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Halifax Urban Forest Master Plan

SPECIAL REPORT

TD Economics

September 24, 2014

THE VALUE OF URBAN FORESTS IN CITIES ACROSS CANADA

Highlights

- Urban forests are the trees and other plants found on the streets, in our yards, in parks, and surrounding our major cities.
- These forests provide a multitude of benefits, enhancing the landscape, reducing pollution, and helping control heating/cooling costs.
- The greater Halifax, Montreal, and Vancouver areas together contain more than 100 million trees, worth an estimated $51 billion (Halifax: $11.5b; Montreal: $4.5b; Vancouver: $35b).
- The return on trees is significant: for each dollar spent on maintenance, between $1.88 and $12.70 in benefits are realized each year, depending on the city.

In June of this year, TD Economics released the report "Urban Forests: The Value of Trees in the City of Toronto", available here. It demonstrated the various benefits of trees from a range of dimensions that are often underappreciated. The report found that the urban forest was worth $7 billion and residents receive from $1.35 to $3.20 in benefits for each dollar spent on forest maintenance (Table 1).

The report received strong interest from across the country, which naturally led to requests for similar estimates for other Canadian urban centres.

This report examines the economic and environmental benefits of the forests in and around three major Canadian cities: Halifax, Montreal, and Vancouver. We describe the environmental benefits provided by these forests, and then examine the unique characteristics of each city's urban forest. In contrast to the Toronto report, this report looks at the forests within the greater area surrounding each city. Our analysis thus includes the Halifax Regional Municipality (HRM), Greater Montreal, and the Greater Vancouver Regional District (GVRD).

A high level of variation exists across cities: for instance, as Chart 1 shows, canopy cover (the share of a city area shaded by trees) varies widely. Even within an area, variation can be observed, as the canopy within the City of Vancouver is much lower than for the Greater Vancouver area overall/ in general.[1]

Table 1 - Annual benefits provided by Toronto's urban forests

Benefit	$ value (millions)	$/tree
Wet-weather flow	$53.95	$5.28
Air quality	$19.09	$1.87
Energy savings	$6.42	$0.63
Carbon sequestration	$1.24	$0.12
Energy emission abatement	$0.58	$0.06
Total benefit	$81.29	$7.95
Cost benefit ratio	-	$1.35 - $3.20

* Carbon avoided and sequestered is net of the emissions from the decomposition and maintenance of trees.

Source: Toronto Parks, Forestry & Recreation, TD Economics.

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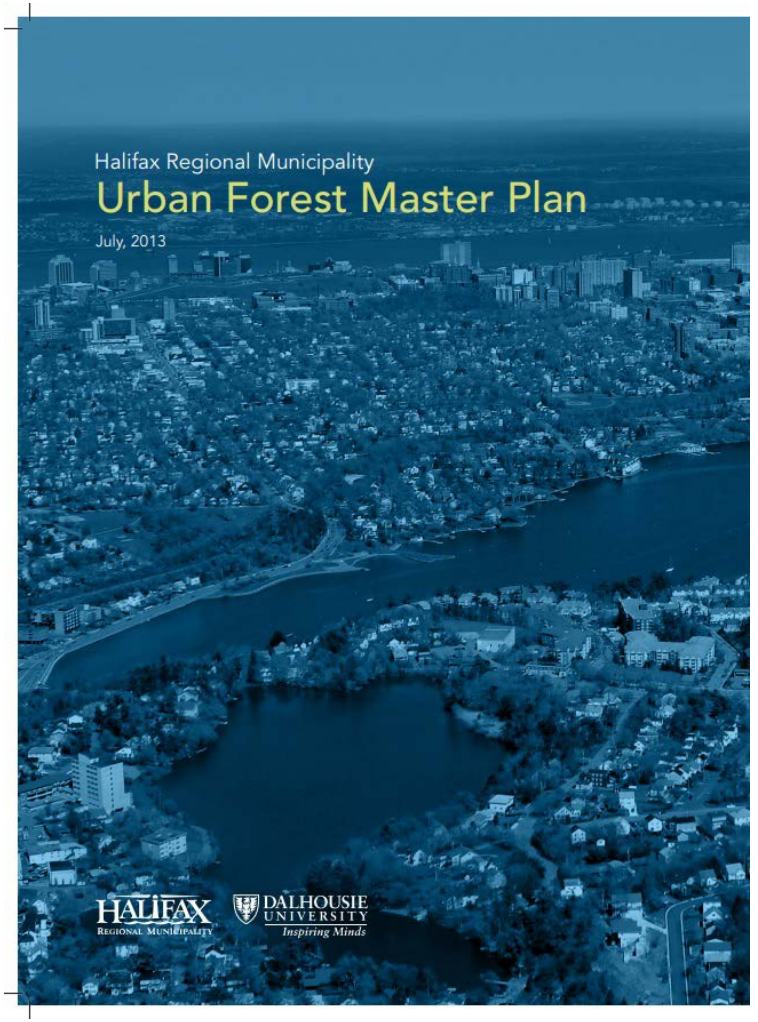

