

TO:	COMMUNITY AND NEIGHBOURHOODS COMMITTEE MEETING ON SEPTEMBER 27, 2011
FROM:	PAT MCNALLY EXECUTIVE DIRECTOR - PLANNING, ENVIRONMENTAL AND ENGINEERING SERVICES
SUBJECT:	EMERALD ASH BORER MANAGEMENT STRATEGY

RECOMMENDATIONS

That, on the recommendation of the Executive Director - Planning, Environmental & Engineering Services, with the advice of the City Planner and the Manager of Urban Forestry:

- (i) the Emerald Borer Management Strategy as attached in Appendix 1 **BE ADOPTED**.
- (ii) the implementation strategy and associated funding as shown in the following table **BE ENDORSED IN PRINCIPLE AND FORWARDED** to the Services Review Committee and Council for the 2012 budget process.
- (iii) Civic Administration **BE DIRECTED** to explore potential sources of financing for this initiative and assess the impact on this source of financing should Council advance with 1:1 vs. 2:1 planting ratio; this information is to be presented to Services Review Committee.

Table 1. Recommended EAB Management Strategy Program and Costs (in thousands of dollars)

YEAR	Treat ment	Removal (Streets and Manic-ured Mark Areas)	Removal (Wooded Park Areas)	Inventory and Survey (Wooded Park Areas)	Risk Inspections (Wooded Park Areas)	Restoration and Rehabilitation (Wooded Park Areas)	Plant 2:1 (Streets and Manicured Park Areas)	Coordination (Administration, Education)	TOTAL
2012		184	145	50			715	100	1194
2013	109	187	145	50		30	751	100	1372
2014		191	145		20	30	828	100	1314
2015	115	195	145		20	30	828	100	1433
2016		199	145		20	30	869		1263
2017	122	203	145			30	912		1412
2018		207	145			30	1007		1389
2019	130	211	145			30	1005		1521
2020		215	145			30	1056		1446
2021	137	219	145			30	1108		1639
2022									0
2023	146								146
2024									0
2025	155								155
TOT ALS	914	2011	1450	100	60	270	9079	400	14284

PREVIOUS REPORTS PERTINENT TO THIS MATTER

- 22nd Report of the Committee of the Whole – June 21, 2011
- Emerald Ash Borer Update - Report to the ETC, July 19, 2010
- 2nd Report of the TFAC, February 25, 2009
- Emerald Ash Borer Strategy - Report to the ETC, May 26, 2008
- 3rd Report of the ETC, January 28, 2008



- 10,000 identified ash trees in boulevards and manicured parks
- Ash trees rank near the top of the species that provide the most environmental benefits such as air quality and energy savings

Additionally outside the Urban Growth Boundary:

- @240,000 ash trees in woodlands outside UGB
- Ash is the 2nd most common tree species in woodlands
- Ash accounts for 9.5% of all the trees in woodlands

London's detailed tree inventory contains approximately 170,000 trees on public boulevards and in manicured portions of parks. Ash accounts for approximately 10,000 or 6% of the total trees in the inventory.

London has 2,670 hectares of parks of which approximately 700 hectares are woodlands or wooded. There are approximately 122 km of managed trails within these parks. More than half of the woodlands and wooded areas contain managed trails. There are approximately 291 km of perimeter that often border subdivisions and commercial establishments. Some of these woodlands, such as those within the Thames Valley Corridor, often contain up to 30% ash trees.

EAB is estimated to:

- Kill most of our ash trees within the next 7-10 years.
- Reduce our urban leaf cover from 24.7 % to about 22.9%. This represents a loss of 7.2% of the existing leaf cover.
- Reduce the structural value of our urban forest by \$130 million.
- Significantly impact species biodiversity in wooded areas.
- Cause significant property standards issues.

Status of the Infestation

EAB was first identified in October 2006. Although it was first found sporadically, we now believe it was more widespread at that time but we didn't know it because reliable detection methods were not available. It is currently detected throughout the City. Some areas of the city are impacted more than others due to the level of infestation and the large proportion of ash trees in the boulevards and parks. Other areas show less damage now but are none-the-less infested and will show more impacts over time. Some parks and woodlands, such as Helen Mott Shaw Park, are severely infested.

What London is Currently Doing About EAB

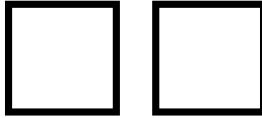
Our EAB strategy has evolved since it was first identified and as the infestation has increased in size and damage. We have incorporated the most recent information and best management practices to guide our current management activities.

