Road Project Evaluation Framework

Introduction

As part of the Transportation Master Plan (TMP) Update, the City of Ottawa will be reviewing its road network to identify and prioritize projects for implementation. Part 1 of the TMP, released in draft in December 2021, proposed a draft set of criteria for evaluating and prioritizing road projects (Policy 9-3).

The City is now expanding on these criteria by developing a comprehensive evaluation framework to select and prioritize road projects for implementation. Successful projects will be included in the City's Ultimate Network, which provides a long-term vision for Ottawa's road infrastructure. In addition, the highest scoring projects will be used to develop a phased implementation plan for various levels of investment, considering the City's GHG reduction targets, sustainable mode share targets, and affordability constraints.

Project Identification

Prior to evaluation, a long list of potential road improvements will be identified based on current and future needs and opportunities. Factors such as travel demand, existing service levels, access to new development, network considerations, and technical feasibility will be used to identify these projects. Prospective projects will include the following project types:

- **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.

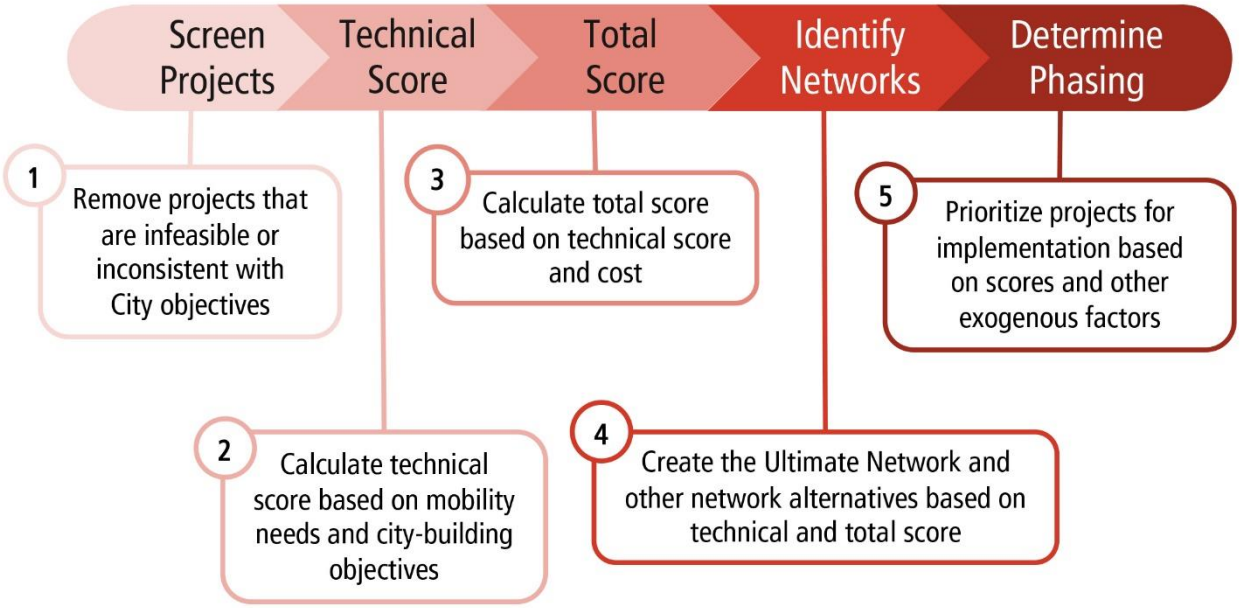
Projects in each category will only be assessed relative to other projects in the same category to account for the significant difference in cost and impact of each of these types of road investments.

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.

Evaluation Framework for New Roads and Road Widenings

The proposed evaluation framework for new roads and road widening projects is summarized in Exhibit 1 and discussed in further detail in the sections below.

Exhibit 1: Roads Evaluation Framework



Project Screening

Some of the road projects identified through the review of network needs and opportunities may not be technically feasible. Other projects may be inconsistent with City objectives, such as projects with major impacts on Provincially Significant Wetlands, roads being widened beyond four midblock lanes, and road projects that directly compete with rapid transit. Some road projects may be screened out at this stage; others may be adjusted to ensure feasibility or to minimize environmental impacts.

Project Scoring

Road projects will each be given both a **technical score** and **total score**, where the technical score excludes the estimated costs of the project. This approach sets a minimum threshold for technical performance of road projects, preventing the pursuit of low-value investments.

The metrics used to determine the technical score and total score of each road project are based on the criteria laid out in Policy 9-3 in Part 1 of the Draft TMP Update. The metrics are 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.
  - **Congestion Reduction:** The potential of the project to relieve congestion in areas where this relief is needed.
- **City-Building Impacts (score out of 20):** The contribution of the project to achieving the City's objectives identified in the new 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 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 new Official Plan.
  - **Support for Transit:** Projects that are integrated with transit infrastructure will score higher.
- **Cost (score out of 25):** Total estimated life-cycle cost of the project, including capital, operating and maintenance costs.

The technical and total score for each project will be calculated as follows. Detailed rubrics for each of these metrics can be found in Appendix A.

Network Identification

The Ultimate Network will be identified based on a technical score threshold; projects with scores below the technical score threshold will be removed to avoid pursuing low-value road investments. The remaining **projects will then be ranked from highest to lowest based on total score**. In addition, the highest scoring projects will be used to develop an implementation plan for various levels of investment, considering the City's GHG reduction targets, sustainable mode share targets, and affordability constraints.

Project Implementation Phasing

After determining the Ultimate Network, 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, and construction readiness. In particular, projects which are critical to supporting new development (i.e. projects with a maximum "access to development" score) may be considered for an earlier phase of implementation.

Evaluation 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 invaluable to support intensification.

As part of the TMP Capital Infrastructure Plan, the City will identify complete street modification projects in existing communities that would 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 a refined set of evaluation criteria that align with the criteria for other road projects:

- **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 new Official Plan and Transportation Master Plan:
  - Equity considerations and benefits to 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 have been identified, starting from the scoring rubrics in Appendix A. 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.

Next Steps

The next step in the TMP update process is the development of the Capital Infrastructure Plan (Part 2 of the TMP). Over the course of 2023 and early 2024, the results of the Origin-Destination Survey will be used along with other inputs to assess future travel trends and expected demand; update the City's transportation networks in accordance with anticipated mobility needs and mode share targets; and identify and prioritize transportation projects. Project prioritization will be based on the evaluation frameworks presented in this document, refined based on the results of public consultation.

Funding allocations for different modes and project types including new roads, road widenings and complete street modification projects will also be examined as part of the Capital Infrastructure Plan. The Capital Infrastructure Plan will include a phased implementation plan for various levels of investment in road projects, considering the City's GHG reduction targets, sustainable mode share targets, and affordability constraints. The Plan will be dynamic with respect to the implementation of projects, with flexibility to shift priorities if external factors affect planned growth or mobility.

Appendix A: Scoring Rubrics

Mobility Needs (55 points)

Table 1: Access to Development (35 points maximum)

Timing of Development	Extent of Access Improvement Provided
Approved secondary plan or subdivision plan; benefitting community is >50% built out	35 points – Opens new development lands in the community 15 points – Significantly improves access to the community 0 points – Minimal Improvement
Approved secondary plan or subdivision plan; benefitting community is <50% built out	25 points – Opens new development lands in the community 10 points – Significantly improves access to the community 0 points – Minimal Improvement
No approved plans	10 points – Opens new development lands in the community 5 points – Significantly improves access to the community 0 points – Minimal Improvement

Table 2: Congestion Reduction (20 points maximum)

Level of Congestion[1]	Extent of Improvement
Severe congestion today	20 points – Significant Delay Reduction 15 points – Moderate Delay Reduction 0 points – Minimal Delay Reduction
High congestion today	15 points – Significant Delay Reduction 10 points – Moderate Delay Reduction 0 points – Minimal Delay Reduction
Moderate congestion today, severe-high future congestion	10 points – Significant Delay Reduction 5 points – Moderate Delay Reduction 0 points – Minimal Delay Reduction
Low congestion today, moderate-high future congestion	5 points – Significant Delay Reduction 3 points – Moderate Delay Reduction 0 points – Minimal Delay Reduction
Low congestion today, low future congestion	0 points – Significant Delay Reduction 0 points – Moderate Delay Reduction 0 points – Minimal Delay Reduction

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

City Building (20 points)

Table 3: City Building

Criterion	Score
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 (4 points maximum)	4 – Project is integrated with rapid transit or transit priority measures such as bus lanes 2 – Project improves travel times along an important transit route 0 – Project does not include transit infrastructure
Effect on 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 treed or vegetated areas to roadway 2 – Project falls within a flood plain or within 30m (in the urban area) or 120m (in the rural area) of a mapped natural heritage feature 1 – Project falls within 30m of a wetland or Urban Natural Feature, or within 120m of a Natural Heritage Linkage Area 0 – Project falls within 120m of a Natural Heritage Core Area or Provincially Significant Wetland
Support for Place-Making & Healthy Streets (4 points maximum)	4 – Project is through an urban area intended for medium or high pedestrian activity[2] 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

[2] Areas intended for high pedestrian activity will be based on new Official Plan designations such as Design Priority Areas, Mainstreet Corridors, Evolving Neighbourhoods.

Costs (25 points)

Table 4: Cost

Criterion	Metric	Scoring
Total Lifecycle Cost (25 points maximum)	Total estimated lifecycle cost of the project in 2022 dollars (includes capital cost as well as operating and maintenance cost)	Scores normalized according to highest-scoring project within each category