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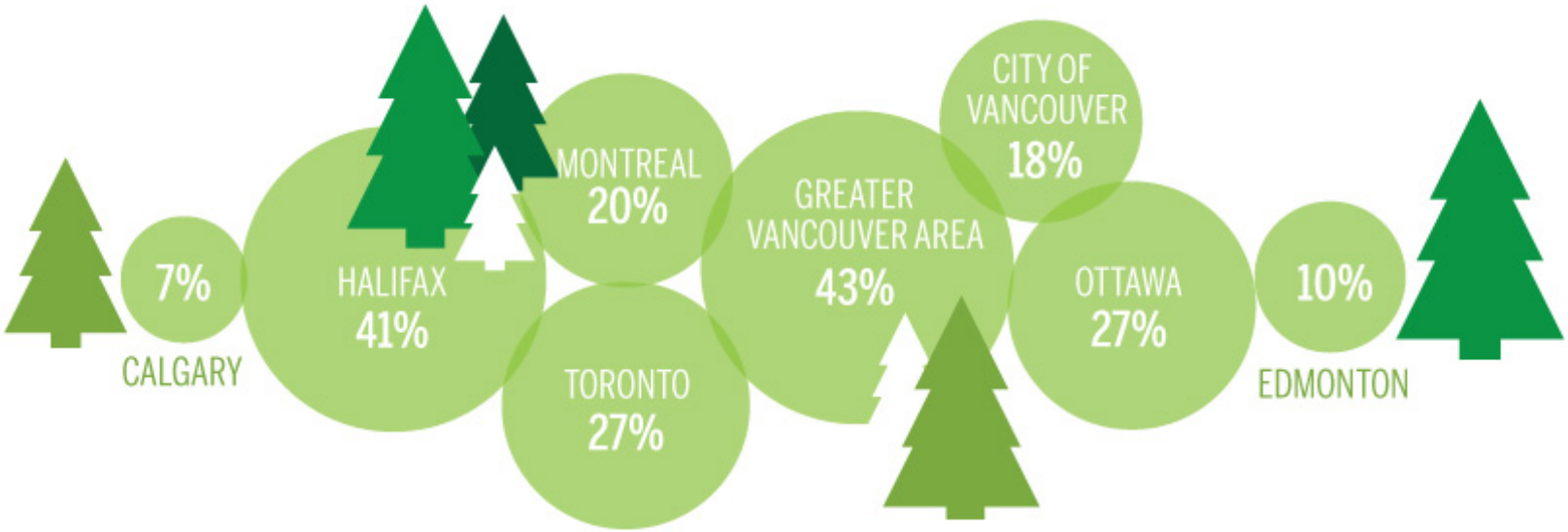
Urban forests in major Canadian cities

The percentage of each city's area covered by trees



SOURCE: MUNICIPALITIES; Kardan, omid et al., (July 2015), Scientific Reports | GRAPHIC: Amanda Shendruk

