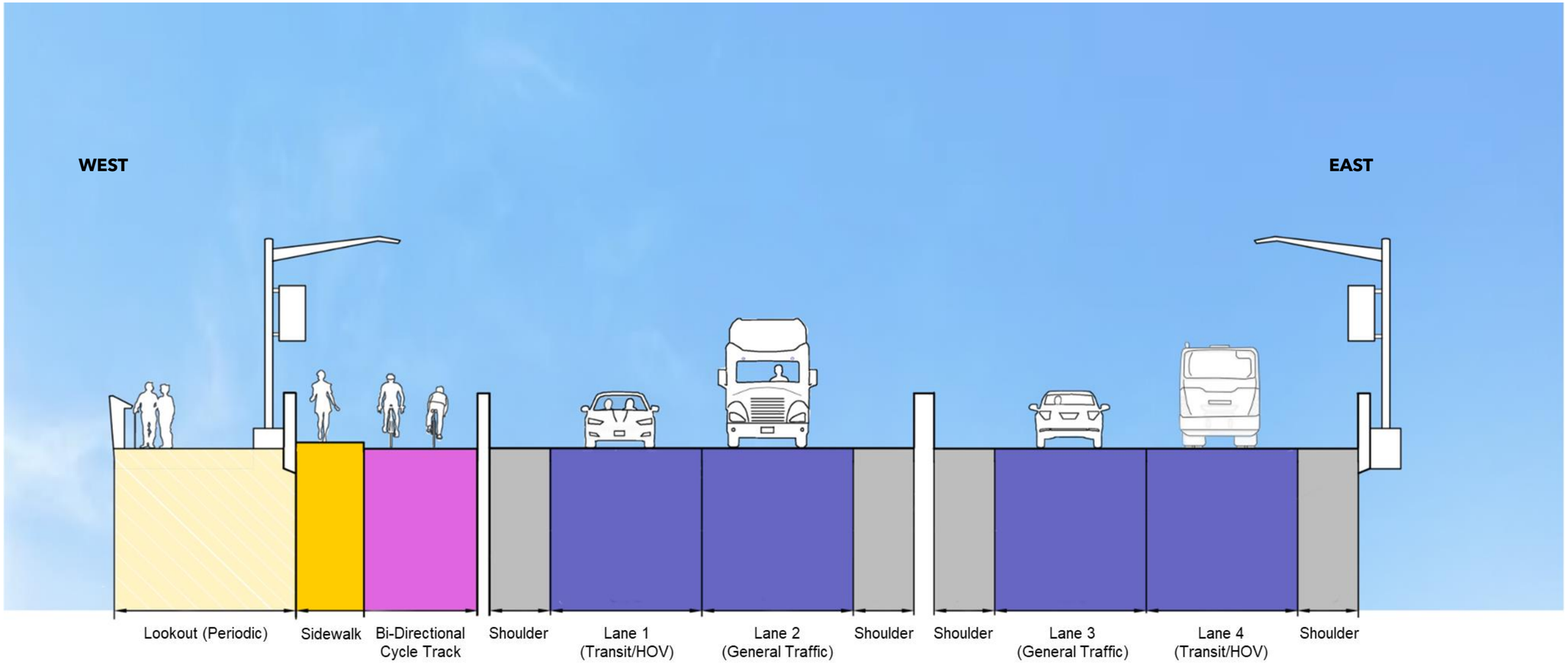


Figure 14: Segment 3 design concept

For Segment 3, one demonstrative design concept is being presented. The following are highlights of how the themes and principles could potentially be realized in this application:

- Dedicated facilities for all modes on the structure.
- Transit/HOV lanes to facilitate fast and reliable transit service during peak commuter periods.
- Pedestrian and cycling facilities on one side increases the probability of user interactions contributing to a sense of security over a long structure. It also provides opportunities to integrate rest areas and lookouts.

Segment 4 – Context and considerations

This segment includes Aviation Parkway from the SGEC Parkway to just north of Ogilvie Road. Aviation Parkway is an NCC parkway characterized by its curvilinear geometry, passing through urban greenspaces with grassy meadows, rock outcrops and landscaped boulevards. The parkway provides one lane per direction between SGEC Parkway and Montreal Road, and two lanes per direction south of Montreal Road.

