



## REPORT FOR ACTION

# Green Streets Technical Guidelines

**Date:** October 2, 2017

**To:** Public Works and Infrastructure Committee

**From:** General Manager, Toronto Water and Acting Chief Planner and Executive Director, City Planning

**Wards:** All

## SUMMARY

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A Green Street is a road or street that incorporates green infrastructure, which includes natural and human-made elements such as trees, green walls, and low impact development (LID) stormwater infrastructure that provide ecological and hydrological functions and processes. Green Streets contribute to building climate change resilience and an improved quality of life in the city. They also support the Official Plan policies and the environmental objectives of the Toronto Green Standard, the Wet Weather Flow Master Plan and other City strategic initiatives including Complete Streets Guidelines, and ResilientTO.

This report advises Council on the completion of the Green Streets Technical Guidelines (the Guidelines), provided in Attachments 1 to 4, which have been prepared collaboratively by Toronto Water and City Planning in consultation with Transportation Services, Parks Forestry and Recreation, other City divisions, and stakeholders. The Guidelines provide guidance, standards, and selection tools for the planning, design, integration and maintenance of a range of green infrastructure by City divisions and private property owners. The Guidelines will facilitate the implementation of green infrastructure solutions in the city that provide environmental benefits including improved air quality, energy efficiency, stormwater management, and enhanced water quality, while ensuring that Toronto's streets remain efficient conduits for vital infrastructure and are attractive, functional corridors for pedestrians, transportation and transit.

The report provides an overview of the Guidelines, the consultation undertaken in developing the Guidelines, and a brief discussion on the next steps for the Guidelines' implementation.

## RECOMMENDATIONS

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The General Manager, Toronto Water and Acting Chief Planner and Executive Director, City Planning recommend that:

1. City Council receive this report for information.

## FINANCIAL IMPACT

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This report has no financial impact.

The implementation of Green Streets will affect both capital and operational budgets for Toronto Water, Transportation Services, and Parks, Forestry and Recreation.

## DECISION HISTORY

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On October 8, 2013, City Council requested that the General Manager, Toronto Water, the General Manager, Transportation Services, the Executive Director, Engineering and Construction Services, and the Chief Planner and Executive Director, City Planning to work together to develop "green infrastructure" standards for the public right-of-way for implementation in Transportation Services and Toronto Water capital projects with a target implementation date for the 2015 construction season. The Council decision can be viewed at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.EX34.4>

## COMMENTS

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### Background on Green Streets

A Green Street is a road or street that incorporates green infrastructure, which includes natural and human-made elements such as trees, green walls, and low impact development (LID) stormwater infrastructure that provide ecological and hydrological functions and processes.

Green Streets provide the following key benefits:

- Enhance the extent and health of the urban forest;
- Mitigate the urban heat island effect;
- Manage stormwater runoff to help mitigate flooding and enhance water quality;
- Reduce stormwater run-off within the right-of-way by promoting infiltration of water into the ground to sustain groundwater systems and maintain inflow patterns and evapotranspiration through plants and trees;
- Enhance air quality; and
- Conserve energy.

More broadly, Green Streets contribute to building resilience to the impacts of climate change, and improving the quality of life in the city. Green Streets support the environmental objectives of the Official Plan, the Toronto Green Standard, and other City strategic initiatives including Complete Streets Guidelines, the Wet Weather Flow Master Plan and Policy, and ResilientTO, as well as Toronto and Region Conservation Authority's (TRCA) Living Cities Policies.

## Green Streets Technical Guidelines

Toronto's Green Streets Technical Guidelines (the Guidelines), in Attachments 1 to 4, provide guidance, standards and selection tools for the planning, design, integration and maintenance of a range of green infrastructure options appropriate for the city's street types and conditions. The Green Infrastructure and Vegetation Selection Tools included in the Guidelines are innovative tools that support planning for green infrastructure from the Secondary Plan level to detailed design. The Guidelines were designed to support Complete Street solutions that address environmental sustainability for development within the City's road right-of-way, in order to help achieve the City's environmental goals. The standards can also be applied to green infrastructure on private property, and public open spaces such as parks.

The Guidelines are meant to be a tool for City staff, developers, and consultants with the key objectives of providing an understanding of sustainable stormwater planning and practices; informing the selection of appropriate green infrastructure options to be integrated as part of street retrofit/rehabilitation or new/reconstruction projects; and, ensuring that green street designs are attractive, functional and appropriate to their urban context.

