



Hamilton
Public Works

**Public Works
Operations and Waste Management**

**Emerald Ash Borer (EAB) Action
Plan (Report PW10088a)**

**General Issues Committee
September 6, 2012**

Providing services that bring our City to life !

Introduction

- Emerald Ash Borer (EAB) is an Asian beetle that kills common ash trees in North America and has no known predators
- All ash trees within the City of Hamilton will be infected and are expected to die within the next 8 to 10 years
- Potential infestation of EAB on Ash trees first reported to Council in 2003 (Report PW03063), followed by a series of Information Updates in 2009
- EAB Management Plan (Report PW10088) presented to Public Works Committee in September 2010
 - *Staff directed to look at additional options and to report back*
- Schollen & Company Inc. and Urban Forest Innovations retained to develop an EAB Action Plan as per Council's direction
- Today's presentation by Consultant (Philip van Wassenaer) provides an update to the 2010 report, highlighting EAB management strategies, control and detection methods, and what other municipalities are doing
- Six options will be presented for Council's consideration for an EAB Action Plan

→ Community
→ People
→ Processes
→ Finance



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Public Works Department Presentation

Emerald Ash Borer Action Plan



SCHOLLEN & Company Inc. with Urban Forest Innovations Inc.

Emerald Ash Borer Action Plan

The EAB Report:

- Presents an Action Plan, with options, based upon a review and update of the 2010 Ken Marchant strategic plan to manage EAB and its effects upon the urban forest
- Provides an update to the 2010 report '*Strategic Plan to Manage the Emerald Ash Borer in Hamilton*'
- Investigates and provides options to manage EAB and considers:
 - Cost-effective and sustainable approaches to manage the EAB infestation in the City of Hamilton,
 - Possible actions to reduce the impacts of the beetle, and
 - Possible actions to enable the City to define the timing of the loss of its ash trees
- Serves as a tool to help establish a framework for local EAB preparedness, community engagement and budget direction by outlining the major issues and providing guidance on how to address them effectively
- Is based on a 10-year planning horizon

Infested Ash Tree



Emerald Ash Borer Action Plan

EAB Facts:

- Rapid spread of EAB has been greatly affected by the inadvertent human transport of beetle-contaminated firewood and other infested ash materials
- The Canadian Food Inspection Agency has put regulatory measures in place to restrict the movement of any ash tree materials from infested areas
- Ministerial Orders under the Plant Protection Act, 1990 now prohibit the transportation of infested or potentially-infested wood materials
- No federal or provincial funding to date, limited role of the CFIA
- EAB affected trees usually result in death within 2-3 years after initial attack
- Based on the experiences of municipalities already affected by EAB, it appears the infestation cycle may last about 10 years
- Since 2002, EAB has spread throughout the American Midwest and northeastern states, and through much of Southern Ontario
- Like many introduced insects, EAB has an array of natural enemies in its native range, but few exist in North America

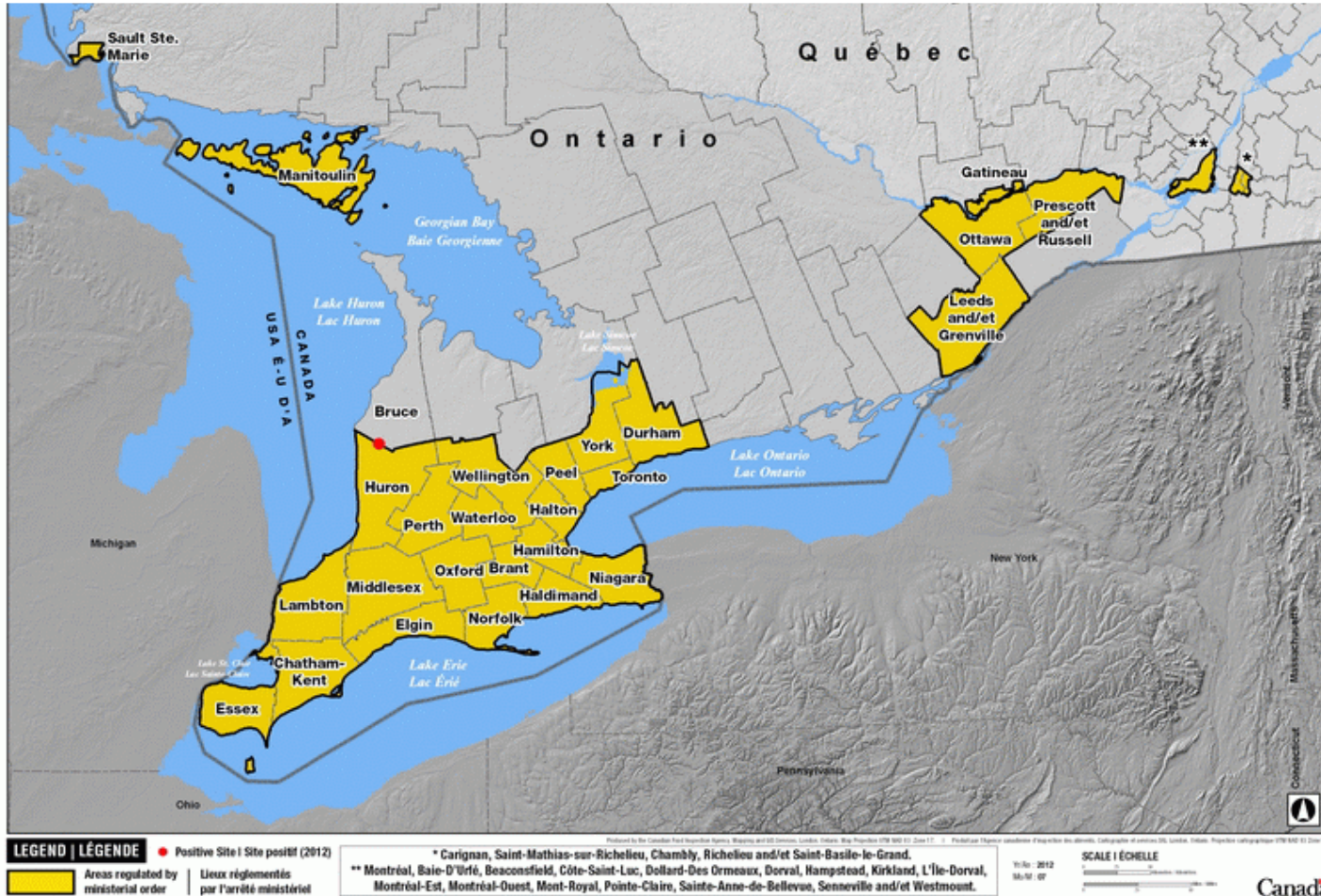


Emerald Ash Borer

Emerald Ash Borer Action Plan

EAB Regulated Areas in Ontario

Note: The Canadian Food Inspection Agency (CFIA) confirmed the presence of EAB in Bruce County on July 11, 2012 and also Frontenac County on August 8th



Emerald Ash Borer Action Plan

Ash Trees in Hamilton:

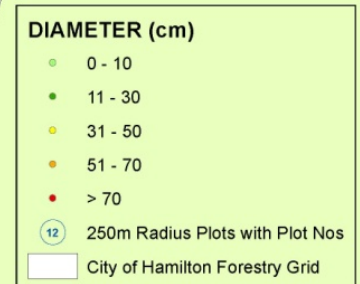
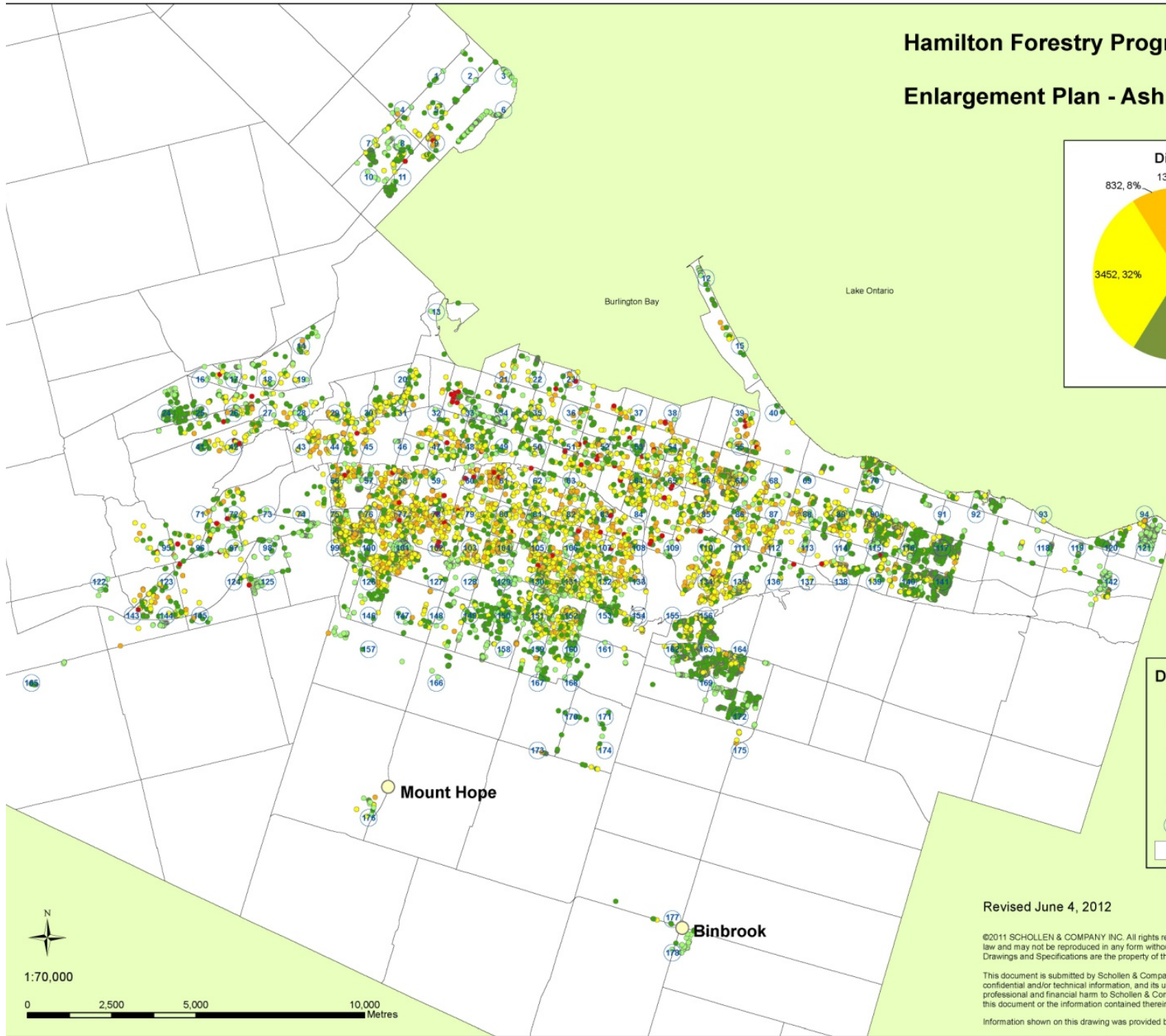
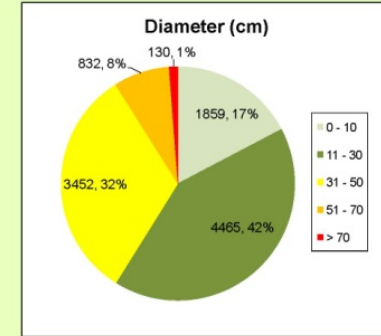
- Hamilton has 10,738 ash street trees in the urban area, accounting for 7.89% of the 136,000 inventoried street trees
- There are ash trees in all urban forestry grids (the inventory does not include rural areas, natural or open space).
- There are an estimated 12,000 ash trees in the City's actively-managed parks and cemeteries in the urban areas
- Total number of ash trees on public lands is 22,738
- 75% of ash trees are > 11 cm Diameter at Breast Height (DBH)
- 75 infected ash trees have been removed since 2009 when EAB was first detected in the City



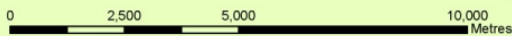
Typical compound leaf of an Ash tree

Hamilton Forestry Program Review

Enlargement Plan - Ash Tree Diameter Class



1:70,000



Revised June 4, 2012



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Information shown on this drawing was provided by the City of Hamilton and is current to 2006.