Considerations

- Aviation Parkway forms part of the NILM and is a cultural heritage landscape.
- The intersection leading to the CASM, two NCC parkways and their adjacent NCC pathways provides a gateway into the corridor.
- Vehicular access to Aviation Parkway exists for few institutional properties and intersecting arterial roads while no residential properties have direct access to the parkway.
- Geometric modifications are proposed as part of the NCC's SGEC Park Plan to reduce vehicle speeds, separate cycling facilities, and increase pedestrian crossing opportunities along the SGEC Parkway and corridor.
- Many adjacent properties including low-rise residential, low-rise commercial, and institutional properties are visually screened by forested edges.
- Aviation Pathway follows the west side of the corridor.
- Limited pedestrian and cycling access exists to or from adjacent neighbourhoods.
- Commercial vehicles are currently prohibited on Aviation Parkway.
- Montreal Road and Ogilvie Road are designated truck routes.
- Large employment centres front onto the segment including Collège La Cité and Montfort Hospital.
- Canada Mortgage and Housing Corporation (CMHC) headquarters is a built heritage resource that influenced the design of the Aviation Parkway.
- Montfort Woods form part of the NILM and are an urban natural feature.
- The former Rockcliffe Base is a cultural heritage landscape, and Wateridge Village is being built as a modern mixed-use community under a Canada Lands Company master plan that reflects its heritage.
- City of Ottawa equity priority neighbourhoods (Brittany-Beechwood, Forbes and Cummings-Cyrville) line the west side of the corridor.
- Manicured landscapes and steep slopes between Aviation Parkway and Wateridge Village allow for picturesque views.
- A potential archaeological site exists near Hemlock Road.
- NCC's policy direction for Aviation Parkway includes repurposing median space, public realm improvements, impact mitigation and maintaining views of SGEC Parkway; land-efficient, urban-format grade separations at major intersections; and safe, accessible pedestrian and cyclist crossings.
- A transit priority corridor with cycle tracks is planned on Montreal Road.

Aviation Parkway looking north from Ogilvie Road, Ottawa Source: Adham Badran

Segment 4 – Context and considerations

Figure 15: Segment 4 context and considerations

Segment 4 – Demonstrative design opportunities and applications

Connected locally and regionally

- **Improve AT connectivity to and within the corridor by:**
  - providing a new grade separated AT crossing where required and improving pathway connections to surrounding neighbourhoods.
  - improving accommodation of vulnerable road users at intersections by implementing protected intersection design elements.
- **Provide infrastructure along Aviation Parkway to support sustainable interprovincial mobility by:**
  - prioritizing efficient movement of transit and HOV users during peak periods through dedicated lanes.
  - facilitating movement for active users where transit routes cross the corridor.
  - Providing transit stops near pedestrian crossings.
- **Manage access to optimize flow and reduce conflicts by:**
  - restricting access between Hemlock Road and the Aviation Parkway to only authorized vehicles during peak commuter periods.
  - modifying vehicle access to the CMHC headquarters and Montfort Hospital.
  - reducing vehicular conflicts by separating motorized vehicles and vulnerable road users.
  - implementing access-management measures between the bridge approach and the intersection with SGEC Parkway / CASM access.
  - facilitating commercial goods movement at intersections with truck routes.

Sustainable and resilient

- **Construct new infrastructure to be durable and sustainable by:**
  - selecting materials compliant with sustainable development standards for climate resilience.
  - using open abutments at the SGEC Parkway overpass and other grade-separated intersections.
  - leveraging green infrastructure and landscaping features to enhance the natural experience.
- **Reduce lifecycle costs by leveraging proactive monitoring and maintenance methods by:**
  - considering the use of prefabricated materials for structures and design elements where possible.
  - selecting design solutions that include efficient and cost-effective inspection and maintenance.
  - Preserving surrounding environmental features and natural areas with adequate construction mitigation measures.

Safe and equitable

- **Reduce and mitigate resident impacts during and post-construction by:**
  - shifting the roadway alignment away from neighbouring communities and sensitive land uses.
  - providing noise attenuation where required, with natural measures rather than noise walls.
  - improving equitable access to community, jobs and services.
- **Design or retrofit pathway facilities and amenities to be accessible by AAA by:**
  - providing signage, appropriate surface treatment, enhanced wayfinding and rest areas with seating.
  - designing longitudinal gradients to a maximum of five percent.
  - including pedestrian/cycling-specific lighting.
  - separating AT modes on Aviation Pathway while ensuring that any pathway widening avoids impacts to mature vegetated areas.
- **Improve safety of existing uncontrolled AT crossings of Aviation Parkway by:**
  - providing new signalized multi-stage AT crossings at La Cité Private and CMHC access.

