

From Nice to Have to Must Have: Making the Case for Green Infrastructure in York Region

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Overview

- Natural Heritage and Forestry – What we do
- Setting the Context
- Key Elements for Moving the Agenda on Green Infrastructure
- Where we are today – Managing Green Infrastructure as a Municipal Asset



Natural Heritage and Forestry

- Delivery service in five key business areas:
 - Urban Forestry
 - York Regional Forest
 - Forest Conservation By-law
 - Invasive Species
 - Green Infrastructure
- Programs implemented by 23 professional staff
- Heavily rely on contractors to deliver operations and partners to deliver programs



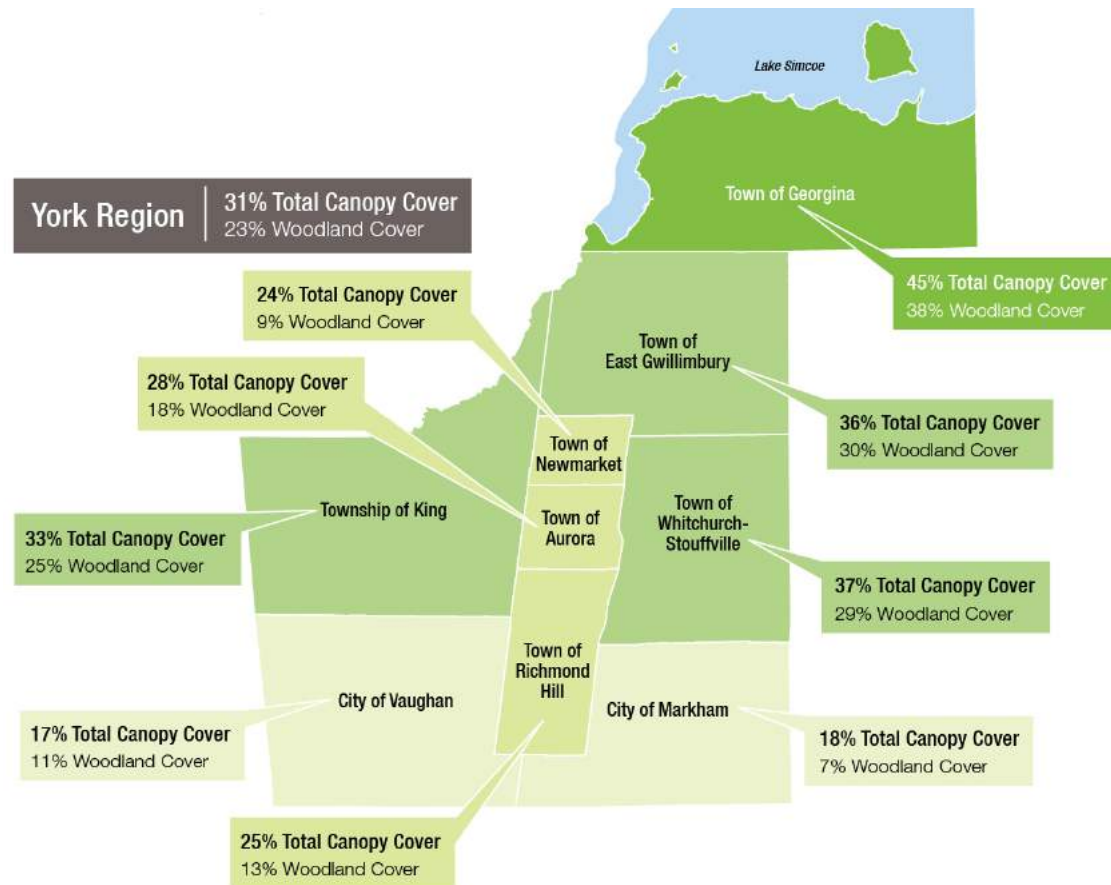
Setting the Context – York Region

- Upper tier municipality located in the Greater Toronto Area of Ontario
- 1,766 sq. KM
- Population of 1.11 million
- Provides Regional Services
 - Policing and land ambulance
 - Water and waste water treatment
 - Regional or arterial transportation system, including transit



Setting the Context – Forest Resources

- Canopy cover - 31%
- Range - 17%S – 45%N
- Target - 35% (2031)
- Woodland cover - 23%
- Range - 9%S - 38%N
- Target – 25% (2031)