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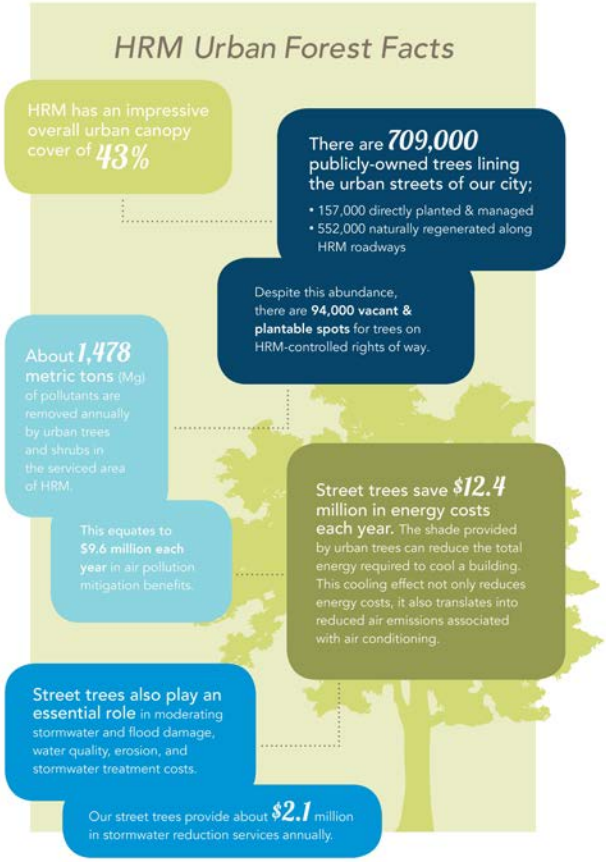
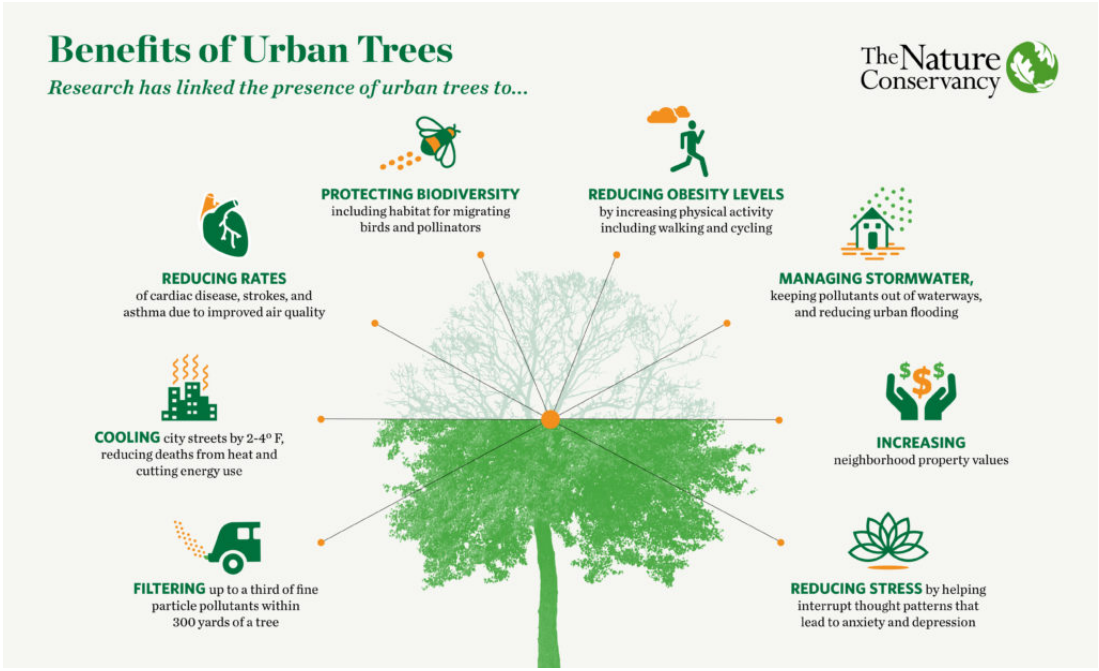
GREEN NETWORK PLAN

