

City of Hamilton

Tree Management Plan

October 2019

C11-B000941

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City of Hamilton

Tree Management Plan

Mohawk Road EA

Project no C11-B000941

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1. Introduction

CIMA+ has been retained by the City of Hamilton (the City) to review the trees potentially affected by a proposal to widen and urbanize Mohawk Road between Lime Kiln Road/McNiven Road to Filman Road in Ancaster. This report serves as part of the documentation required for the Schedule 'C' Municipal Class Environmental Assessment required for this project, and will help determine the project's potential impacts as well as general recommendations to avoid and/or mitigate tree loss and injury.

2. Limitations

The assessment presented in this report has been made using accepted standard arboriculture techniques as outlined in the Council of Tree and Landscape Appraisers *Guide for Plant Appraisal, 9th Edition* (2000). These techniques include visual examination of above ground parts of each tree or trees in each group. The trees observed were not climbed, cored, or dissected, and excavation for detailed root crown inspection was not performed. Since some symptoms may only be present seasonally, the extent of observations that can be made may be limited by the time of year in which the inspection took place.

Since trees are living organisms, their health and vigour continually change over time due to seasonal variations, changes in site conditions, and other factors. For this reason, the assessment presented in this report is valid at the time of inspection, and no guarantee is made about the continued health of trees that are deemed to be in good condition. It is recommended that the trees be re-assessed periodically to identify changes in condition. While every standing tree has the potential for failure and therefore poses some risk, a tree assessment is a good indication of present health and potential problems that could arise in the future.

CIMA+ has prepared this report for the sole use of the client. Any use of this report by a third party, as any decision based on this report, is the singular responsibility of the third party. CIMA+ will not be held responsible for eventual damages towards a third party resulting from decisions taken, or based, on this report.

3. Methodology

An ISA Certified Arborist from CIMA+ conducted a site visit on August 28, 2018 to complete the following inventory and assessment.

Trees and tree groups were located within and adjacent to the existing right-of-way (ROW) and uniquely numbered. Trees were identified, measured, and assessed for condition. The assessment methodology is outlined further below, and follows the tree assessment requirements outlined by the City. The tree inventory table containing this information are included in Appendix A along with drawings TI-1 through TI-3 that show the the locations of the numbered trees and tree groups surveyed.

3.1 Tree Size

Size refers to trunk diameter (caliper or diameter at breast height: DBH) measured in centimetres at 1.4 m above the ground. Where trees had more than one trunk from the base, the size of each trunk was recorded. Where trees forked to codominant trunks, each trunk was measured or the diameter was measured under the flare and the approximate height of the measurement was noted.

The diameter spread (dripline) of each tree canopy is included to help determine possible injury and branch pruning that may be required as a part of the proposed work.

3.2 Observations

Several structural defects and health problems are included in the Comments section of the tree inventory and assessment table. Following is an explanation of the short forms used in the table:

| | |
|------|---|
| GR | Girdling roots |
| COD | Codominant trunks or codominant leaders |
| NA | Narrow branch angles |
| INCL | Included bark |
| CRB | Crossing branches |
| MBR | Multiple branches from the same point of attachment |
| DPR | Decay at pruning wounds |
| SMD | Small dead branches |
| ADV | Adventitious shoots |
| LEAN | Cardinal direction of lean |

These observations are defined below.

Structural defects are often insignificant when a tree is small, but can pose problems when the tree grows larger and the weight of branches put added stress on defects that can cause weakness. Larger trees also have the potential to cause more damage should they fail. The following is an explanation of some of the observations included in the inventory and assessment table, and how they can affect trees over time.

- *Adventitious shoots* are vigorous growth of shoots from pruning cuts, inner branches, or along the trunk that usually occur in response to stress.
- *Codominant leaders* (2 trunks or branches of approximately equal size) often have narrow branch angles, and are associated with weak branch attachment. Strong branch attachments occur between 2 limbs of unequal size with enough space for branch enlargement and formation of a branch bark ridge.
- *Crossing branches* are often associated with narrow branch angles. Branches that cross over each other often rub, causing damage and therefore weakness to one or both branches, and crossing branches can eventually girdle each other.
- *Decay at pruning wounds* can occur when pruning (or other bark-penetrating abrasions) expose a tree's heartwood, which can then be affected by a rot-causing fungi. The decay

can lead to cavities and internal decay, and potentially affect the structural integrity of the tree.

- *Emerald Ash Borer* (EAB) refers to a species of beetle native to East Asia that feeds on all species ash trees (*Fraxinus* spp.) during its larval stage. Typical symptoms of infection include heavy seed set, dieback, splitting bark, and adventitious shoots. Almost all infected ash trees will die within a few years of infection.
- *Exposed surface roots* can be a result of erosion and soil compaction combined with increasing root diameter. It is important to protect exposed roots from pedestrian and vehicular traffic, and lawn mowers. Damage to roots can cause stress and can result in canopy dieback.
- *Frass* is the excrement of insect larvae, with an appearance similar to sawdust or small wood chips that can be seen at the base of a tree where wood boring insects are feeding. Frass can be an indicator of internal decay.
- *Fruiting bodies* are often recognized as mushrooms or conks on trees. Presence of fruiting bodies is a positive indicator of wood decay, but depending on the species of the fruiting body, the decay can be of little significance or an indicator of imminent failure. It is important to observe decay fungi during the season in which it is growing to accurately identify the species and consider the potential associated indications of the extent of decay.
- *Girdling roots* are roots that cross over each other or around the trunk of the tree. As these roots grow larger, they can restrict the uptake of nutrients and water, and inhibit structural anchorage.
- *Grapevines and dog-strangling vine* growing over the canopy of trees suppress vigour and eventually kill trees by blocking sunlight. They also add weight that can make trees more susceptible to breakage during storms.
- *Included bark* is bark that has become embedded in a crotch where limbs join, and causes weakened branch attachments. As the trunk and branch increase in diameter, the bark of each stem in the tight crotch begin to push apart, increasing the likelihood of failure.
- A tree with a *lean* can be more susceptible to windthrow and soil failure. *Self-correcting lean* refers to a natural correction of the lean by development of new growth that counteracts the lean of the trunk to provide a more balanced form.
- *Live crown ratio* is the ratio of the live crown to the overall height of the tree. A low live crown ratio can develop when trees are growing close together in stands, or can be created by pruning or dieback. Low live crown ratio is associated with increased likelihood of failure, depending on the cause and site factors.
- When a tree has *multiple branches from the same point of attachment*, the branches usually have characteristics of weakly attached branches.
- *Narrow branch angles*, especially where there is included bark, can be a problem as trees grow larger because the inner wood is poorly attached.

- *Sapsucker holes* refers to holes in the trunk or branches made by birds in search of insects. This damage is a sign of insects in the tree, and can make trees more susceptible to other infection.
- *Small dead branches* are an indicator of crown dieback and can be an early sign of stress.
- *Suppressed trees* are growing under the canopies of neighbouring trees, which can diminish vigour and affect structural form.
- *Woundwood* is the thickened tissue growing around the edges of a wound. The rate of its development can be a sign of the tree's vigour.

The detailed observations made concerning tree species, size, and condition are included in the tree inventory and assessment table in Appendix A.