Setting the Context – Legislative and Policy Framework

- Provincial – Municipal Act, Planning Act, Places to Grow, Oak Ridges Moraine, Green Belt
- Regional – Official Plan, Strategic Plan, Forest Management Plan, Forest Conservation By-law
- Local – Official Plans, Natural Heritage Studies, Zoning, Single Tree By-laws

Setting the Context – Actor's Influencing Green Infrastructure

- Public
- Elected Officials
- Regional – senior management
- Regional – staff
- NGO's
- Corporate interests – developers, agriculture

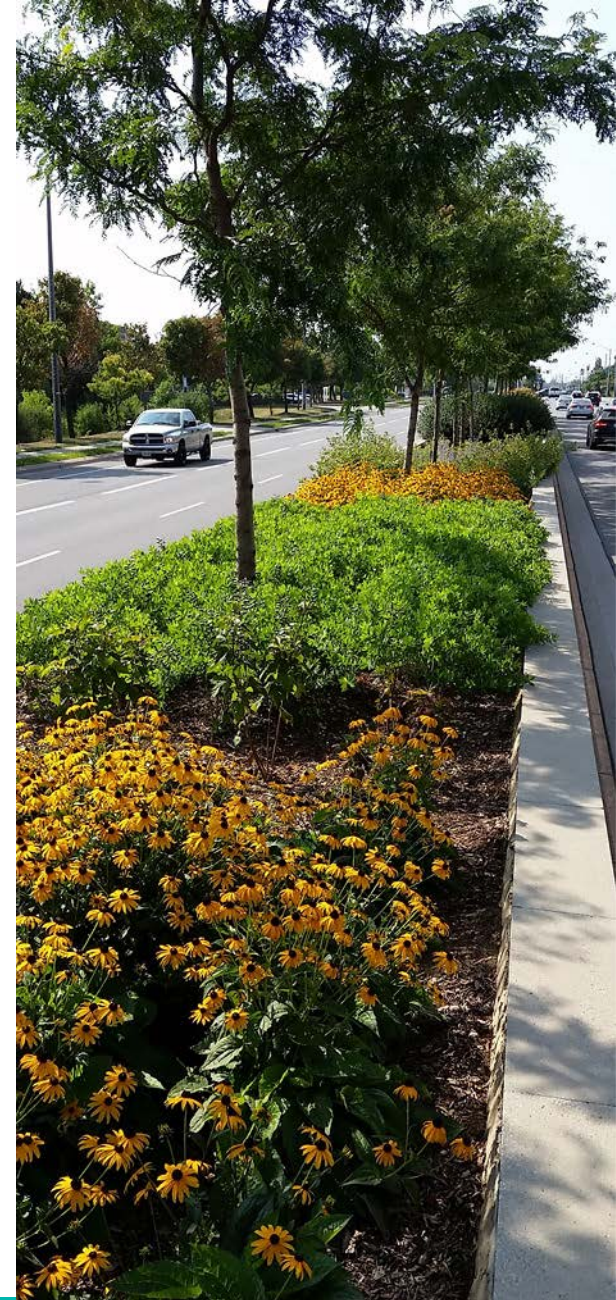


Key Elements for Moving the Agenda on Green Infrastructure

- Public support / influence
- Creditability – walking the walking
- Demonstrating value – quantifying the benefits
- Turn challenges into opportunities
- Communication – talking in a language people understand
- Strong corporate culture / support

Public Support / Influence

- Public opinion strongly influences elected officials and policy direction
- Greening Strategy – public demanding on the ground action
- Forest Conservation By-law – public and NGO pressure on tree removal issues
- Natural Heritage Feature Protection – Save the Oak Ridges Moraine

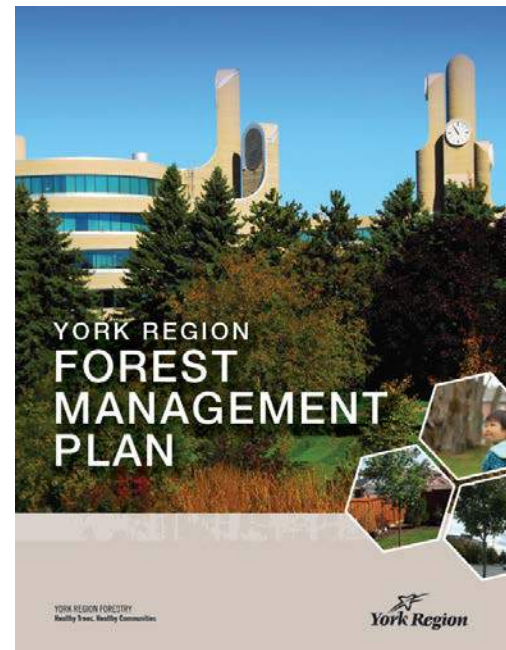


Creditability – Walking the Walking

- Building creditability with public, elected officials and senior management critical to moving the agenda
- Improving street tree health from 23% to 84%
- Forest Conservation By-law – balance forest protection and agricultural uses
- Forest Stewardship Council certification

Turn Challenges into Opportunities

- Significant issues affecting trees and forests:
 - Asian Long Horn Beetle
 - Emerald Ash Borer
 - Ice storms
- Positive outcomes:
 - Municipal tree inventories
 - Urban forest management plans
 - Canopy cover targets
 - Increased awareness



Demonstrating Value – Quantifying the Benefits

- Everyone loves trees, but do they truly understand the benefits
- Urban forest studies (I Tree Eco) completed in each local municipality
- Results:
 - \$8 million in energy savings per year
 - Remove 3200 tonnes of air pollution annually
 - Remove 77,000 tonnes of carbon annually, equivalent to taking 60,000 cars off roads

BENEFITS OF TREES



IMPROVED HEALTH



CANCER PROTECTION



SAVE ENERGY



SAVE MONEY



INCREASED
PROPERTY VALUE



REDUCE FLOODING



IMPROVED
WATER QUALITY



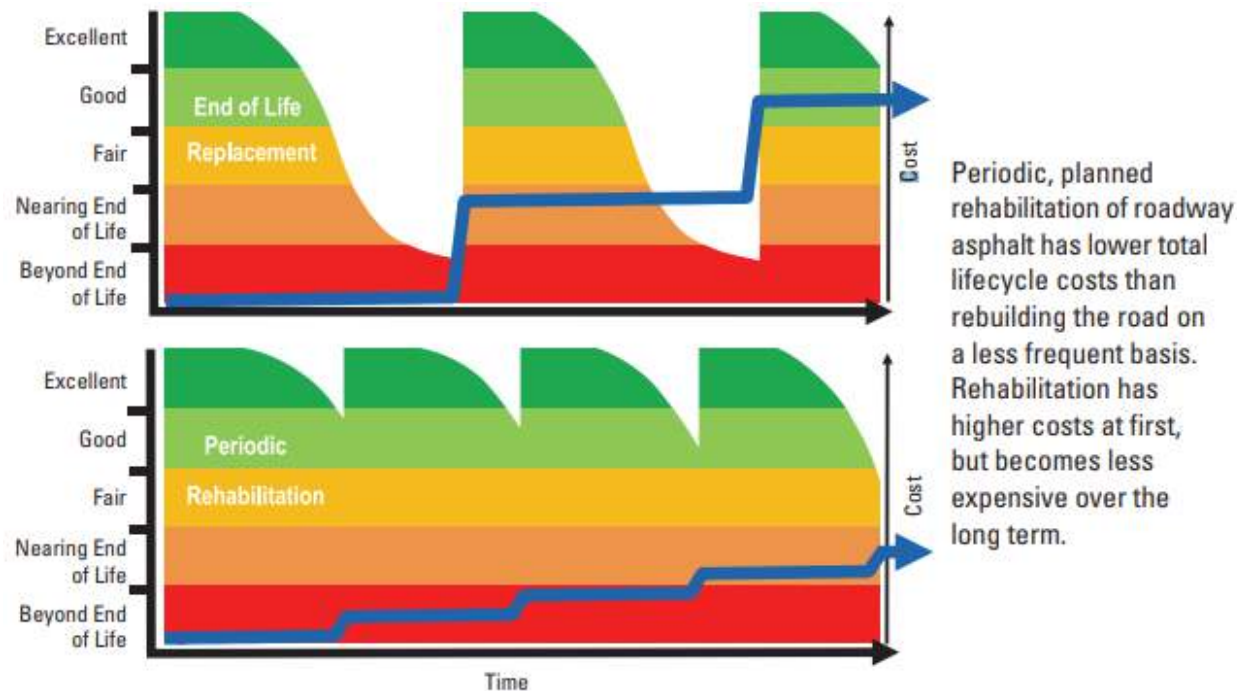
BREATHE EASY



MITIGATE CLIMATE CHANGE

Where we are today – Managing Green Infrastructure as a Municipal Asset

- Process of making the best possible decisions regarding the building, operating, maintaining, renewing, replacing and disposing of infrastructure assets