JUNE 2018


HRM Urban Forest Facts
HRM has an impressive overall urban canopy cover of 43%
There are 709,000 publicly-owned trees lining the urban streets of our city;
• 157,000 directly planted & managed
• 552,000 naturally regenerated along HRM roadways
Despite this abundance, there are 94,000 vacant & plantable spots for trees on HRM-controlled rights of way.
About 1,478 metric tons (Mg) of pollutants are removed annually by urban trees and shrubs in the serviced area of HRM.
This equates to $9.6 million each year in air pollution mitigation benefits.
Street trees save $12.4 million in energy costs each year. The shade provided by urban trees can reduce the total energy required to cool a building. This cooling effect not only reduces energy costs, it also translates into reduced air emissions associated with air conditioning.
Street trees also play an essential role in moderating stormwater and flood damage, water quality, erosion, and stormwater treatment costs.
Our street trees provide about $2.1 million in stormwater reduction services annually.


Benefits of Urban Trees
Research has linked the presence of urban trees to...
The Nature Conservancy
PROTECTING BIODIVERSITY including habitat for migrating birds and pollinators
REDUCING OBESITY LEVELS by increasing physical activity including walking and cycling
REDUCING RATES of cardiac disease, strokes, and asthma due to improved air quality
MANAGING STORMWATER, keeping pollutants out of waterways, and reducing urban flooding
COOLING city streets by 2-4° F, reducing deaths from heat and cutting energy use
INCREASING neighborhood property values
FILTERING up to a third of fine particle pollutants within 300 yards of a tree
REDUCING STRESS by helping interrupt thought patterns that lead to anxiety and depression

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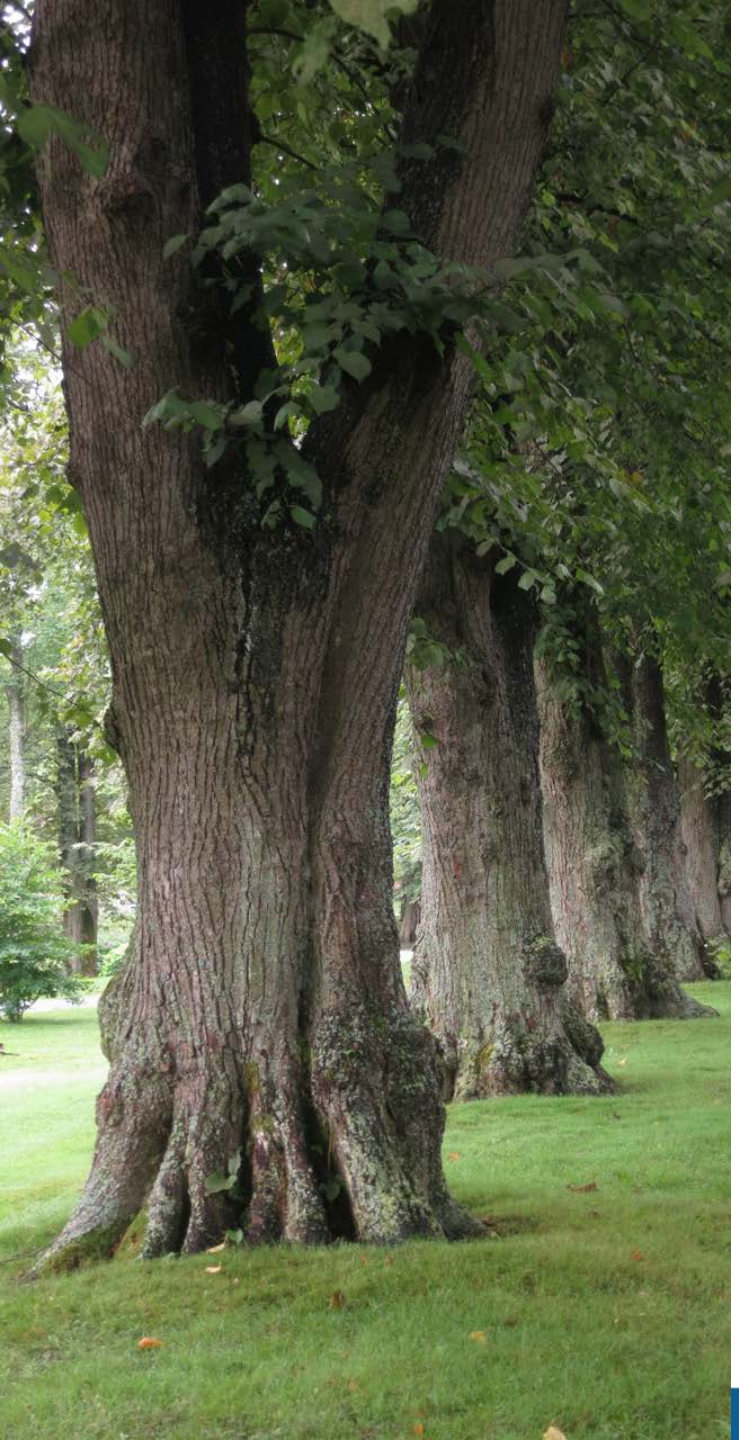

Accessibility, Community Building and Social Health

HRM's Plan on a Page: 2017-2021

The Plan on a Page articulates the values of our organization and demonstrates our key priorities.

VISION

HRM's vision for the future is to enhance our quality of life by fostering the growth of healthy and vibrant communities, a strong and diverse economy, and sustainable environment.

MISSION

We take pride in providing high-quality public service to benefit our citizens. ***We make a difference.***

VALUES

- Respect
- Collaboration
- Diversity & Inclusion
- Integrity
- Accountability
- Evidence-Based Decision Making
- Sustainability

ADMINISTRATIVE PRIORITY AREAS

- Financial Responsibility
- Our People
- Health & Safety
- Service Excellence

COUNCIL PRIORITY AREAS

- Economic Development
- Service Delivery
- Healthy, Liveable Communities
- Social Development
- Governance & Engagement
- Transportation

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Mental & Physical Health

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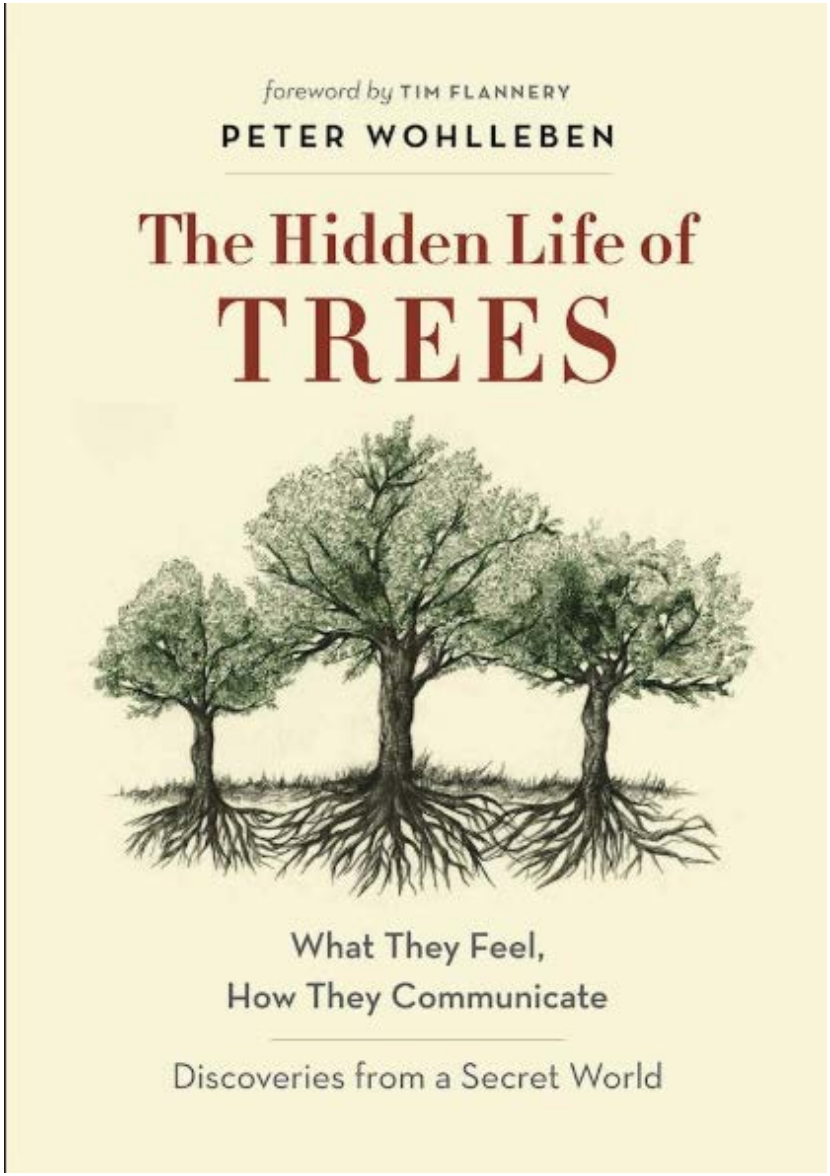