Our GIS-based tree inventory program was used to map all our ash trees by size and condition class. Staff examined all inventoried ash trees during the late winter/ spring to identify potentially infested trees and update the tree size and condition. We used a newly-developed sampling technique that gives a higher detection accuracy. This survey identified potential ash trees to treat with TreeAzin™ and those to remove. This was the first comprehensive update of the ash data since 2002.

A workshop was held with major tree care companies, UTRCA, and other stakeholders to confirm the extent of EAB infestation in May, 2011.

Existing capital budgets have been directed to: remove hazardous trees; inject 384 high value ash trees with TreeAzin™, and; coordinate our limited operational funding where possible to remove the trees, grind the stumps and plant the trees this year especially in neighbourhoods that require a high percentage of ash removals.

Public education continues to be a major component of our management. Staff informed residents in neighbourhoods that have been most heavily impacted by EAB before any large



scale removals of ash trees were conducted. We realize that these large scale removals are difficult for residents and the loss of the trees will dramatically change the character on those streets. We want to assure residents that we do not take the removal of the trees lightly and we wouldn't be doing this if the trees were not hazardous, dead or dying. Letters were sent to affected residents and neighbourhood "walkabouts" were conducted with Forestry staff to explain what we were doing.

The City established an EAB hotline and website where residents can learn more about the insect and management options. A screen shot of the website home page is included as Appendix A to this report.

Additionally Civic Administration has prepared a communications plan and a business case for additional EAB funding to deal with increased liability, removals and replacement and have hired a consultant, Davey Resource Group, to assist in the development of a detailed, long-term EAB strategy for approval by Council. We recognize that the EAB population and destruction will continue to increase exponentially over the next few years and the EAB strategy adopted by Council will direct Civic Administration planning and operations during this critical period in London's history.

The current management direction from Council with respect to removal of ash trees, based on previous levels of known infestation and damage in 2009, is reactive. Ash trees are removed if they are seriously infested and pose a safety hazard or if they are dead. Ash removals are currently funded out of existing operational funding for the planned tree maintenance program and from a reallocation of funds from existing woodland management capital accounts. Replanting of ash trees is funded out a special EAB planting capital fund that expires in 2013. Tree injections are currently funded from savings in existing capital accounts and projects.

EAB Management Options

A variety of management options were considered and the pros and cons evaluated in the development of the preferred option presented in this report. These included removal strategies, treatment options and tree replacement levels.

Proactive/ Reactive Tree Removal

A. Proactive Removal: Removing ash trees that are not infested with EAB

Pros:

- Opportunity to spread removal costs over longer time frame.
- Proven reduced removal costs compared to removal cost of dead trees.
- Worker safety is increased compared to removal of dead trees.
- Reduces issue of dealing with many dead and hazardous ash trees at one time.
- Opportunity to start the replanting and building the leaf cover sooner.
- Greater flexibility in organizing removal and routine work schedules.
- Ability to utilize ash wood for higher value products or use it as a local source of firewood.

Cons:

- Immediate impacts to tree canopy and aesthetics.
- Removing healthy ash may create negative feelings within the community.
- Does not take into account that research may find an effective control for EAB.
- May prove to be over-reactive to the actual impacts that will be experienced.
- May lower future genetic resistance of trees to EAB attacks.

B. Reactive Removal: Removing only ash trees which are either seriously infested with EAB and pose a high hazard or are dead

Pros:

- Delayed impacts to tree canopy and aesthetics.
- No negative public perception of removing healthy trees.
- Delayed budgetary impacts until the EAB infestation is severe.
- Further EAB research may offer effective control, minimizing need for removals.

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Cons:

- Increased safety risk to workers, people and property.
- Budget impacts can be unexpected, severe and concentrated once EAB infestation level is high.
- Replanting funds may not be available due to extreme removal costs.
- Increased operational costs associated with multiple surveys and removals in the same area.
- Higher removal costs of the trees in that structural condition.

Removal and Treatment Options

Various tree protection and removal management strategies, based on current level of knowledge of EAB, best management practices, lessons learned in London and from other municipalities were assessed.

A. Removal of all ash trees once EAB has been confirmed

Pros:

- Removes risk to property owners.
- Operational efficiencies can be realized.

Cons:

- Incorrectly assumes that chemical protection treatments are ineffective, unsafe or too costly.
- Proven not to effectively control the rate of infestation.
- Not considered “good forestry practice” without a plan to replace the trees and manage the woodland for the long term.
- If done too quickly can greatly reduce the overall benefits to society in terms of cooling, storm water management, energy savings, etc.