Why manage green infrastructure as an 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



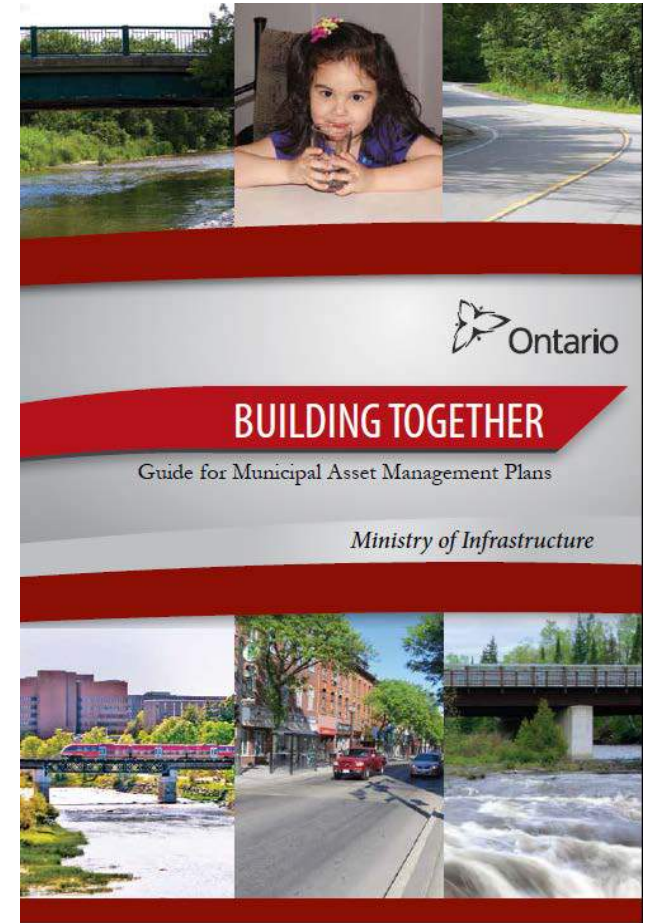
Beginnings of Green Infrastructure Asset Management

- 2013 – Green infrastructure included in state of the infrastructure reporting
- 2015 – Green infrastructure reported in second state of the infrastructure report
- Green infrastructure includes:
 - Street trees
 - York Regional Forest



Green Infrastructure Asset Management Plan

- Planned 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

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.



Asset Valuation – Results

	Asset Group	Valuation
Urban Forest	Biological Assets	421,483,342
	Civil Assets	1,981,140
	Urban Forest Total	423,474,482
YRF	Biological Assets	22,788,989
	Land	30,483,900
	Civil Assets	8,978,624
	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

Green Infrastructure – Levels of Service

- Identifying levels of service to be provided by green infrastructure was the most challenging element of the plan
- 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	Reported 2016	Data Source
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%		GI AMP 2017
	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%	84%	2015 Street Tree Health Assessment
	Reliability	Annual ecosystem benefits in amounts and dollars including carbon sequestration, air quality impacts, stormwater runoff benefits.	Ecosystem benefits (e.g. kg/year).	> current	Carbon - 293,102 kg/yr Pollution - 9,478 kg/yr	Silvecon Effective Valuation Tech Memo