Emerald Ash Borer Action Plan

<http://www.arbdoctor.net/emeraldashborer.htm>

Progression of Ash tree decline from Emerald Ash Borer



0%



20%



40%



60%



80%



100%

Emerald Ash Borer Action Plan

EAB Management Strategies:

EAB active management options can include the following:

- Removal of standing dead trees within two years of EAB-induced tree mortality;
- Infestation surveying;
- Beetle population monitoring;
- Pre-emptive tree removal/tree replacement; and
- Treatment where deemed appropriate

General approaches

1. Reactive management —only dead or extremely heavily infested trees are removed; and
2. Proactive management — management activities focus on distributing the costs of EAB management in an equal manner to avoid cost spikes in intervening years (equal number of trees removed and replaced)

Emerald Ash Borer Action Plan

EAB Control Methods:

Methods for consideration by the City of Hamilton include:

- **Ash Tree Removal** – Reduces EAB habitat and proximity to other ash trees. Improves urban forest diversity through replacement
- **Insecticidal Control** – Allows retention of “high value” trees. Only effective in trees not already infected by EAB
- **Biological Control** – Requires an Integrated Pest Management Strategy. Research on-going and currently this is an unfeasible option



Typical larval feeding gallery

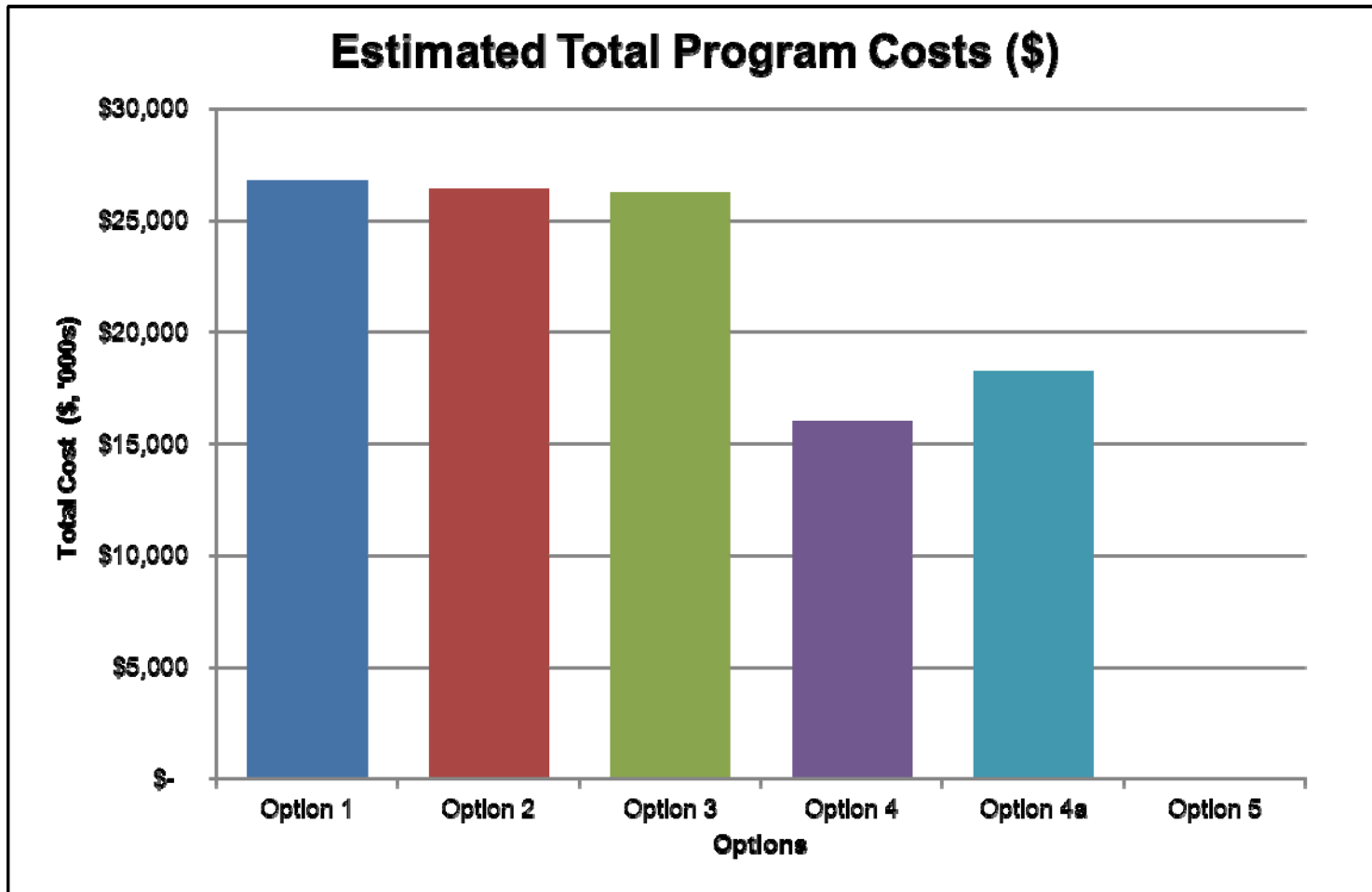
Emerald Ash Borer Action Plan

EAB Management Strategies: Management Options for the City of Hamilton

Option & Description	Estimated 10-year Cost
Option 1 – Reactive management, 1:1 planting <ul style="list-style-type: none"> • Infested or dead Ash trees are removed and replaced 	\$26.8 million
Option 2 – Reactive management, proactive planting <ul style="list-style-type: none"> • Infested or dead Ash trees are removed and replaced • An equal number of trees are planted each year to compensate for the 10-year anticipated removals 	\$26.4 million
Option 3 – Proactive management, 1:1 planting <ul style="list-style-type: none"> • One-tenth of the Ash trees are removed and replaced each year 	\$26.2 million
Option 4 – Minimal cost strategy <ul style="list-style-type: none"> • Only reactive tree removal is performed with no stumping • No replacement tree planting 	\$16 million
Option 4a – Minimal cost strategy (including stumping) <ul style="list-style-type: none"> • Reactive tree removal is performed with stumping • No replacement tree planting 	\$18.3 million
Option 5 – Zero net additional cost strategy <ul style="list-style-type: none"> • Staffing resources are redirected to ash removals, suspending all programs except for storm response • All tree planting will be funded through the current STPP 	\$0