B. Targeted ash removal combined with targeted chemical treatment

Pros:

- Balanced approach with respect to protection of ash and reduction of risk.
- Aligns with best management approach exemplified by *Coalition for Urban Ash Tree Conservation*.
- Prolongs the life of high value ash trees in order to maintain their structural, environmental and social values until such time as other effective control or protection options are developed.
- Cost benefit of treating larger or high trees can be positive in the long term.
- Improved operational efficiencies and lower operational costs as removals and chemical treatments are coordinated.

Cons:

- Added expense as initial cost of treatment may be more than initial removal cost.
- Some less infested or healthy ash trees will be removed.
- Treated trees may die eventually.

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C. Chemical Treatment of All Ash Trees

Pros:

- TreeAzin™, the chemical recommended for control of EAB has been clinically shown to be effective.
- Assumes all ash trees are suitable candidates for effective treatment.

Cons:

- May be cost prohibitive compared to the removal cost of the infested tree.
- Not all trees are suitable candidates for treatment.
- Once a treatment program has begun it may need to be continued for the serviceable life of the tree which may be greater than 15 years or until the EAB infestation levels collapse.



D. Do Nothing

Pros:

- No immediate costs associated with treating ash trees or replanting.

Cons:

- Increased safety risk to workers.
- Increased liability because hazardous trees must still be removed.
- Increased risk of human and property damage or death.
- Increased legal claims higher than management costs.
- Potential harm to London’s brand as “The Forest City”.
- High costs may be required for removals when budgets may not be sufficient to deal with the hazards.
- Higher removal costs of dead and severely infested trees compared to removal costs of living, healthier trees.
- Leaf cover lost due to tree mortality may not be replaced because majority of trees on boulevards and in manicured parks have been planted and will not regenerate naturally.
- Woodland sustainability will be significantly compromised due to invasive and less desirable species.

Tree Replacement Options

It is anticipated that the majority of ash trees will die within the next 10 years with a significant impact on leaf cover. The majority of ash trees on boulevards and manicured portions of parks were initially planted and are not expected to regenerate naturally. EAB is indiscriminate in the size of trees it infests. It kills all sizes of trees, however, large trees have incrementally more leaf area and provide correspondingly greater environmental benefits than small trees.

The tree planting recommendations in this report only reflect the replacement of boulevard and manicured portions of parks. Additional research is required to identify restoration and regeneration requirements for woodlands and wooded areas of parks such as Springbank and Helen Mott Shaw Parks. The development of management plans and identification of future planting and natural regeneration requirements for these areas is estimated separately in the recommended strategy.

A. Replace trees based on diameter ratio of 1:1

This option assumes that if a tree of a particular diameter is removed, it will be replaced with a number of trees whose total diameter corresponds to that of the original tree. For example if a 50 cm diameter tree is removed, it will be replaced with ten 5 cm trees. Based on the current diameter distribution of trees identified in our inventory system, the average number of replacement trees required for this option is approximately 3:1.

Pros:

- Some municipalities have recommended this approach to mitigate leaf cover losses.
- Leaf cover and environmental will be replaced in a shorter time period.
- Immediate effects of tree loss on boulevards will be reduced.
- Allows for the planting of areas currently without trees and distributing the future leaf cover more uniformly across the City.
- Will mitigate natural mortality of planted trees as not all trees survive to an age where they will produce significant leaf cover.

Cons:

- This equates roughly to a replanting rate of 3:1 for every tree removed from boulevards or manicured portions of parks.
- Planting costs are 3 times more expensive than at a 1:1 tree removal to replanting ratio regardless of the size of the removed tree.
- May have tree and contractor availability issues in the first few years of the program.

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- May have difficulty identifying sufficient planting areas initially.

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B. Replace trees based on 2:1 replanting ratio

This option assumes that two trees will be planted for each tree that is removed regardless of the size of the original tree.

Pros:

- Immediate effect of tree loss on boulevards will be reduced.
- Allows for the planting of areas currently without trees and distributing the future leaf cover more uniformly across the City
- Leaf cover and environmental benefits will be replaced in a shorter time period
- Will mitigate natural mortality of planted trees as not all trees survive to an age where they will produce significant leaf cover.

Cons:

- Planting costs higher than replanting at 1:1 ratio.
- May have tree and contractor availability issues in the first few years of the program.
- May have difficulty identifying sufficient planting areas initially.

C. Replace trees based on 1:1 ratio

This option assumes that each tree removed will be replaced by another planted tree regardless of the size of the original tree.

Pros:

- Immediate effects of tree loss on boulevards may be reduced.
- Least expensive replacement option in the short term.

Cons:

- May not have immediate effect on tree loss.
- Does not account for natural tree mortality over time.
- Leaf cover loss due to EAB will not be recovered due to natural mortality.