Public realm

- **Enhance placemaking along the segment by:**
  - leveraging local community nodes and natural areas to create enhanced public spaces.
  - considering additional public art and activation of space building upon local culture and history.
  - maintaining or enhancing the visual relationship between the parkway and the RCMP Musical Ride.
  - highlighting features of historical, cultural and indigenous significance near the shoreline and in proximity to the CASM and Ottawa Rockcliffe Airport.
  - promote access to major destinations from Aviation Pathway at Montreal Road and Ogilvie Road.
  - applying and integrating Capital Parkway lighting and wayfinding standards, among others.
- **Embrace and use natural systems throughout the segment by:**
  - preserving and enhancing the native and local flora and fauna.
  - lining both sides of the road with a symmetrically arranged row of trees to frame the right-of-way, if the parkway is realigned.
  - integrating street trees where feasible with consideration of microclimate and biodiversity creation, particularly along pathway alignments to create opportunities for shade.
- **Enhance all-season accessibility of pathways by:**
  - using plantings at the intersecting area of SGEC and Aviation Parkways to create “windscreens” for users along AT routes in winter months.
  - considering winter maintenance practices and impact on environmental and built environments.
  - ensuring that the design of affected areas of the SGEC Parkway and the Capital Pathway are adapted toward increasing access to or visibility of the Ottawa River.

Segment 4 – Demonstrative design opportunities and applications

Figure 16: Segment 4 potential design opportunities and applications

Segment 4 – Demonstrative design concepts

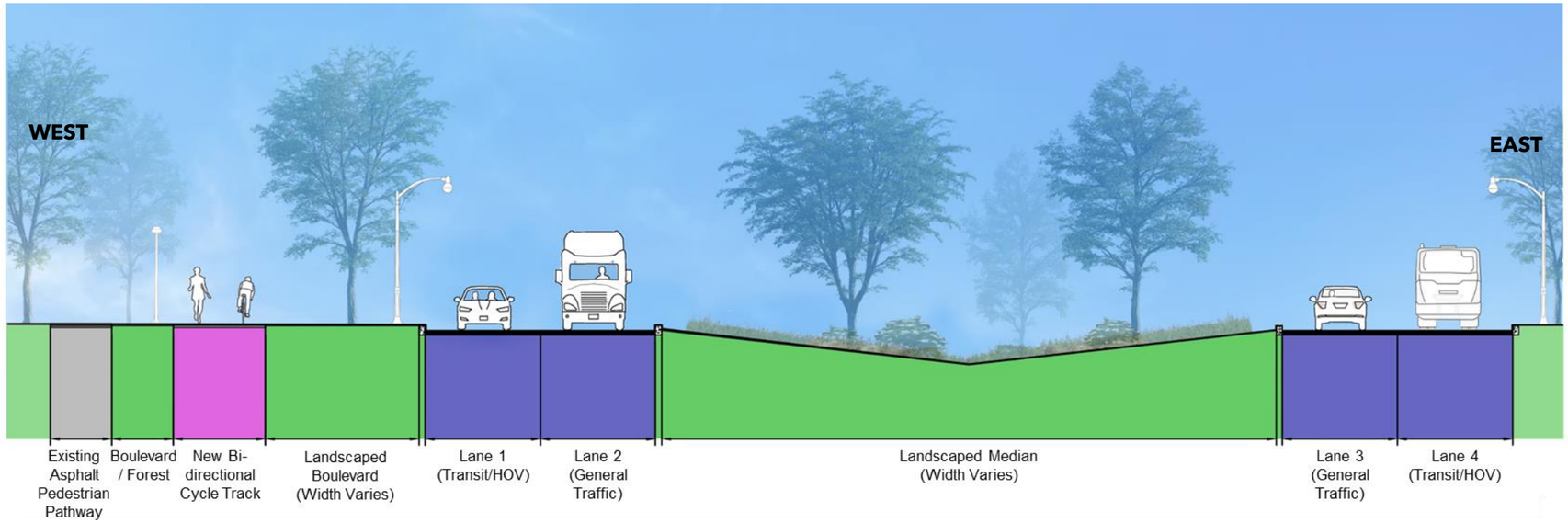


Figure 17: Segment 4 design concept option 1: large landscaped /green median

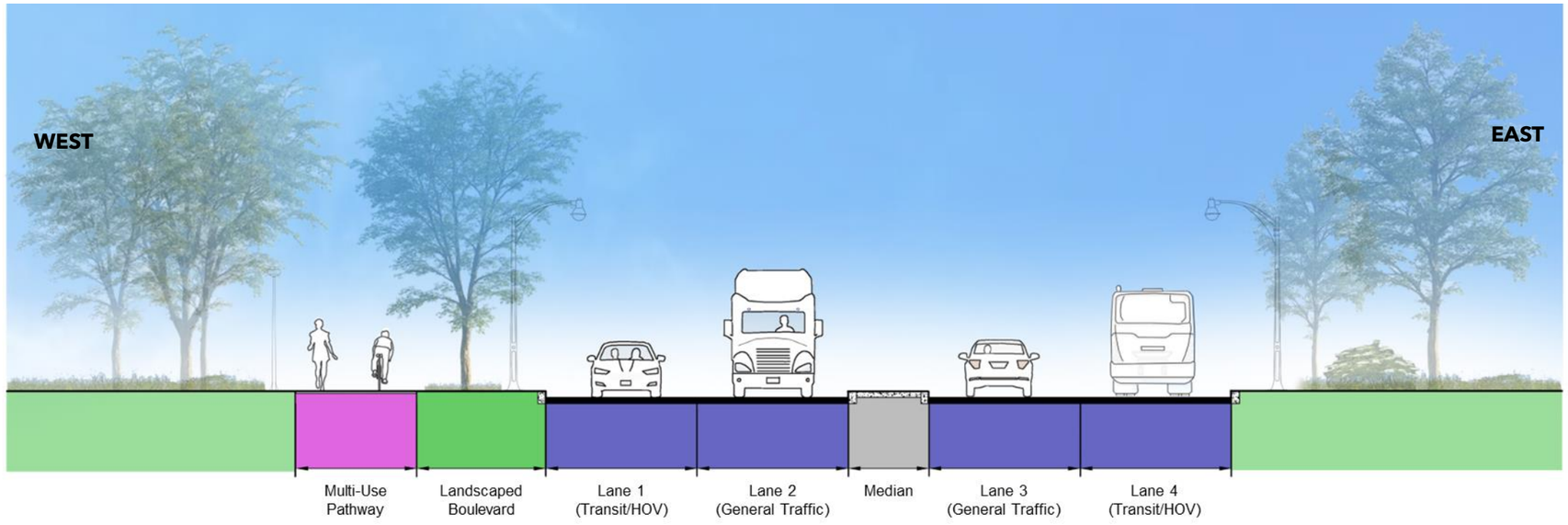


Figure 18: Segment 4 design concept option 2: move parkway lanes together

For Segment 4, there are two demonstrative design concepts being presented. The concepts demonstrate potential allocations of space for the segment based on consideration and elevation of different design principles. The following are highlights from each option.

Option 1- large landscaped / green median

- A wide landscaped median provides significant planting and green drainage opportunity, maintaining the distinctive park-like aesthetic of Aviation Parkway, similar to existing conditions.
- Bi-directional cycling facility and pedestrian pathway on one side provides highly comfortable and accessible facilities by separating users and could allow for reduced impact to existing vegetation.

Option 2- move parkway lanes together

- A narrowed roadway footprint would increase opportunities for a wide range of impact mitigation measures or public realm improvements. This could include reducing noise and visual impacts and increasing tree screening opportunities.
- A MUP on one side maintains a separate facility for active users without requiring additional roadway space.
- A raised fixed median would improve safety by separating users while using minimal roadway space.
- Line both sides of realigned parkway with a symmetrically arranged row of trees to frame the right-of-way.

Segment 5 – Context and considerations

Aviation Parkway transitions to an interchange with Highway 417 and OR 174 south of Ogilvie Road. It generally maintains its parkway character north of the interchange.

Considerations

- Aviation Parkway is a part of the NILM, containing grassed boulevards and forested edges. Wooded lands also surround the north side of the interchange.
- Low-rise residential and community land uses on either side are screened by forested edges.
- Aviation Parkway connects to provincial Highway 417 and OR 174; however directional ramps from north to west, west to north and east to north are not currently provided.
- This segment lies in the Ministry of Transportation of Ontario's corridor management area.
- Ogilvie Road, Highway 417 and OR 174 are truck routes.
- Cyrville O-Train Station is within 300 metres of the corridor.
- Aviation Pathway continues along the west side of the segment and connects to the MUP along the O-Train line.
- Intensification and an increased mix of land uses is planned near Cyrville O-Train Station.
- Cummings-Cyrville is designated an equity priority neighbourhood by the City of Ottawa and is on the west side of the segment.
- Designated built heritage resources are located adjacent to the segment.

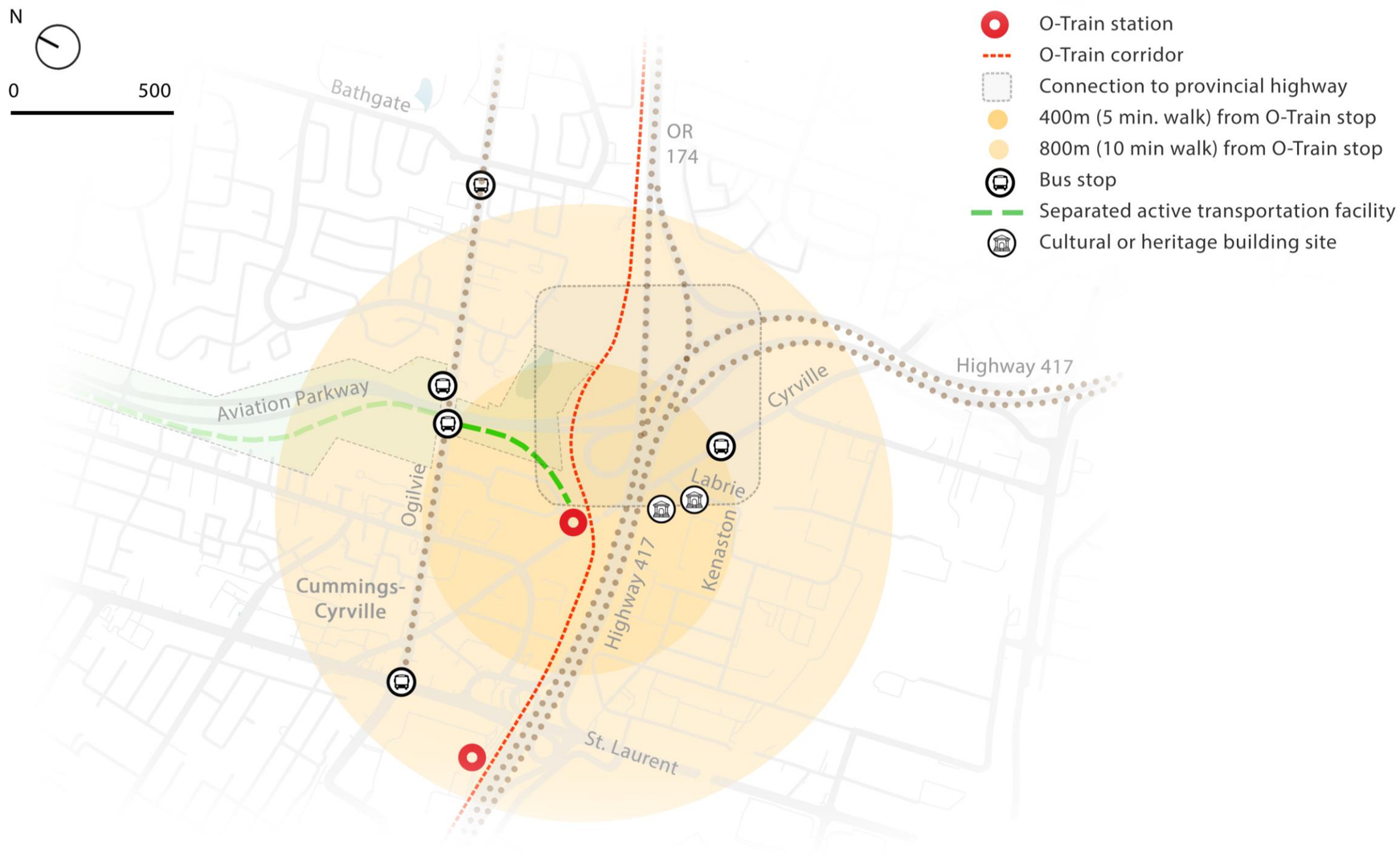


Figure 19: Segment 5 context and considerations

Segment 5– Demonstrative design opportunities and applications

Connected locally and regionally

- **Modifying vehicular connectivity at and near the Highway 417-OR 174 interchange by:**
  - adding ramps to and from Aviation Parkway where justified.
- **Encourage sustainable mobility by:**
  - allowing transit vehicles along Aviation Parkway and providing transit infrastructure to support operations, particularly during peak periods in the peak direction.
  - working with STO and OC Transpo to develop new transit routes using the corridor.
- **Add new AT facilities and improve connections to existing facilities beyond the segment by:**
  - upgrading the informal pathway from Ogilvie Road to City Centre Park to a MUP.
  - connecting Cyrville Station pathway directly to the informal pathway to City Centre Park.

Sustainable and resilient

- **Maintain or retrofit existing structures for interchanges and crossings where possible by:**
  - designing multi-lane structures to accommodate traffic staging of future maintenance/rehabilitation works without requiring significant closure or detouring of traffic.
- **Use sustainable construction methods and materials by:**
  - selecting materials for new structures compliant with sustainable development standards for climate resilience.
  - integrating cost-effective maintenance strategy elements.

Safe and equitable

- **Ensure that existing and proposed AT facilities are designed for all AAA by:**
  - considering how AT users must cross this segment, accounting for any applicable transitions.
  - maintaining or providing lighting from all public access areas to Cyrville Station from Ogilvie Road.
  - designing the longitudinal gradient of facilities to be less than five percent.
  - considering additional rest areas and furnishings along new pathways and leading to Cyrville Station, up to a frequency of every 30 metres.
  - providing enhanced treatments for safety and comfort of vulnerable road users given the higher speeds and volumes near the interchange.

Public realm

- **Incorporate placemaking principles within the design by**:
  - highlighting areas of significance in the natural and built form through educational signage and artwork, including within the Highway 417-OR 174 interchange and along the pathway from Ogilvie Road to Cyrville Station.
  - implementing a gateway feature near Ogilvie Road to highlight the change in setting from highway to parkway.
- **Preserve local flora and fauna while providing additional landscaping by:**
  - considering localized microclimates, prioritizing more trees as part of a transitioning urban fabric.
  - ensuring that new plantings and landscaping do not compromise sightlines and are consistent with the principles of CPTED.
  - leveraging new structures and crossings to highlight natural systems and green infrastructure approaches.

Segment 5– Demonstrative design opportunities and applications

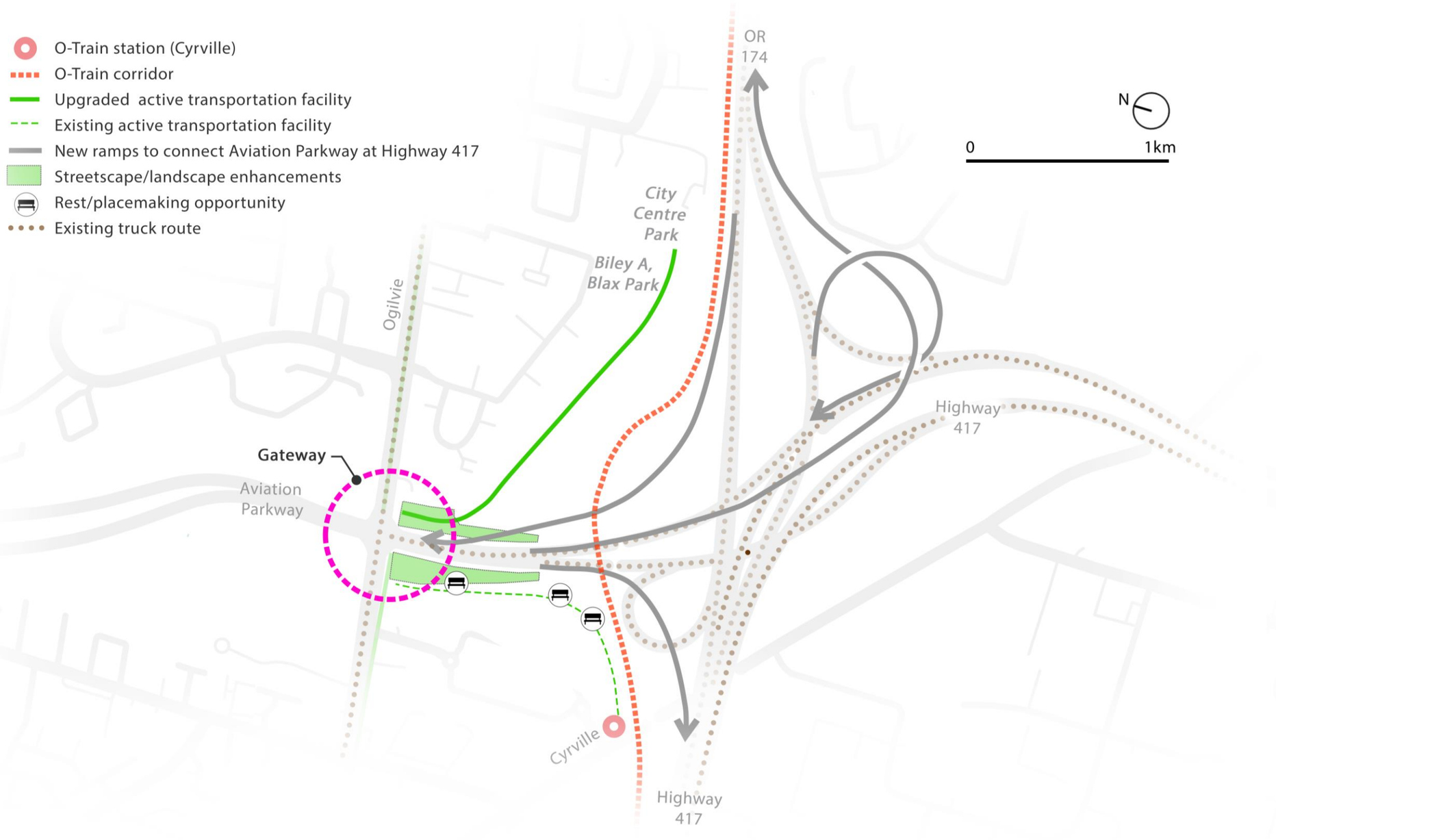


Figure 20: Segment 5 potential design opportunities and applications

GLOSSARY

The following is an overview of the abbreviations used throughout this Planning and Design Principles document and their meaning.

AAA – all ages and abilities

ACPDR – Advisory Committee on Planning, Design and Realty

AT – active transportation

CASM – Canada Aviation and Space Museum

CMHC - Canada Mortgage and Housing Corporation

CPTED - Crime Prevention Through Environmental Design

CSD – context-sensitive design

FLUDTA – federal land use and design transactions approval

HOV – high-occupancy vehicle

IPT – integrated project team

LRT – light-rail transit

LTIICP – Long-Term Integrated Interprovincial Crossings Plan

MTMD - Ministère des Transports et de la Mobilité durable

MUP – multi-use pathway

NCC – National Capital Commission

NILM – National Interest Land Mass

PAG – public advisory group

PSPC – Public Services and Procurement Canada

RCMP - Royal Canadian Mounted Police

SGEC - Sir George-Étienne Cartier

SDS – Sustainable Development Strategy

STO - Société de transport de l'Outaouais

The following are terms and definitions used throughout this Planning and Design Principles document.

Abutment: The substructure at the ends of a bridge span that supports the structure.

Active transportation: Any form of human-powered transportation.

Blue infrastructure: A network of natural or human-made waterbodies, such as lakes, ponds, canals, and streams designed to manage water (e.g. reduce flood risk, control stormwater runoff) and create more livable, attractive, and resilient places.

Capital Pathway: A network of multi-use paths owned and managed by the NCC that are separate from motor vehicle traffic and can be either within the roadway right-of-way or within its independent right-of-way, and include facilities built for cycling, walking or other active mobility modes of travel.

Climate resilient design: The design of a site, infrastructure or programs in a way that anticipates, considers and adapts to changing climate conditions.

Cultural landscape: a set of ideas and practices embedded in a place. The 'ideas and practices' are what make it cultural; the 'place' is what makes it a landscape.

Cultural recognition: The acknowledgement, respect and honouring of a group's traditions, histories and values.

Development: The process of erecting, altering or extending built assets, or changing the use of built assets or infrastructure.

Environmental stewardship: The responsible use, management, and protection of the natural environment through direct action to protect natural resources for current and future generations.

Flora and fauna: The collection of all plants (flora) and animals (fauna) living in a specific region.

Gateway: An arrival point having distinctive, identifiable landscape markers that signal the entry into the park / city neighbourhood and that identify the park's/neighbourhood's character. (adapted from SGEC Park Plan).