3.3 Tree Condition

Each tree was given a subjective rating for trunk integrity, canopy structure, and crown vigour, and an overall health condition rating of Good, Fair, Poor, or Dead. The following is a summary of how the ratings are determined:

- **GOOD (G):** dead branches less than 10%; signs of good compartmentalization on any wounds, no structural defects
- **FAIR(F):** 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects
- **POOR (P):** more than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects
- **DEAD (D):** tree shows no signs of life

4. Summary and Recommendations

A total of 162 trees and tree groups were surveyed. Of these, five (5) trees were located on public property that are potential hazards to the public: Trees 29, 31, 32, 33, and 35. These were the only ash trees observed on site, and all are severely affected by Emerald Ash Borer (EAB). They suffer from at least 80% crown dieback, with mostly bare crowns and large scaffold branches overhanging the sidewalk to the north, and in some cases overhanging parked cars on private property to the south. Their DBHs range from 28 to 52 cm, and their spreads from 9 to 12 m. Regardless of the impacts of the proposed project on these trees, their removal is prudent because Ash trees affected by EAB tend to break more easily than other dead trees. See Table A1 and drawings TI-1 to TI-3 in Appendix A for further information about the locations and descriptions of these trees.

4.1 Tree Impacts and Compensation

A total of 58 trees are expected to be injured as a result of the proposed hardscape and/or grading through the TPZs as required for the road reconstruction. Injuries are indicated in the tree impacts column of the tree inventory and assessment table in Appendix A.

A total of 25 trees are expected to require removal due to conflict with construction zones along the roadway. Removals are indicated in the tree impacts column of the tree inventory and assessment table in Appendix A.

When nothing is indicated in the tree impacts column, the tree is to be retained and no impact is expected.

Compensation in the form of re-planting on site and/or planting trees elsewhere is required for the loss of 25 individual public trees. This compensation requirement shall be completed during the project detailed design and construction phases.

5. Protected Species

The *Migratory Birds Convention Act*, 1994 protects the nests of migratory birds. Trees to be removed from the site should be removed outside of the migratory bird-nesting window, the timing of which differs regionally across Canada as determined by Environment Canada. Following Environment Canada's guidelines, the window at this site is from April 1 to August 31. Trees may be removed during this restricted period only when trees are inspected for nests of protected bird species by a qualified avian biologist immediately prior to removal.

No protected tree species listed under the Endangered Species Act (2007) were found at this site.

6. Construction Management

The most typical construction damage to trees is root damage from compaction and severance. While the dripline of a tree's canopy is typically thought to be associated with the root area, the root zones can actually extend significantly beyond the dripline of the tree, sometimes up to 2 or 3 times the height of the tree. Some of the trees inventoried are growing close to the edge of the proposed construction and may be at risk of contact with, and damage from, heavy equipment.

Generally, to protect trees, grade changes and construction activities that could cause soil compaction should be kept away from trees as much as possible. If roots will be damaged by excavation equipment, it is better to cut roots cleanly with sharp pruning tools rather than allow them to be torn by large equipment. Clean cuts will help to minimize decay and entry points for disease. If branches are likely to hang in the way of passing equipment, the branches should be pruned by a qualified arborist to avoid tearing and undue injury to the tree.

Equipment and materials should not be stored near trees, and equipment should not be left idling where exhaust could burn foliage.

It is recommended that tree protection fencing be erected following the City's Tree Protection Zone and Tree Hoarding Details around trees at risk of injury. The project design drawings must show the City's Tree Protection Zone Detail as well as the Tree Hoarding Detail and the Tree Preservation Techniques notes as per the City's Public Tree Preservation and Sustainability Policy (attached in Appendix B).

7. Certification and Closure

I certify that all the statements of fact in this assessment are true, complete, and correct to the best of our knowledge and belief, and that they are made in good faith.

I trust that this report meets your needs at this time. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,



Lisa Cullen, OALA, ISA
ISA Certified Arborist ON-0741A

Attachments:

Appendix A: TI-1 to TI-3 Tree Inventory Drawings (3 pp.) and Tree Inventory Table (5 pp.)

Appendix B: Tree Protection Zone Detail, Tree Hoarding Detail, and Public Tree Preservation & Sustainability Policy

A

Appendix A

Tree Inventory Drawings TI-1 to TI-3

Tree Inventory Table



B

Appendix B

Tree Protection Zone Detail,
Tree Hoarding Detail, and
Public Tree Preservation & Sustainability Policy



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