- No ‘Forest Parents’
- Conflict with Urban Infrastructure
- Limited room for roots
- Poor quality and quantity soils
- Pollution
- Construction
- Invasive species
- Mechanical damage
- Poor branching habit

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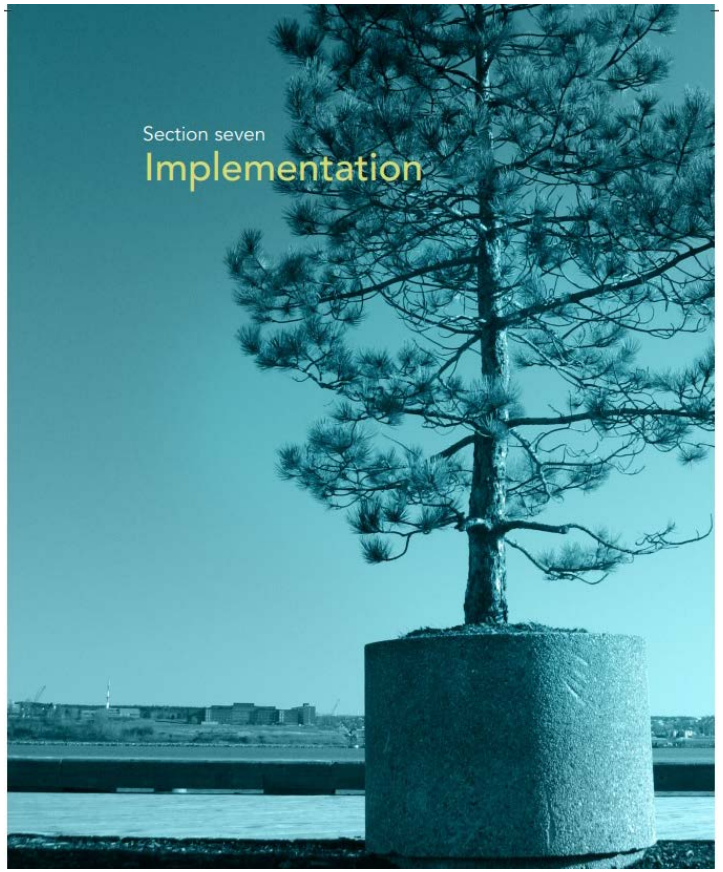
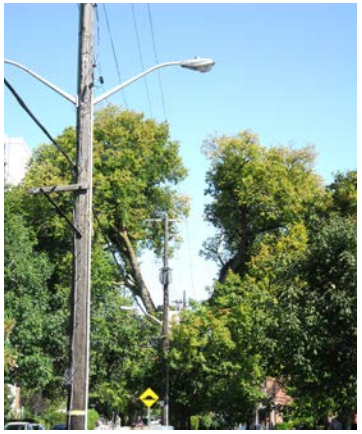
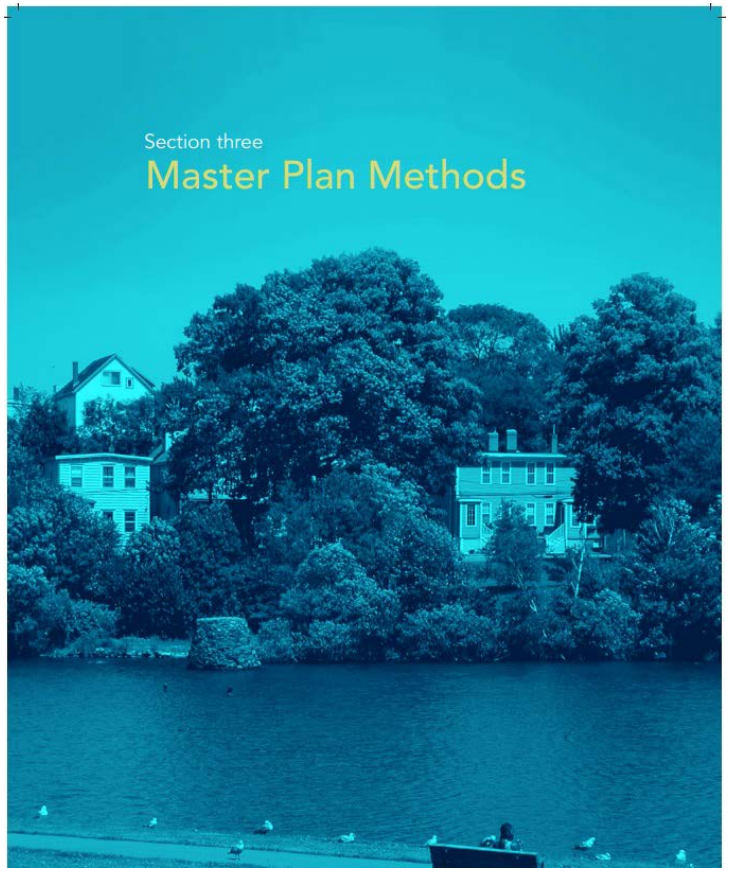

Section seven
Implementation




Section three
Master Plan Methods

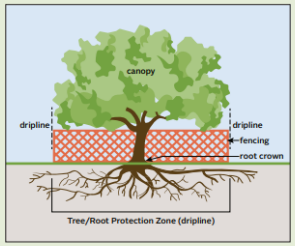
GUIDE TO URBAN
TREE PLANTING
ND DETAILS

Const

Trees near construction and demolition can face significant stress. Damage to trunks and branches, excavation of roots, compaction of soil, and changes to grades and drainage patterns can lead to an unhealthy or unsafe tree. In extreme cases construction and demolition work may contribute to the death of a mature tree.

If trees are to be preserved during and after construction or demolition of an adjacent development, tree protection measures are required.

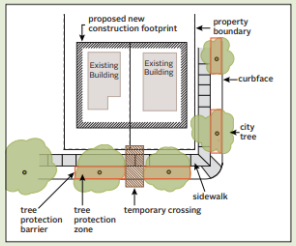
The Halifax Regional Municipality has a Tree Protection By-law T-600 which regulates activities within the dripline of a mature tree. The dripline is defined as the area directly located under the outer circumference of the tree branches. A permit is required for such activities, and will be granted by the municipality upon receipt of a tree protection plan.



At a minimum, the Tree
include a drawing identi

- all existing buildings,
surfaces and all existi
trees within the distur
- location, size and specie
owned trees to be retaine
and the extent of the tree
- location of proposed tree pro
fencing and locations of tempo
points within the Tree Protection
- All proposed changes on site (e.g. fo
of new building with number of floors,
access points, boulevard crossings or oth
modifications of the Right of Way within
the minimum Tree Protection Zone)
- Locations and extent of any proposed
laydowns and or construction materials
storage area(s)

Tree Protection Plan Example

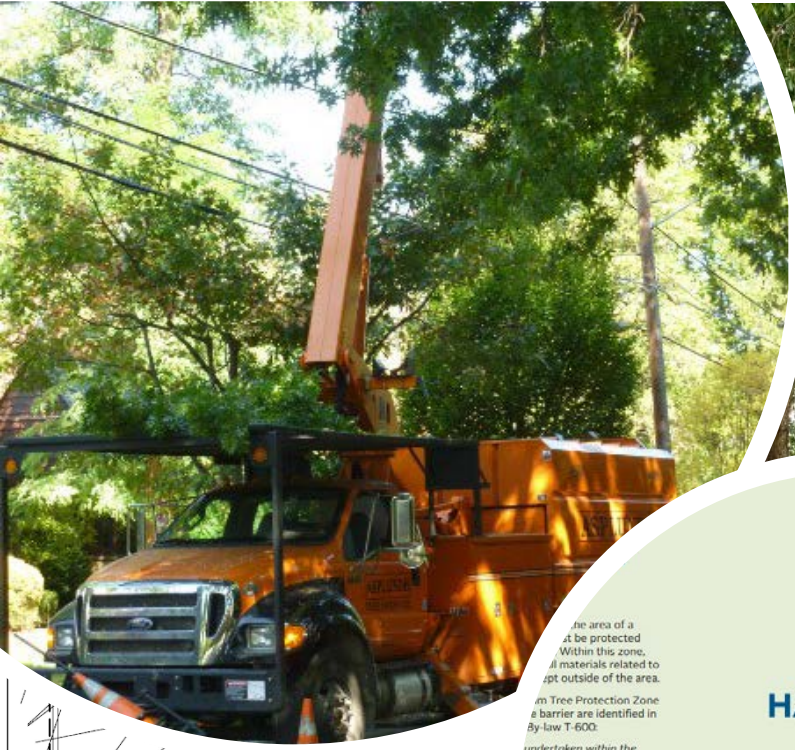


- Rig
- Plywood ove
mulch

Anti-compaction measu
place longer than six mo
suffocate.

Exceptions

Any exceptions, Tree Protecti
alteration, or tree pruning for
require consultation and appro
Regional Municipality.



ORANGE BARRIER FENCE ALONG PERIMETER

VARIES SEE TREE PROTECTION ZONE CALCULATION TABL

PROFILE VIEW

2m (min)

SIGN, ON TWO (2) ...
TREE PROTECTION ZONE ...
NOT REMOVE FENCE DURING CONSTRUCTION

TOP AND BOTTOM RAIL MIN. 28mm X 89mm

WOODEN POST MIN. 76mm X 76mm BRACE AS REQUIRED

ORANGE BARRIER FENCE ALONG PERIMETER

WOOD OR METAL POST BELOW GRADE. IF METAL IS SPECIFIED

...ne area of a
...t be protected
...Within this zone,
...ll materials related to
...pt outside of the area.

...m Tree Protection Zone
...e barrier are identified in
...By-law T-600:

...undertaken within the zone of a public tree, ...eater, the person doing the ...ect the tree with a barrier ...3 metres high and 2 metres ...e of .5 metres for every 45 ...r at the breast height of ...hever is greater and where

...ne Calculation Table

...imum Protection ...ance Required ...sure from the outside ...of tree trunk)

...ers

7. ...

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For further information on tree protection requirements and construction, and the tree protection By-law T-600, please call 311 or email contact@halifax.ca

halifax.ca/trees

March 15, 2019

Thank You

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