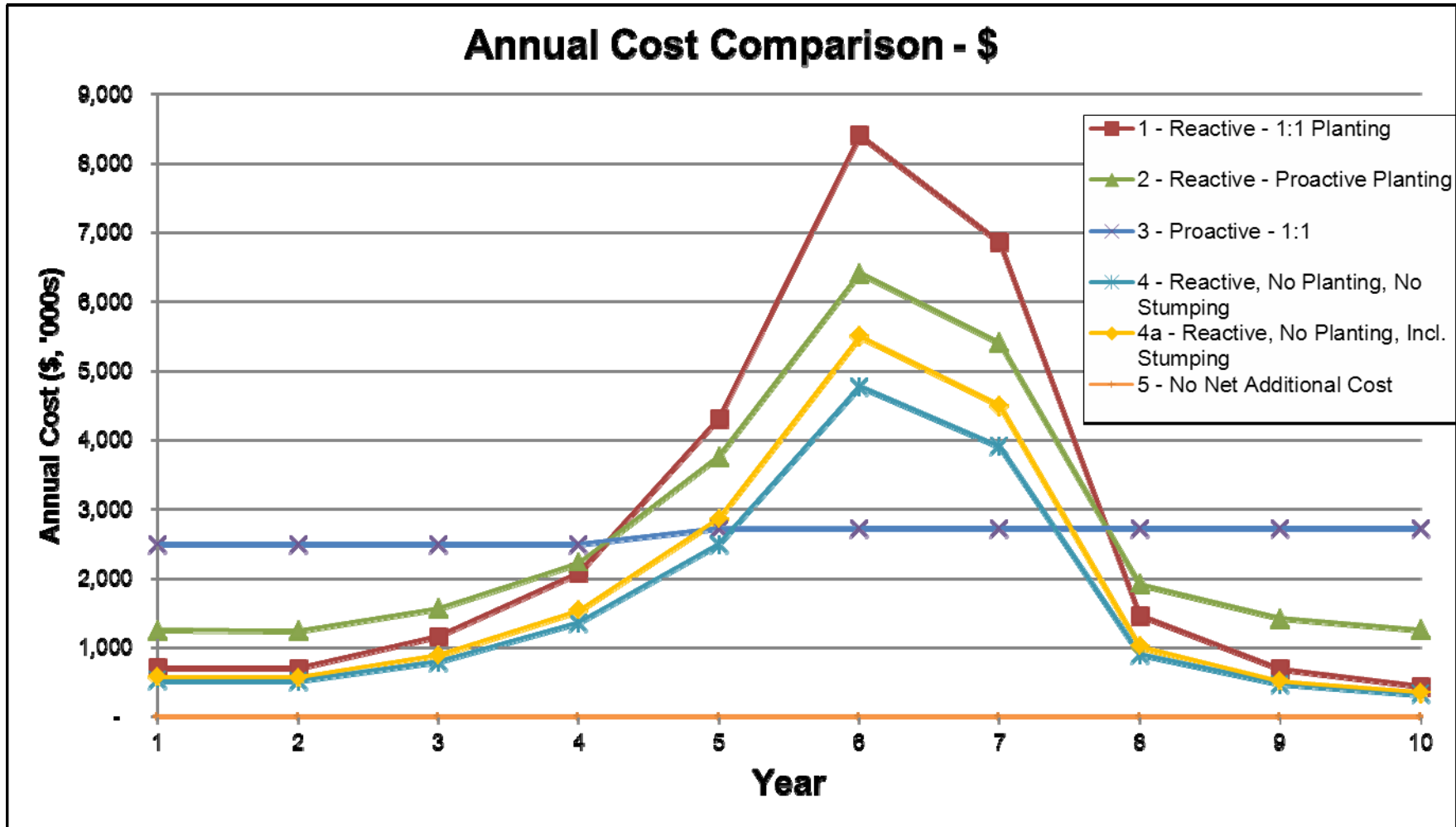
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EAB Management Strategies: Comparison of Management Options – Total Cost



Emerald Ash Borer Action Plan

EAB Management Strategies: Comparison of Management Options – Annual Cost



Emerald Ash Borer Action Plan

What Other Municipalities are Doing: Ontario municipalities

	Expected Costs and/or Budget	Total Ash Trees	Ash Trees to be Removed	Ash Trees to be Treated	Comments
Oakville	\$1.46 million (for 2012)	8,000	2,000	6,000	
Kitchener	\$2.4-7.5 million (depending on strategy to be chosen)	6,553 (streets & active parks)	TBD	350	
London	\$14.3 million (15 year plan)	9,938 (streets & active parks)	8,958	384 Bi-annually	Will replant 17,916 trees
Mississauga	\$51 million (10 year plan)	23,311 (street) 23,000 (park)	Unknown	600	
Ottawa	\$700,000 (for 2012) \$1.3 million by 2014	Unknown	Unknown	1,500	Majority to be Removed
Richmond Hill	\$12 million (10 year plan)	7,867	6,217	1,725	
Burlington	\$9.2 million (to 2020)	8,000+	Unknown. Only when infested.	5,200 Bi-annually	
Toronto	\$37 million (5 year plan)	32,400 (street)	Unknown	8,000	Includes removal and replacement

Emerald Ash Borer Action Plan

EAB Detection Methods:

- The borer is difficult to detect in low density populations and can spread before resource managers even know the beetle is present. This is why detection is important.
- Detection methods include:
 - Visual surveys
 - Destructive sampling
 - Detection trees
 - Trap survey
 - Branch sampling (detection)
- Certain techniques may be more suitable for use in high-risk areas, while others may be more suitable for widespread surveys.
- Due to its usefulness in early EAB detection, branch sampling is the primary recommended method for EAB sampling in the City of Hamilton.