Tree Protection Using TreeAzin™

TreeAzin™ is the preferred and approved chemical insecticide registered for use to control EAB in Canada. It is recommended for application every two years for the effective life of the tree. It is generally accepted that TreeAzin™ treatments should be continued until after the EAB populations decline when most of their food supply has been killed. The current major infestation is anticipated to last approximately 15 more years.

A. Maintain Current TreeAzin™ Treatment Program

Pros:

- Maximize tree survival of the existing treated trees. Some of the treated trees already have low levels of infestation.
- Maintain a certain percentage of high value ash trees and their associated leaf cover benefits across the City.
- Maintain existing environmental and social benefits of high value ash trees.
- Minimize impacts of large scale removals some boulevards and in parks
- Cost benefit of treating larger, healthier trees can be positive.
- Proactive approach to maintaining a percentage of the current ash population alive.

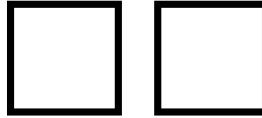
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- Maintains species diversity.

Cons:

- Must maintain current funding levels for treatment in order to keep the trees alive.
- Some of the trees may die over time.



B. Do Not Treat Trees With TreeAzin™

Pros:

- Savings in funding requirements associated with current treatment program.

Cons:

- No net savings in funding because the trees will need to be cut and replanted at a higher cost than continued treatment.
- Treatments to date will no longer be effective and trees will be more susceptible to EAB and those that are already infested will die sooner.
- Increased mortality of treated trees.
- Loss of benefits associated with these high value trees.
- Increased removal impacts on boulevards and in parks.
- Benefits incurred through the treatment will be lost as the trees will die.

Utilization and Cost Recovery Options

We currently do not have an estimate for the potential revenue from ash material but have identified some options to explore and bring forward to Council in a report at a later date.

Currently London has a very effective program of dealing with existing levels of wood residue from Forestry operations. This program provides opportunities for local business, services to the community and support for City programs. The City does not charge clients or City programs for the wood. Cost recovery for the services is realized through savings in operational costs that would be incurred if all the residue would be chipped or if other City programs would have to purchase the chips from external sources. Cost recovery by charging firewood cutters for the residue was tried in the past but was not successful. It is more cost effective for the City to provide the wood for free than to pay for the grinding of the wood which would otherwise not be used by them.

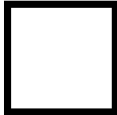
Some of the logs are delivered to private yards across the City subsequently sold for firewood. We provide this service at no charge to the local woodcutting industry. The remainder of the wood is chipped and used as mulch in our park planting and community planting operations, on managed trails or in dog parks. Sometimes larger tree trunks are provided to schools free of charge to be used as playground amenities. Trees that are felled in wooded areas of parks are left on the ground to maintain the long term nutrient balance of the woods and provide wildlife habitat.

Additional wood residue resulting from an influx of ash will create operational and utilization issues. There is limited opportunity high quality wood from for urban ash trees which often contain structural defects or imbedded objects such as nails. The market for ash materials for furniture and flooring requires high quality wood and is being flooded. Dead ash trees have limited value for high quality timber because they dry quickly. This produces cracks in the wood and greatly reduces the amount of suitable wood. The greatest opportunities for recovering the highest value from the ash trees are from utilizing live trees, and finding opportunities to marketing the residue.

Removing a large number of ash trees, many of which will be of a larger diameter, has created the need for innovative approaches to dealing with the wood residue. Some States and communities have developed a variety of approaches to deal with this issue. The State of Illinois, along with federal agencies, municipalities and organizations has developed a wood utilization team to look at statewide uses of ash materials. Some municipalities encourage local sawmills to purchase and mill the wood while other municipalities purchased their own mill and create lumber for picnic benches and other uses. Toronto has recently sent out a “Request for Offers” to bidders interested in purchasing and removing tree limbs and trunks from wood residue generated from their forestry programs. Oakville conducted a commercial thinning operation in a woodland park two years ago as part of an ecological restoration project and the proceeds of the sale of the wood was used to recover the cost of the restoration. Wood residue is used as biofuel in areas that have cogeneration plants in other parts of Canada.

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The use of wood residue is a sustainable practice and is recognized by many organizations that promote the use of natural resources. There may be opportunities for the City to explore opportunities with Canada Green Building Council to promote the use of urban wood residue as part of their initiatives that include LEED® approved building processes.