Green Infrastructure – Asset Management Strategies

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

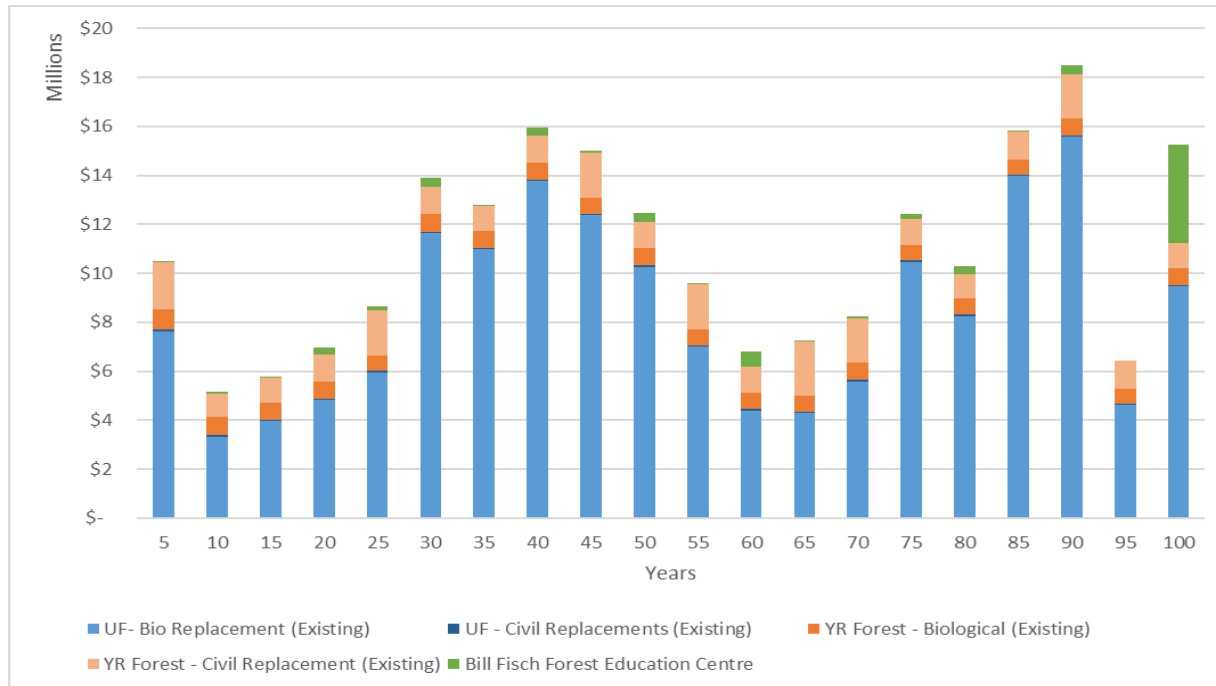
Management task	Type	Treatment Location & Rationale	Frequency	Delivery	
Trees					
Planting (Under Warranty)	Installation	Capital	To upgrade Regional corridors not meeting current landscaping standards, and to support transportation renewal plans. Additional warranty for 1 year if tree replaced under 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

TABLE 4-8 – URBAN FOREST MANAGEMENT STRATEGIES (CIVIL ASSETS)

Item	Treatment & Rationale	Freq. (yr)	Delivery
Tree Grates			
Description	Tree grates are decorative metal plates made from cast iron or cast aluminum that are placed around tree bases.		
Function	They are important for tree health in urban environments as they help avoid soil compaction, allow water and air reach the soil, and keep roots of urban street trees from becoming a stumbling obstacle to pedestrians.		
Capital	Installation	None	Contract
Capital	Replacement	100	Contract
Soil Cells			
Description	Soil cells are engineered modules that are installed below engineered surfaces such as pavements and sidewalks.		
Function	Soil cells are typically installed under the sidewalks and other highly impervious urban areas to enhance the root space and other resources available to street trees. They also minimize root damage to other infrastructure in the road corridor and provide some degree of stormwater management through absorption, evapotranspiration, and interception.		
Capital	Installation	None	Contract
Capital	Replacement when sidewalk over the cell is renewed	50	Contract
Assumptions	Capital costs: Soil cell expected life is 115 years (as per manufacturer) but are replaced on a shorter cycle due to replacement cycles of surrounding infrastructure.		
Automated Irrigation Systems			
Description	Drip irrigation systems are installed at all new planter sites where possible and include a supply connection, meter, backflow preventer, controller, valves, PVC pipe, and drip emitters		
Function	To supplement natural rainfall and maximise the health of the landscape plantings by minimizing water stress		
Capital	Installation	None	Contract
Maintenance	Spring and fall maintenance (flushing and charging)	Annual	Contract
Maintenance	Periodic repairs and component replacements	Variable	Contract
Capital	Replacement	20	Contract
Assumptions	Growth: All urban landscape planters get automated irrigation		

Green Infrastructure – Financial Strategy

- Funding plan to put asset management strategies into action, required investment to meet service levels
- Modelling shows significant peaks in funding during 100 years



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



Questions

Contact

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