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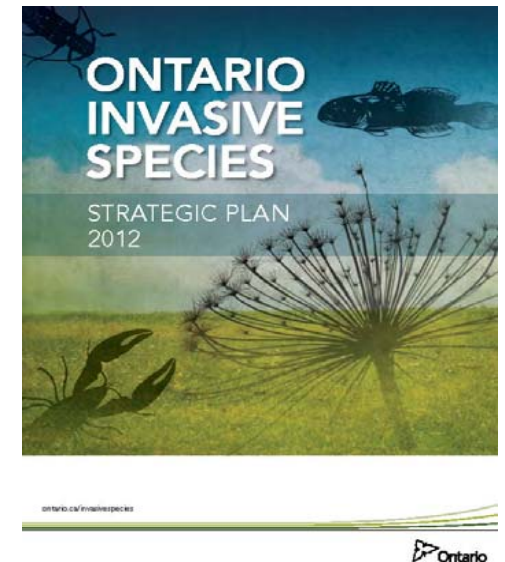
Emerald Ash Borer Action Plan



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EAB Management - Federal and Provincial Government

- Involvement from Canadian Government
- Currently there is no national EAB strategy
- CFIA spent over \$30 million to cut over 130,000 ash trees in Essex County, but it failed to stop the spread of EAB
- No funding is available; CFIA now mainly involved in identification of EAB, promotion of awareness of quarantine zones and conducting limited surveys
- Province recently released *Ontario Invasive Species Strategic Plan, 2012* which acknowledges EAB as an invasive species, but does not commit any funding for the management of it



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Emerald Ash Borer Action Plan Options

Option & Description	Estimated 10 year cost
<p>Option 1 – Reactive management, 1:1 planting Only heavily infested or dead Ash trees are removed and replaced on a 1:1 removal to replacement ratio & approximately 400 trees are injected with insecticide annually</p>	\$26.8 million
<p>Option 2 – Reactive management, proactive planting Only heavily infested or dead Ash trees are removed & an equal number of trees are planted each year to compensate for the forecasted ten year tree removals to equalize planting costs. Tree canopy is replaced at a faster rate than Option 1. Approximately 400 trees are injected with an insecticide annually.</p>	\$26.4 million
<p>Option 3 – Proactive management, 1:1 planting One tenth of the Ash tree inventory is removed each year for ten years and replanted at a 1:1 removal to replacement ratio. This results in a more even distribution of costs. Approximately 400 trees are injected with insecticide annually</p>	\$26.2 million
<p>Option 4 – Minimal-cost strategy Only reactive tree removal is performed with no replacement tree planting or stump removal. Approximately 400 trees are injected with insecticide annually.</p>	\$16 million
<p>Option 4a – Minimal cost strategy (including stumping) Only heavily infested or dead Ash trees are removed and stumped. No replacement tree planting is performed. Approximately 400 trees are injected with insecticide annually.</p>	\$18.3 million
<p>Option 5 – Zero net additional cost strategy Resources are redirected to Ash removals and all current Forestry programs, aside from Storm response will be suspended. Tree planting will be funded through the current Tree Planting Program.</p>	\$0

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Report Recommendations

- a) Receive report PW10088a
- b) Select preferred option for EAB Action plan, based on six options presented in Table 1 of report
- c) Refer costs of the selected option to the 2013 Capital Budget Process
- d) Direct staff to implement selected option, subject to approval of funding
- e) Staff to provide an annual update to GIC on implementation of EAB Action Plan

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Thank You