Although large boulevard and park trees may have some structural defects or imbedded material such as nails that limit their utility for high value products, there are clearly opportunities to for alternative uses for the ash and other wood residue. These need to be explored in more detail and the cost of such studies is incorporated in the Coordination costs associated with the recommended management strategy.

Management of EAB on Private Property and Public Education

Approximately 75% of all the ash trees in London are on private property. Residents have a responsibility to deal with infested trees on their property. Communications between the City and property owners is a critical factor in successfully managing this infestation over the next 15+ years.

The recommended strategy identifies a comprehensive communication plan. It includes steps to improve the knowledge available to property owners and potential tools that may reduce their management costs. The costs for this plan are included in the coordination costs associated with the recommended management strategy.

Some of these include: continuing to update the EAB website; development and use of brochures, posters, videos and other social media; neighbourhood EAB information meetings; explore the creation of a one-time tax rebate for TreeAzin™ injections: consider creating a “reduced cost tree planting program” to encourage homeowners to plant trees; consider the use of hyperspectral imaging analysis to map the location of all the ash trees in the City including that on private property and provide information to affected homeowners as was done in Milwaukee.

Recommended EAB Strategy and Rationale

The following EAB strategy as summarized in Table 1 is recommended by staff for endorsement by Council. It is developed as directed by Council and is in support of the business case for funding EAB management beginning in 2012 budget year. Actual experience costs were used where available. Additional details on aspects of the recommended strategy are identified within the consultant report located on City Website ([http://www.london.ca/d.aspx?s=/Trees Lawns and Gardens/ashborerinfo City property.htm](http://www.london.ca/d.aspx?s=/Trees_Lawns_and_Gardens/ashborerinfo_City_property.htm))

The strategy acknowledges that EAB is a serious and immediate threat to a significant portion to our urban forest both on public and private property. It recognizes the need for continued and additional immediate, decisive and aggressive measures to protect and manage our boulevard, park, backyard and woodland tree assets. These measures include:

- the continuation of the current tree injection program to protect high value specimens, proactive removal of some live trees to allow for more orderly, efficient and cost effective removal and replanting programs,
- rapid re-establishment of the leaf cover lost to EAB-induced mortality,
- active management of woodlands, and;
- support program to coordinate activities, improve communication and education and explore utilization options and research opportunities.

The recommended strategy promotes a balanced, integrated approach to managing the EAB over long term that includes: identification of management issues, risk management, detection, removals restoration, replanting and reforestation, communication and education, research and funding. It is based on the most current scientific and operational information available.

Acknowledgements: Andy Beaton, Forestry Supervisor, PEES- Transportation and Roadside Operations; John Parsons, Division Manager, PEES- Transportation and Roadside Operations; Bonnie Bergsma, Ecologist Planner, PEES – Parks Planning and Design

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Cc:TFAC



Appendix A Screen shot of City of London EAB website Home Page

Home > Residents > Trees, Lawns & Gardens

Trees, Lawns & Gardens

- Amazing Tree Quest
- Civic Garden Complex
- Compost Value Day
- Emerald Ash Borer
- Growing Naturally
- Gypsy Moth Control Program
- Irrigation (sprinkler) Systems
- Trees on Public Property
- Tree Inventory
- Tree Watering
- Urban Deer Management
- Urban Forestry Strategy
- Watering Regulations

Protecting your trees from the Emerald Ash Borer (EAB)

June 2011

What you need to know

- EAB affects only ash (*Fraxinus*)
- Both healthy and weakened trees are attacked
- EAB attacks trees of all sizes from 1 cm and larger
- Infected trees die quickly and become hazardous
- Insects do not discriminate between trees on City property and private property – they attack all trees
- You are responsible for trees on your private property
- Do not plant ash trees

How to find out if EAB is in your tree (click on link)

The four trees on the left are healthy with full canopy, the tree on the right is potentially infested and has lost a significant portion of its crown

If EAB is present in your tree (click on link)

Protecting ash trees on private property

We are in a critical stage of this infestation right now. If action is taken in 2011, there is a chance you could save your tree for the foreseeable future and defer the high cost of tree removal. However, treatment is most successful if done from June to August.

What you can do

- Determine if you have an ash tree on your property.
- Measure the size of your tree. Measure the trunk diameter at chest height. If the tree is >25cm, it may be a candidate for treatment.
- Determine if the tree is healthy. Look to see that there are leaves in at least 70% of the crown. Call a certified arborist to determine if it is a candidate for treatment.

Resources:

- BioForest Technologies Inc.
- Canadian Food Inspection Agency
- Emerald Ash Borer University
- Ministry of Natural Resources
- Tree Canada

[How to identify ash trees, infested trees, and EAB \(pdf\)](#)

For more information: