

Transit and Road Project Prioritization Frameworks for the Capital Infrastructure Plan

Introduction

The Transportation Master Plan (TMP) Capital Infrastructure Plan will identify the projects and investments that are needed to meet Ottawa's travel needs and achieve the City's mode share and greenhouse gas reduction targets. It will also identify a subset of projects that are affordable within the City's long-range financial plans, along with the corresponding timelines for implementation.

Exhibit 1 provides an overview of the approach for developing the TMP Capital Infrastructure Plan. It identifies the following steps:

- **Identifying Needs.** The City will use data collected from the fall 2022 Origin-Destination (OD) travel survey to understand how, where, and why residents are traveling today. Using this data, the City will update its transportation model and will forecast future travel demand to 2046 based on population and employment projections from the Official Plan. Since travel patterns are still changing in response to the pandemic, different scenarios will be examined to account for uncertainty, such as higher versus lower levels of working from home. Future transportation needs will be assessed by comparing future travel demand with existing network capacity, considering objectives such as providing access to destinations and shifting trips to sustainable modes.
- **Identifying and Screening Projects.** The next step will be to identify and screen candidate projects for inclusion in Ottawa's Ultimate Transit and Road Networks. The Ultimate Networks provide a long-term vision for the city's transportation infrastructure and include transit and road projects to meet 2046 travel demand. Projects from the 2013 TMP will be reviewed to confirm their need, and new projects will be identified to accommodate growth. Candidate projects may also include different options for the same corridor. Some projects with potentially significant impacts (such as the Alta Vista Transportation Corridor) will be subject to a more detailed analysis of alternatives. Projects to reconfigure existing streets as "complete streets" will also be identified, in support of intensification and modal shift.

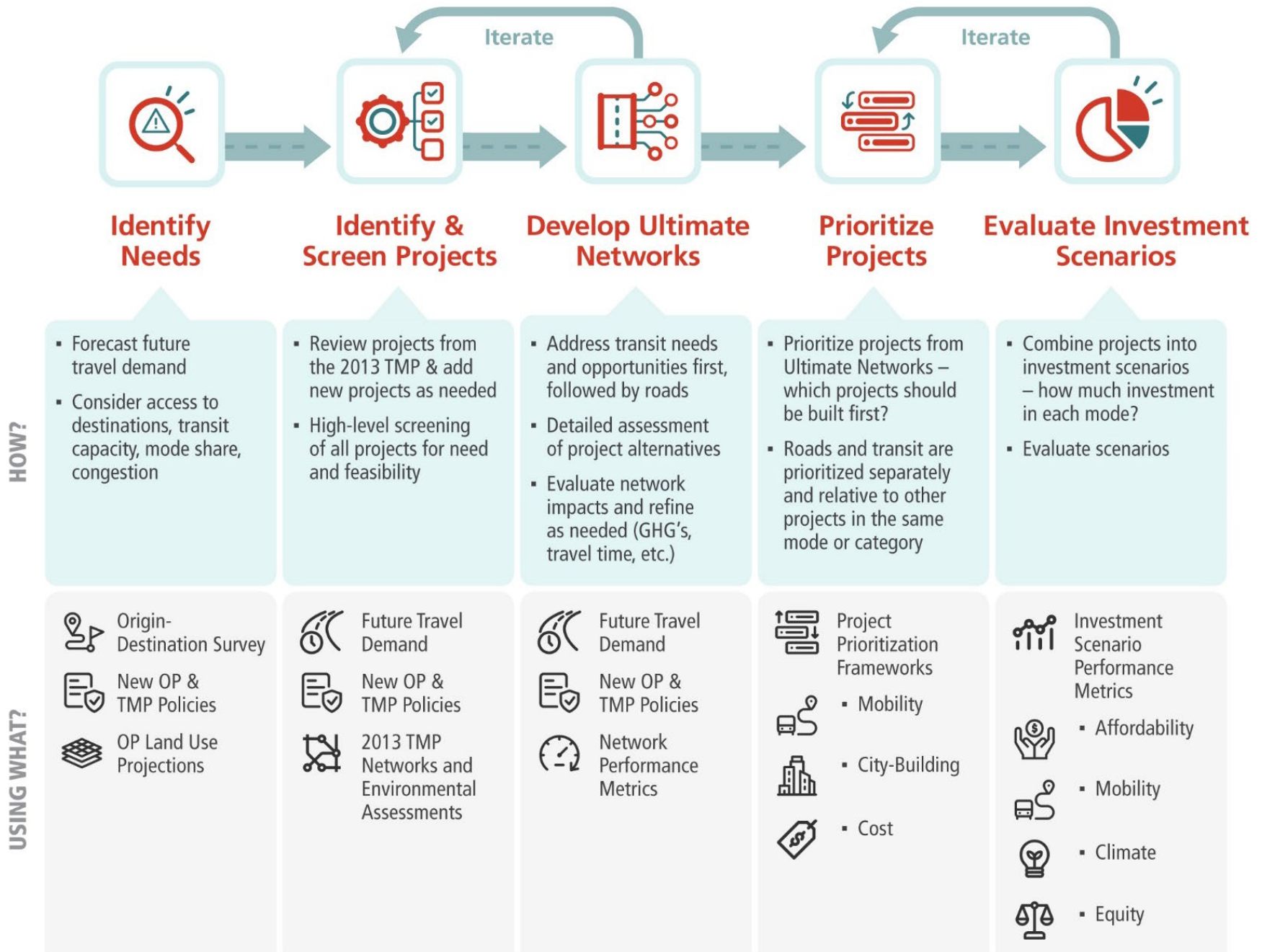
All candidate projects will be subject to a high-level screening for need, feasibility, and policy alignment. Screening will consider:

- Projects with major impacts on Provincially Significant Wetlands
- Projects with major impacts on Natural Heritage Core Areas and Linkage Areas
- Roads being widened beyond four midblock general-purpose lanes
- Road projects that directly compete with rapid transit
- Projects with known natural hazard implications (e.g. projects in the floodplain; projects in areas with unstable soils or landslide risk)
- Projects with very high costs and/or other technical feasibility challenges.

Some projects may be screened out at this stage; others may be adjusted to ensure feasibility or to minimize environmental impacts. The City will seek alternatives to adding road capacity through the Greenbelt wherever practical; network development will aim to accommodate travel demand through transit and active transportation, however, road projects will also be considered where residual demand exists that cannot be met by sustainable modes (including projects that may be adjacent to rapid transit corridors).

- **Developing the Ultimate Networks.** In developing the Ultimate Networks, transit options to accommodate travel demand will be identified first; projects to add road capacity will be included where required to supplement the Ultimate Transit Network and meet residual travel demand that cannot be met by sustainable modes. Road projects will also be required to provide access to new development. The Ultimate Transit and Road Networks will be reviewed and refined based on network performance metrics such as destination accessibility, travel time, and greenhouse gas emissions. Identifying projects and developing the Ultimate Networks will be an iterative process.
- **Prioritizing Projects within the Ultimate Networks.** The transit and road projects in the Ultimate Networks will be prioritized using frameworks that consider Mobility Needs, City-Building, and Cost. The frameworks will be used to compare projects of the same type – i.e. to prioritize new roads and road widening projects relative to one another, and to prioritize transit projects relative to one another. The prioritization process will determine which road projects will be built first, and which transit projects will be built first. The proposed Transit and Road Project Prioritization Frameworks are presented in the next sections of this document.
- **Evaluating Investment Scenarios.** Separate from project prioritization, the City will consider how to allocate funding across modes and project types. The TMP Team expects to develop two or three network investment scenarios that feature different levels of funding for different project types, including new roads and road widenings, complete street modifications to existing roads, rapid transit and transit priority projects, and active transportation. The different investment scenarios will be evaluated based on their ability to achieve City objectives, considering performance metrics related to mobility, climate change, equity, and affordability. The investment scenario that is approved by Council will determine the funding envelope for each project type (i.e. the amount of funding allocated to transit, active transportation, etc.). This funding envelope will then be applied to the prioritized list of projects to determine the anticipated timelines for implementation.

Exhibit 1: Approach to Developing the TMP Capital Infrastructure Plan



Prioritization Frameworks for Transit and Road Projects

The transit and road projects in the Ultimate Networks will be prioritized to determine which road projects will be built first, and which transit projects will be built first. Prioritization will be conducted using the proposed Transit and Road Project Prioritization Frameworks presented below. The Frameworks include prioritization criteria, sub-criteria, metrics and scoring rubrics. Each project is expected to receive a total score that allows it to be compared to other projects within the same category.

The Transit and Road Project Prioritization Frameworks were developed based on Official Plan objectives, TMP Policies, and the frameworks from the 2013 TMP. They were also reviewed and refined based on the results of public engagement from June 1 to July 2, 2022; public engagement results are documented in a separate consultation summary report.

Prioritization Framework for Transit Projects

Project Categories

Transit projects that are included in the Ultimate Network will be grouped into categories for prioritization purposes. Projects in each category will only be assessed relative to other projects in the same category to account for the significant difference in cost and impact of each of these types of transit investment. Project categories include the following:

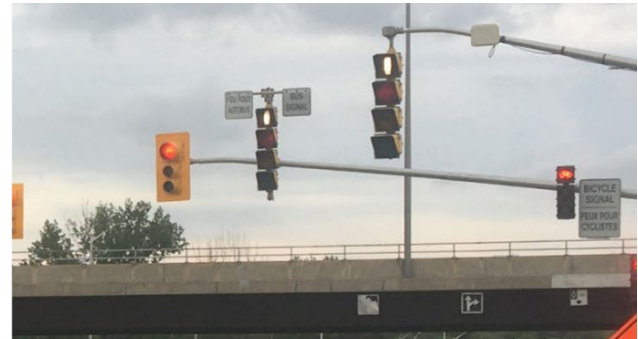
- **Rapid transit:** transit corridors with fully exclusive right-of-way and grade-separated crossings, such as light rail corridors and bus-only roads. Also includes transit facilities with semi-exclusive right-of-way with physical separation and at-grade crossings, such as median busways.



- **Transit priority corridors:** projects with dedicated bus lanes and/or other priority measures along an entire corridor. In addition to bus lanes, measures may include queue jump lanes, transit signal priority, restrictions for general purpose vehicles, etc. Transit priority corridors will also include corridors with the potential for tactical transit improvements that can be implemented relatively quickly and at low cost. Transit priority corridors can be implemented as pre-builds of ultimate rapid transit corridors to support and shape future ridership patterns.



- **Isolated priority measures:** transit priority projects focused on specific intersections or bottlenecks. Measures may include queue jump lanes, transit signal priority, restrictions for general purpose vehicles, etc.



While both rapid transit and transit priority corridors will follow a similar prioritization process using the frameworks in Appendix A, isolated priority measures will be identified and prioritized separately based on OC Transpo’s service metrics (e.g. existing ridership and delay).

Project Scoring

The proposed prioritization framework for transit projects includes criteria and metrics that are based on Official Plan objectives, TMP policies, the frameworks from the 2013 TMP, and the results of public engagement. The criteria are summarized in *Exhibit 2*.

Exhibit 2: Transit Prioritization Framework



A description of each criterion and the associated metrics is as follows:

- **Ridership growth (score out of 35):** A measure of the projected increase in corridor ridership to 2046. This includes new riders who are attracted to transit because of the travel time savings delivered by the project. It also reflects ridership growth resulting from population and employment growth in different areas of the city.
- **Service improvement (score out of 25):** A measure of the expected travel time savings and reliability improvements provided by the project, focusing on existing riders. Projects that significantly improve service on corridors with high ridership today will score highest.
- **City-building impacts (score out of 20):** The contribution of the project to achieving the City’s objectives identified in the Official Plan and Transportation Master Plan:
 - **Equity:** Projects that serve residents living in TMP Equity Priority Neighbourhoods will score higher.

- **Natural systems:** Projects that run through key environmental areas such as wetlands, the Greenbelt, and urban natural features will score lower. Projects that repurpose space on existing roadways or existing transportation corridors will score highest.
- **Major destinations and economic development:** Projects within walking distance to major destinations (*Official Plan* Special Districts, Special Economic Districts, Design Priority Areas, and Large-scale Institutions and Facilities) will receive a higher score.
- **Cost (score out of 20):** Total estimated life-cycle cost of the project, including capital, operating and maintenance costs.

Scoring rubrics for each of these criteria and metrics are presented in Appendix A. Results from public consultation, including changes to the transit framework in response to public and stakeholder feedback, are documented in a separate consultation summary report.

Application of the Transit Framework to Determine Implementation Timelines

Transit projects will be grouped into implementation phases (short-, medium-, and long-term) based on their total scores. The phasing may be refined in consideration of external factors such as coordination with other projects (e.g. road renewal), development timing, network considerations, and construction readiness. The Capital Infrastructure Plan will also establish mechanisms for monitoring and re-prioritizing investments as land use and mobility patterns evolve.

Prioritization Frameworks for Road Projects

Project Categories

Road projects that are included in the Ultimate Network will be grouped into categories for prioritization purposes. Projects in each category will only be assessed relative to other projects in the same category to account for the significant difference in cost and impact of each of these types of road investment. Project categories include the following:

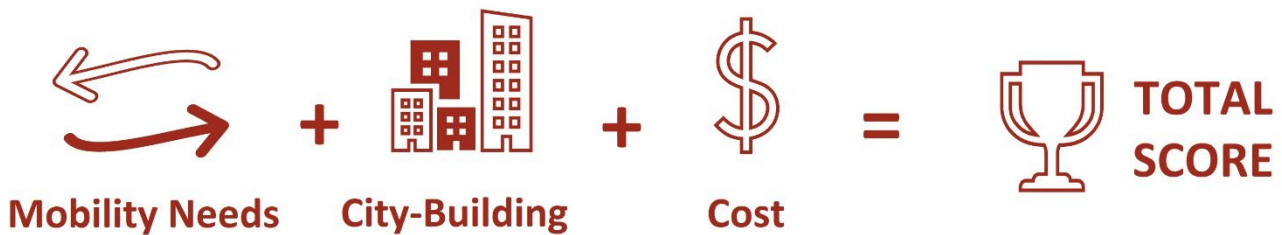
- **New roads and road widenings:** projects to build new roads or add lanes to existing roads, to improve vehicular access and/or to add vehicular capacity.
- **Complete street modifications to existing roads:** projects to reconfigure existing streets to better accommodate sustainable modes, in support of intensification and modal shift. This also includes projects to upgrade arterial and collector roads with a rural cross-section to an urban cross-section with sidewalks and cycling facilities.

Isolated measures such as intersection modifications will be considered before pursuing larger-scale road projects. Isolated measures will be prioritized and implemented through other programs such as the Network Modification Program, separate from the TMP; funding requirements for all types of road projects will be considered within the Long-Range Financial Plan. Other types of road projects may also be considered within the TMP Capital Infrastructure Plan; for example, projects may be identified to address flood risks and/or to address safety issues such as at-grade rail crossings.

Project Scoring: New Roads and Road Widenings

The proposed prioritization framework for new road and road widening projects includes criteria and metrics that are based on Official Plan objectives, TMP policies, the frameworks from the 2013 TMP, and the results of public engagement. The criteria are summarized in Exhibit 3.

Exhibit 3: New Road and Road Widening Project Prioritization Framework



A description of each criterion and the associated metrics is as follows:

- **Mobility Needs (score out of 55):** A measure of the project’s potential to achieve the goals of Ottawa’s transportation system and meet current and future mobility needs:
 - **Access to Development:** The role of the project in completing the transportation network in new or growing areas. Projects that improve access will score higher than projects in areas that are already well connected to the transportation system.
 - **Congestion Reduction:** The potential of the project to relieve congestion in areas where vehicular travel demand exceeds the road capacity. Projects that reduce congestion may also reduce cut-through traffic in adjacent communities. Projects that address existing congestion will score higher than projects that address congestion triggered by future development.
- **City-Building Impacts (score out of 25):** The contribution of the project to achieving the City’s objectives identified in the *Official Plan* and Transportation Master Plan:
 - **Potential for Induced Demand & GHG emissions:** Projects that encourage people to make more or longer trips by driving will score lower.
 - **Impacts on Natural Systems:** Projects that run through key environmental areas such as wetlands, the Greenbelt, and urban natural features will score lower.
 - **Effect on Priority Neighbourhoods:** Projects that benefit Equity Priority Neighbourhoods with minimal negative impacts will receive higher scores.
 - **Support for Place-Making & Healthy Streets:** Projects that directly improve walkability and encourage Healthy Streets will score higher, particularly in key areas such as Design Priority Areas, Hubs, and Evolving Neighbourhoods as defined in the *Official Plan*.
 - **Support for Transit:** Projects that are integrated with transit infrastructure will score higher.
 - **Goods Movement & Economic Development:** Projects along corridors that are important freight routes and that provide access to major *Official Plan* destinations will score higher.
- **Cost (score out of 20):** Total estimated life-cycle cost of the project, including capital, operating and maintenance costs.

Scoring rubrics for each of these criteria and metrics are presented in Appendix B. Results from public consultation, including changes to the roads framework in response to public and stakeholder feedback, are documented in a separate consultation summary report.

Identification and Prioritization of Complete Street Modifications to Existing Roads

As Ottawa continues to grow and intensify, the transportation network will need to move more people and goods using the space available today. Especially in built-up areas, the City will need to accommodate this growth through more space-efficient modes including walking, cycling, and transit to maximize the capacity of the network. Practical experience has shown that continuing to add general purpose vehicular capacity to accommodate peak period travel demand is financially and spatially unfeasible at the scale needed. Street reconfigurations to encourage walking, cycling and transit are therefore essential to support intensification.

As part of the TMP Capital Infrastructure Plan, the City will identify complete street modification projects in existing communities that support intensification and modal shift. Some projects may upgrade streets with ditch drainage and paved shoulders to urban cross-sections with storm sewers, sidewalks and cycling facilities. Other projects may involve surface reconstruction to add trees and active transportation facilities; reallocation of vehicle lanes to other modes; and/or lane reconfigurations to reduce vehicle speeds. Mainstreet Corridors and Design Priority Areas are expected to be prioritized for complete street modifications. Projects will be identified and prioritized based on the following criteria:

- **Mobility Needs:** Considers the project's potential to achieve the goals of Ottawa's transportation system and meet current and future mobility needs. Metrics will reflect:
 - Significance of improvements towards Complete and Healthy Streets, considering the base conditions, proposed project scope, and contribution to network connectivity.
 - Number of users who would benefit from the improvements, based on the surrounding land use and transportation system context, including potential for intensification.
- **City-Building Impacts:** The contribution of the project to achieving the City's objectives identified in the *Official Plan* and Transportation Master Plan:
 - Equity considerations and benefits to Equity Priority Neighbourhoods.
 - Connections to destinations and amenities including rapid transit.
 - Support for place-making, intensification, and economic development.
- **Cost:** Total estimated life-cycle cost of the project, including capital, operating and maintenance costs.

These criteria will be further refined once a set of candidate projects has been identified. Project identification and prioritization will consider where complete street corridor designs have already been developed and refined through public consultation. Phasing and prioritization will also be influenced by coordination opportunities with other planned works, to maximize cost-effectiveness.

Road Project Implementation Phasing

Road projects will be grouped into implementation phases (short-, medium-, and long-term) based on their total scores. This phasing may be refined in consideration of external factors such as the timing of nearby land development, network considerations and dependencies (including the timing of transit investments), and construction readiness. In particular, projects which are critical to supporting new development (i.e. projects with a high "Access to Development" score) may be considered for an earlier phase of implementation. The Capital Infrastructure Plan will also establish mechanisms for monitoring and re-prioritizing investments as land use and mobility patterns evolve. This will include reviewing the timing of development to respond to newly approved development plans.

Next Steps

The next step in the TMP update process is the development of the Capital Infrastructure Plan (Part 2 of the TMP). As part of this work, the results of the Origin-Destination Survey will be used along with other inputs to assess future travel needs; identify and screen transit and road projects; update the City's transportation networks; prioritize projects; and develop network investment scenarios considering affordability as well as the City's mode shift objectives and climate change targets (Exhibit 1). The prioritization of projects will be based on the frameworks described in this document.

The TMP Part 2 will include significant public engagement. The City will be sharing information on travel patterns, as well as transportation network needs and opportunities. The City will also be seeking input on important topics such as the proposed road and transit projects, and the principles for allocating funding between different investment priorities. Throughout the TMP Part 2, the City will seek to be transparent about the approach, methodology and trade-offs, to ensure that the TMP Capital Infrastructure Plan reflects the values of Ottawa's residents and supports Council-approved objectives.

Appendix A: Transit Project Scoring Rubrics

Ridership Growth – 35 points	
Ridership Growth on the Corridor – 35 points maximum	
Metric	Number of additional riders who are expected to use the transit corridor in 2046 relative to today (based on regional travel demand model projections ¹ ; captures new riders due to population growth as well as ridership growth due to improved service)
Scoring	Projects that attract more riders will receive a higher score ²

Service Improvement – 25 points	
Service Improvement for Existing Customers – 25 points maximum	
Metric	Expected person-hours of travel time savings and reliability improvements (based on corridor service metrics, project characteristics, and existing ridership)
Scoring	Projects that deliver more service improvements will receive a higher score

City Building – 20 points	
Equity – 7.5 points maximum	
Metric	Number of riders using the project who live in a TMP equity priority neighbourhood or traffic zone (based on regional travel demand model projections)
Scoring	Projects that serve more riders who live in a TMP equity priority neighbourhood will receive a higher score
Natural Systems – 5 points maximum	
5	Minimal negative impact on natural systems
4	Project converts an open space or meadow area
3	Project falls within a treed or forested area
2	Project falls within 30m (in the urban area) or 120m (in the rural area) of a mapped natural heritage feature
1	Project falls within a floodplain; within 30m of a watercourse, wetland or Urban Natural Feature; or within 120m of a Natural Heritage Linkage Area
0	Project falls within 120m of a Natural Heritage System Core Area or Provincially Significant Wetland

¹ The City's regional travel demand model projects ridership growth considering population & employment projections for different areas of the city; anticipated travel time for each mode of travel with and without the project; and the additional capacity resulting from the project.

² Several metrics involve comparing project benefits or costs based on a numerical result (e.g. number of riders attracted, person-hours of travel time savings, costs). For these metrics, the numerical ranges and associated points will be developed once values are known. Points will generally be scaled based on the projects with the best numerical results; the projects with the best results receive the maximum score, and all other scores are adjusted proportionally.

City Building (continued) – 20 points

Major Destinations & Economic Development – 7.5 points maximum

Metric	Number of major destinations within walking distance to the corridor
Scoring	<p>Calculate scores for each project based on the following major destinations defined in the <i>Official Plan</i>:</p> <ul style="list-style-type: none"> • Special Districts & Special Economic Districts: +20 • Large-scale Institutions and Facilities (hospitals, major health care facilities, universities, community colleges, major employers, federal employment campuses, major sports, recreational and cultural facilities): +10 • Design Priority Areas (areas that are of national, regional or local importance, including neighbourhood commercial streets): +5 per kilometre <p>The projects with the highest scores will receive the most points</p>

Cost – 20 points

Total Lifecycle Cost – 20 points maximum

Metric	Total estimated lifecycle cost of the project in today's dollars (includes capital cost as well as operating and maintenance cost)
Scoring	Projects with lower lifecycle costs will receive a higher score

Appendix B: Road Project Scoring Rubrics (New Roads and Road Widening)

Mobility Needs – 55 points			
Access to Development – 33 points maximum			
Timing of Development ^{3,4}	Extent of Access Improvement		
	Opens new development lands in the community	Significantly improves access to the community	Minimal Improvement
Approved secondary plan or subdivision plan; benefitting community is >50% built out	33	22	0
Approved secondary plan or subdivision plan; benefitting community is <50% built out	22	11	0
No approved plans	11	6	0
Congestion Reduction – 22 points maximum			
Level of Congestion ⁵	Extent of Delay Reduction		
	Significant Delay Reduction	Moderate Delay Reduction	Minimal Delay Reduction
Severe congestion today	22	18	0
High congestion today	18	14	0
Moderate congestion today, severe-high future congestion	14	10	0
Low congestion today, moderate-high future congestion	8	6	0
Low congestion today, low future congestion	0	0	0

³ Approved secondary plan or subdivision plan must cover a substantial portion of the growth area that would benefit from the project.

⁴ The Capital Infrastructure Plan will establish mechanisms for monitoring and re-prioritizing investments as land use and mobility patterns evolve. This will include reviewing the timing of development to respond to newly approved development plans.

⁵ As measured based on the volume of traffic relative to the available road capacity (v/c ratio).

City Building – 25 points	
Potential for Induced Demand & GHG Emissions – 4 points maximum	
4	Project provides for more direct routing of trips, reducing trip lengths (and GHG emissions); low potential for induced demand
2	Moderate to high potential for induced demand due to modal shift
0	High potential for induced demand due to modal shift as well as increased demand from people choosing to live outside of Ottawa
Support for Transit – 5 points maximum	
5	Project is integrated with rapid transit or includes transit priority measures such as bus lanes
3	Project improves the travel time for buses along an important transit route ⁶
1	Project improves the travel time for buses along a corridor used by transit
0	Project does not benefit transit
Effect on Equity Priority Neighbourhoods – 4 points maximum	
4	Project benefits Priority Neighbourhoods by reducing truck traffic or cut-through traffic, or through Complete Streets improvements
2	No impact on Priority Neighbourhoods
0	Project has a negative impact on Priority Neighbourhoods (air quality, noise, property impacts, barrier effect, loss of neighbourhood green space, etc.)
Natural Systems – 4 points maximum	
4	Minimal negative impact on natural systems
3	Project converts an open space, meadow area, treed or forested area
2	Project falls within 30m (in the urban area) or 120m (in the rural area) of a mapped natural heritage feature
1	Project falls within a floodplain; within 30m of a watercourse, wetland or Urban Natural Feature; or within 120m of a Natural Heritage Linkage Area
0	Project falls within 120m of a Natural Heritage System Core Area or Provincially Significant Wetland

⁶ Important transit routes will be identified based on the forecast number of riders or buses that are expected to use the corridor in 2046.

City Building (continued) – 25 points

Support for Place-Making & Healthy Streets – 4 points maximum

4	Project is through an urban area intended for medium or high pedestrian activity ⁷ and will have a positive impact on walkability, place-making and healthy streets
2	Adjacent land uses are not sensitive to street design (low pedestrian activity); minimal impact on place-making and healthy streets
0	Project has a negative impact on walkability, place-making and healthy streets (air quality, noise, property impacts, neighbourhood amenities, barrier effect, etc.) in areas intended for medium or high pedestrian activity. This includes projects with indirect negative impacts or “downstream impacts” on areas with medium or high pedestrian activity, even if the land uses adjacent to the project itself are not sensitive to street design.

Goods Movement & Economic Development – 4 points maximum

Metric	Significance of the project for goods movement and/or for enabling access to major destinations defined by the <i>Official Plan</i>
Scoring	<p>Calculate scores by adding up points for each of the following, to a maximum of 4 points:</p> <ul style="list-style-type: none"> • Project is an important freight route⁸: 3 points • Project is a direct route to a Special District, Special Economic District, Large-scale Institutions and Facilities (hospitals, major health care facilities, universities, community colleges, major employers, federal employment campuses, major sports, recreational and cultural facilities): 1 point each

Cost – 20 points

Total Lifecycle Cost – 20 points maximum

Metric	Total estimated lifecycle cost of the project in today’s dollars (includes capital cost as well as operating and maintenance cost)
Scoring	Projects with lower lifecycle costs will receive a higher score

⁷ Areas intended for high pedestrian activity will be based on *Official Plan* designations such as Design Priority Areas, Mainstreet Corridors, and Evolving Neighbourhoods.

⁸ Important freight routes will be defined based on the projected volume of trucks, as estimated using the regional travel demand model.