To achieve these objectives, the Guidelines contain the following key components:

- **Section 2.0 - Green Street Solutions** - provides background on the process undertaken to define a list of green infrastructure options that would be viable within Toronto's road rights-of-way.
- **Section 3.0 - Technical Guidelines** - describes the integration between the Guidelines and Complete Streets Guidelines and provides a description of each green infrastructure technique identified in the Selection Tool. Construction considerations and guideline drawings are also provided in this section.
- **Section 4.0 - Green Infrastructure Selection Tools** - the Green Infrastructure Selection Tool and associated Vegetation Tool provide an efficient means to identify the most appropriate green infrastructure options for a given street condition and context.
- **Section 5.0 - Operations and Maintenance** - describes conditions, costs, repairs, replacement and expansion for green infrastructure options.
- **Section 6.0 - Monitoring Recommendations** - outlines monitoring objectives, methods, mapping, and tracking techniques and provides recommendations to guide integrate with other monitoring initiatives and databases.

### Guidelines Development - Research and Consultation

The development of the Guidelines was a collaborative initiative between City Planning and Toronto Water, working closely with Public Consultation, Transportation Services, Parks, Forestry & Recreation, and in consultation with other City divisions and external

stakeholders. The Guidelines document was prepared by a consulting team that included Schollen & Company Inc., Urban Forest Innovations, TMIG, and DPM.

The development of the Guidelines involved a thorough review of City policy documents to ensure that the new Guidelines considered and aligned with the City's existing policies and initiatives. Research included an analysis of twenty-two precedent manuals and guidelines from municipalities across North America (e.g. Philadelphia, Portland, New York City, etc.) and interviews with staff in these municipalities. Interviews were also held with City of Toronto staff, stakeholders, industry experts and product suppliers, in order to develop an understanding of experiences and issues related to green infrastructure in Toronto.

Extensive consultation was undertaken during the development of the Guidelines. The following groups were established to engage a broad range internal and external stakeholders:

- **Working Group** - staff from City Planning, Engineering and Construction Services, Parks Forestry & Recreation, Public Consultation, Transportation Services, and Toronto Water;
- **Advisory Group** - representatives from other City divisions, City agencies, boards and commissions, conservation authorities, environmental non-profit groups, universities (Ryerson University, the University of Toronto, and the University of Guelph), BILD GTA, and the Ontario Ministry of the Environment and Climate Change; and,
- **Technical Advisory Group** - subject matter experts in the field of green infrastructure from City divisions Toronto Region Conservation Authority, Credit Valley Conservation Authority, Ontario Ministry of Environment and Climate Change, City of Mississauga and Region of Peel, and other municipalities.

## Implementation

The completion of the Guidelines represents an important step to facilitate the future implementation of Green Streets in the City. While Toronto Water, City Planning and Transportation Services were developing the Guidelines, they were also implementing green infrastructure demonstration projects at various sites across the city. These demonstration projects include:

- **The Queensway Sustainable Sidewalk** - The first application of the use of a tree planting technology (Soil Cells) to treat and improve stormwater road run-off while support the growth of healthy trees;
- **South Station Street** - An urban and sub-urban bio-swale was constructed on opposite sides of the road to provide a visual demonstration of context sensitive Green Streets design; and,

- Fairford Parkette - A welcoming public space for the local community with the functionality of a bio-retention facility to absorb and clean water to demonstrate that form and function can co-exist.

Implementation of the Guidelines will focus on making them operational across the City. In the short-term, City divisions will be applying the Guidelines as part of additional green infrastructure demonstration projects. This will provide direct experience on the use of the Guidelines with respect to coordinating green infrastructure projects, capital and maintenance costs, etc. The insights gained by utilizing the Guidelines for green infrastructure demonstration projects will inform the City of elements needed for the long-term implementation of Green Streets in Toronto.

## **CONTACT**

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## **SIGNATURE**

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General Manager, Toronto Water

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Gregg Lintern  
Acting Chief Planner and Executive Director, City Planning

## **ATTACHMENTS**

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Attachment 1 - Green Streets Technical Guidelines (August 2017)  
Attachment 2 - Green Streets Appendices  
Attachment 3 - Green Streets Green Infrastructure Selection Tool  
Attachment 4 - Green Streets Vegetation Selection Tool