Clean Air Council Meeting –
Building a More Complete Value Proposition for Green Infrastructure
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Green Infrastructure Asset Management Plan: Lessons Learned

Managing Green Infrastructure as a Municipal Asset

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York Region

Overview

1. York Region Natural Heritage and Forestry
2. York Region Green Infrastructure Asset Management Plan
3. Why manage green infrastructure as an asset
4. Putting the plan into action / Lessons Learned

Natural Heritage and Forestry Division

Delivery five programs related to the protection and enhancement of green infrastructure

1. York Regional Forest
2. Forest Conservation By-law
3. Greening Strategy
4. Invasive Species Management
5. Urban Forestry/Street Trees

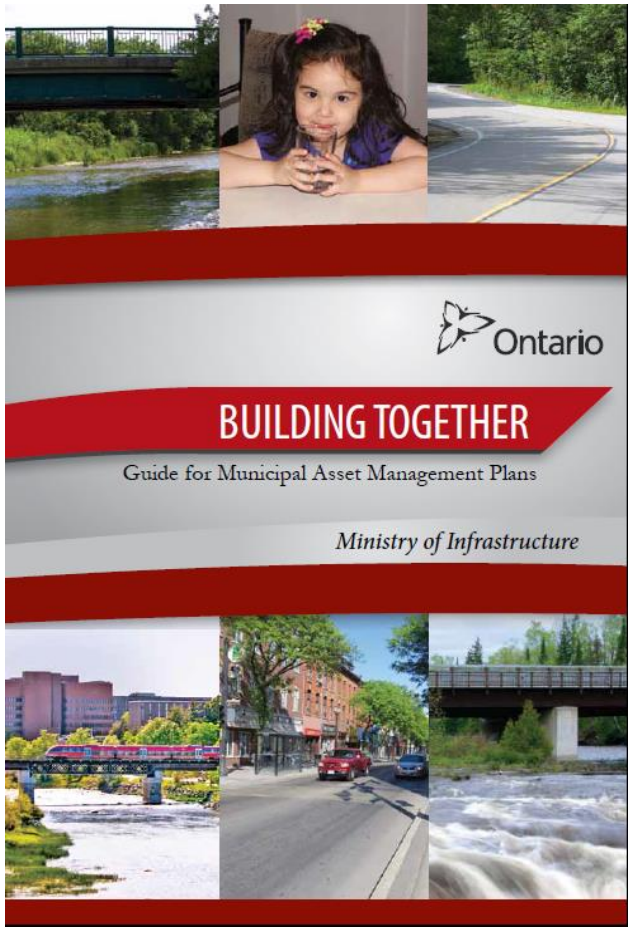
What is Asset Management

- Asset management planning is the process of making the best possible decisions regarding the building, operating, maintaining, renewing, replacing and disposing of infrastructure assets.

- The objective is to maximize benefits, manage risk, and provide satisfactory levels of service to the public in a sustainable manner.

Green Infrastructure Asset Management Plan

- Joint project between Forestry and Environmental Services Infrastructure Asset Management Groups
- Plan included all assets managed by the Forestry Division
- Plan followed the Ministry of Infrastructure Guide
- Key components included:
  - State of the infrastructure
  - Levels of service
  - Asset management strategy
  - Financing strategy
  - Continuous Improvement



Green Infrastructure Asset Portfolio

- Assets organized into biological assets and civil assets under three categories:
- Urban Forest
  - Biological – street trees, shrubs, perennials and growing media
  - Civil – soil cells, irrigation and drainage
- York Regional Forest
  - Biological – vegetation communities
  - Civil – trails, parking lots, fences, culverts, etc.
- Bill Fisch Forest Stewardship and Education Centre

State of the Infrastructure – Urban Forest Asset Valuation

What is the most appropriate and defensible method to value urban forest biological assets?

- Street trees – Use CTLA trunk formula method
- Shrubs and perennials – replacement cost
- Growing media – replacement cost
- Assessed ecosystem services using I Tree Eco
- Civil assets valued using depreciated replacement cost

State of the Infrastructure – York Regional Forest Asset Valuation

What is the most appropriate and defensible method to value Regional Forest biological assets?

- Forests – Timber value, land value, re-establishment cost
- Wetlands and prairies – land value, re-establishment (future)
- Assessed ecosystem services using I Tree Eco
- Civil assets valued using depreciated replacement cost

Asset Valuation Summary

	Asset Group	Valuation
Urban Forest	Biological Assets	421,493,342
	Civil Assets	1,981,140
	Urban Forest Total	**423,474,482**
YRF	Biological Assets	22,788,989
	Land	30,483,900
	Civil Assets	6,976,624
	York Regional Forest Total	**60,249,513**
Bill Fisch Forest Stewardship and Education Centre	Civil Assets	4,577,174
	Bill Fisch Forest Stewardship and Education Centre Total	**4,577,174**
	TOTAL	**$488,301,169**

Defining Levels of Service

- Identifying levels of service to be provided by green infrastructure was challenging
- Level of service includes:
  - Community level of service
  - Technical level of service
  - Performance measure

TABLE 3-3: URBAN FOREST PROPOSED LEVELS OF SERVICE

Community Level of Service	Service Attribute	Technical Level of Service	Technical Performance Measure	Planned Target
Will street trees, landscape vegetation and supporting infrastructure provide the expected benefits to residents over the long term?	Scope	% of available space along urban Regional roads occupied by street trees.	% of urban Regional roads meeting applicable landscaping standards.	95%
	Quality	Health of street tree and landscape plantings as a measure of aesthetics and performance of supporting assets (e.g. growing media and irrigation systems).	Tree health condition (% of street trees meeting satisfactory or better health rating).	90%
	Reliability	Annual ecosystem benefits in amounts and dollars including carbon sequestration, air quality impacts, stormwater runoff benefits.	Ecosystem benefits (e.g. kg/year).	> current

Green Infrastructure – Asset Management Strategies and Lifecycles

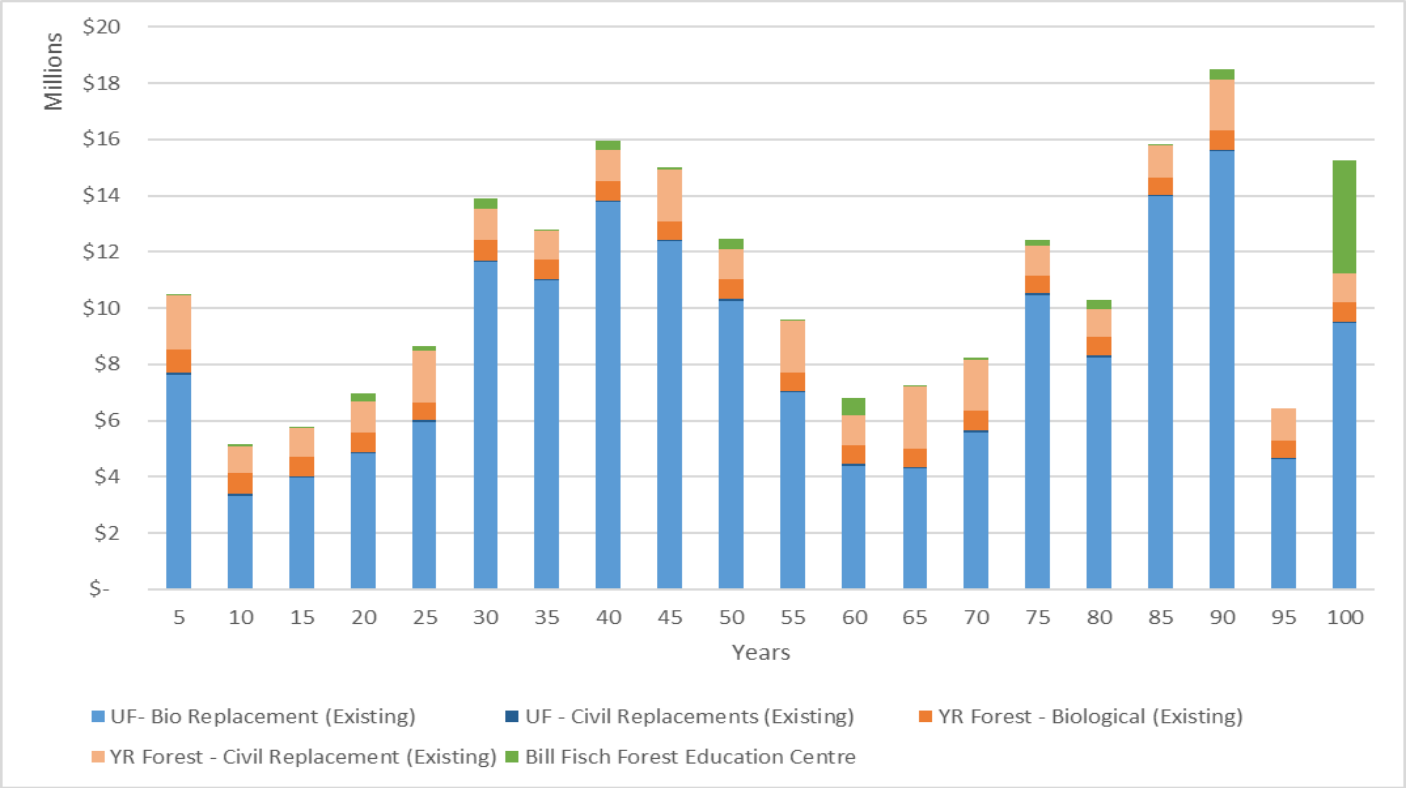
- Street trees - identify three growing environments and estimate average lifespan
  - Urban – 35 years
  - Suburban – 44 years
  - Rural – 53 years
- York Regional Forest – natural communities are self perpetrating (with maintenance)

TABLE 4-6 – URBAN FOREST MANAGEMENT STRATEGIES (BIOLOGICAL ASSETS)

Management task		Type	Treatment Location & Rationale	Frequency	Delivery
Trees					
Planting *(Under Warranty)*	Installation	Capital	To upgrade Regional corridors not meeting current landscaping standards, and to support transportation renewal plans. Additional warranty for 1 year if tree replaced under warranty.	As suitable transportation corridors are refurbished	Contract
	Watering	Capital	To ensure healthy establishment of new trees.	14 times each summer season (weekly) for 3 growing seasons	Contract
	Warranty Maintenance	Capital	Re-mulch at end of year 1. Re-mulch, fertilize, and remove stakes, watering bags at end of warranty (year 2). Conifer trees are wrapped in burlap during the first two winters.	At milestones as per establishment plan	Contract
	Tree Inspections	Capital	Detailed inspection at the time of planting and at least 1 warranty inspection per tree.	Assessed during the 3rd growing season.	YR Staff
Juvenile Tree Maintenance		Maintenance	Structural pruning, mulching, fertilizing. An average of 4 treatments per tree.	Every 3 years, post warranty period	YR Staff
Intermediate Tree Maintenance		Maintenance	Structural pruning.	Every 7 years	Contract
Mature Tree Maintenance		Maintenance	Removal of dead or hazard trees and pruning of hazard trees to manage risk in public rights of way.	Every 4 years plus requests and emergency tree work as required	Contract
Tree Removal and Stumping		Capital	All trees are removed and stumped at end of life.	As required	Contract

Green Infrastructure – Financial Strategy

- Funding plan to put asset management strategies into action, required investment to meet service levels
- Key outcomes from financial strategy
  - Need to review service levels and return on investment for some treatments
  - Need to establish reserve to minimize impacts of funding peaks



Why Manage Green Infrastructure as an Municipal Asset

- Recognize and communicate the benefits provided by green infrastructure
- Provides a defensible approach to identifying investment requirements – levels the playing field
- Increase access to infrastructure funding programs
- Green infrastructure can provide a lower cost solution than traditional grey infrastructure

Putting the Plan into Action

- The plan has resulted in securing additional capital funding, additional $0.5 million per year
- Implementing improvements in data collection and management
- Identified the need for a forestry replacement reserve
- Plan meets the requirements of Ontario Regulation 588/17
- Plan scheduled for review and update in 2021
- A component of a successful DMAF application

Questions

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