Grade separation: Structures that separate different lanes of traffic, modes or natural barriers. These structures are often referred to as underpasses, overpasses or bridges.

Green infrastructure: A network of natural vegetative elements, including trees, plants, parks and green technologies such as green roofs and green walls, designed to increase biodiversity, mitigate the effects of higher temperatures in urban areas, decrease stormwater runoff, offer recreational spaces, and contribute to more sustainable and pleasant places.

Heritage: A legacy that provides or has provided value to a society. Heritage value may have many factors, such as historical and cultural association or built or environmental importance, with its use and integrity continued over time.

Higher-order transit: Public transportation that operates in a dedicated right-of-way, such as subways, light-rail transit, and bus rapid transit.

La Route verte: A province-wide network of cycling facilities in Quebec.

Lookout: Spaces or structure projections that provide opportunities to appreciate the visual connection to the water's edge and the experience of being "over" the water.

Micromobility: A range of small, low-speed devices used to facilitate personal transportation. Devices can use a combination of human-powered, combustion and electric based propulsion. They include, but are not limited to, electric wheelchairs and scooters, adaptive cycles, bicycles, electric bicycles, electric kick scooters, electric skateboards, electric unicycles and hoverboards.

Median refuge: A crossing area, often raised, in the median of a multi-lane road that allows pedestrians or cyclists to cross one direction of traffic at a time.

Multi-stage crossing: Pedestrian and cyclist crossings that can be made in multiple stages due to the presence of a median refuge.

Multi-use pathway: Pathways that serve a variety of user types, including walkers, runners, cyclists and other non-vehicular modes on a shared surface.

National Interest Land Mass: A designation for federally owned land that supports the symbolism, functions, physical structure, and natural and cultural landscape qualities of the National Capital Region. The NCC designates these lands to preserve, sustain and manage the lands in the long-term.

Natural environment: Features including floodplains, shorelines, wooded and grassed areas, and other habitats. It includes the interaction within and between these areas and between all living species, climate and weather.

Parkway: A limited access route that provides a gateway into the National Capital Region, connecting important landmarks and featuring shorelines, green spaces and pathways.

Pedestrian crossing: A part of the roadway that is designated for pedestrians to cross, identified through pavement markings, signs or traffic signals.

Placemaking: The act or intention to create unique places that will attract people due to being pleasurable, interesting and context sensitive.

Policy: A statement or document that commits an organization to taking a consistent course of action over the short, medium and long term.

Protected intersection: Intersection design defined by measures to protect pedestrians and cyclists from motor vehicle movements through physical separation of AT and traffic signal timing.

Queue jump lane: A specialized traffic lane at an intersection, often restricted to buses, that is designed to allow vehicles to proceed to the front of the queue and bypass traffic at an intersection.

Rest area: A designated public space where people can stop, sit, and rest. They typically have benches and other amenities

such as shelters, waste receptacles, picnic tables, and drinking fountains.

Signal priority: Allows vehicles (e.g. buses, light-rail transit, emergency vehicles) to receive an earlier green light or an extended green phase to reduce delay at intersections.

Stormwater management: Stormwater comes from rain, ice and snow-melt events. It runs into streets, lawns and other areas. Stormwater management tries to reduce this runoff by providing opportunities for it to be absorbed into the ground and to improve its water quality before it empties into a waterbody such as streams and rivers or into wetlands.

Sustainable transportation: A transportation system that allows the basic access needs of individuals and groups to be met safely and in a manner consistent with human and environmental health.

Transit hub: A major transit station that serves as a multi-modal connection point for passengers and goods (e.g. combining buses, trains, subways or airplanes).

Transit node: A key intersection or convergence in the public transportation network, like a transit hub but typically less complex.

Transit-oriented development: An urban planning strategy whereby high-density and mixed-use buildings are concentrated around public transit hubs or stations.

Transit priority: Measures such as dedicated lanes, signal phases, queue jump lanes and grade separation to improve reliability and efficiency and reduce delays for public transit.

Tree canopy: The layer of tree leaves, branches and stems that cover the ground when viewed from above.

Vantage point: A place that provides a clear view of an area.

Viewshed: An area that is visible from a specific viewpoint.

Wayfinding: The set of architectural or design elements that aid orientation.

WB-20: A combination semitrailer truck with standardized dimensions that is often used during geometric design to represent the largest truck that would regularly use the roadway.

Wetland: Lands that are saturated or flooded with water, either permanently or seasonally. Examples include marshes, swamps and bogs.