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Appendix C: Tree Inventory - Main Report

Halton Region

Halton Regional Road 25 Environmental Assessment Arborist Report

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Halton Region

Arborist Report

Halton Regional Road 25 Environmental Assessment

CIMA+ Project no B0015154

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Appendix A: Tree Inventory Table and Drawings

1 Introduction

Halton Region (hereafter Client) has retained CIMA Canada Inc. (CIMA+) to provide a tree inventory and condition assessment of trees near proposed road widening along Regional Road 25. The purpose of this report is to inventory and evaluate the condition of existing vegetation within the Project Limits:

- (1) Along the East side of Regional Road 25, from Speers Street to Derry Road. Planted trees and naturalized trees growing as individuals or in groups, within 15 meters from the edge of the road, were inventoried.
- (2) Along the west side of Regional Road 25, from Speers Street to Derry Road. Planted trees and naturalized trees growing as individuals or in groups, within 15 meters from the edge of the road, were inventoried.

Using the project drawings (dated September 2022) as reference, this report will help determine the project's potential impacts and provide general recommendations to avoid and/or mitigate tree loss and injury.

2 Bylaws and Regulations

The following regulations are applicable to trees at this site.

2.1 Federal

The *Migratory Birds Convention Act* (1994) is federal legislation that protects migratory birds, their nests and eggs. Any required tree removal must be completed outside of the migratory bird nesting window, the timing of which differs regionally across Canada. Following Environment and Climate Change Canada's nesting zones and calendars, the general nesting period at this site is from April 1 to August 31. The Migratory Bird Regulations (2022) prohibit the disturbance, damage, or destruction of migratory bird nests or eggs. Environment and Climate Change Canada (ECCC) Guidelines to Avoid Harm to Migratory Birds should be referenced to understand the risk posed to migratory birds by the proposed work, and the requirements for determining the presence of occupied nests.

2.2 Provincial

Tree-based habitats that are essential to the life cycle of protected Ontario bat species are protected under the provincial *Species Conservation Act* (2025).

The active bat season is from April 1 to September 30 in southern Ontario. To protect bat habitat, tree removal should be avoided within that period of time. Should removal need to occur within that time frame, Ministry of the Environment, Conservation and

Parks (MECP) requirements are to be followed for work that could impact the habitat of protected bat, wildlife, tree and plant species.

2.3 Regional and/or Municipal

Halton Region's Tree By-law does not apply to the following situations:

1. Removing dead or diseased trees
2. Carrying out normal farm operations (e.g., clearing saplings along the edge of a farm field next to a woodlot)
3. Removing trees already approved for removal under another process (e.g., development approved under the Planning Act)

3 Emerging Threat of Oak Wilt

Oak trees are present at the project site; however, signs of Oak Wilt were not noted during the assessment. The following information is included to increase awareness of this potential threat to oak trees.

Oak Wilt is caused by the fungus *Bretziella fagacearum* and has appeared in Ontario in recent years. The fungus attacks the vascular system of the tree and restricts the flow of water and nutrients. It is not a treatable disease. All oak species are vulnerable but Red Oaks are particularly susceptible, and death can result within a single season.

The greatest risk of transmission of the pathogen is through pruning cuts or open wounds in trees. Pruning cuts and wounds attract Nitidulidae beetles (commonly called Sap beetles) which can carry the fungal Oak Wilt spores into trees. These small beetles are active from April to November and can carry fungal spores of the oak wilt pathogen. Infection can also happen by root grafts to healthy trees in close proximity to infected trees and from infected wood

Signs of Oak Wilt are characterized by a wilting and bronzing of the foliage, starting at the top of the tree and tips of the branches, and spreading rapidly through the crown. Individual leaves turn bronze progressively from the tip to the base.

To prevent the spread of Oak Wilt;

- Oak trees should not be pruned between April and November, when the beetles are active
- Wood from suspected infected trees should not be moved from the site
- Follow guidelines from the Invasive Species Centre

If Oak Wilt is suspected, it should be reported to the Canadian Food Inspection Agency (CFIA). For more information, go to the website at www.invasivespeciescentre.ca.

4 Methodology

An ISA Certified Arborist from CIMA+ conducted site visits in June 2023, to complete the tree inventory and assessment.

The tree locations were identified by topographic survey as well as by visual inspection on site. Trees and tree groups within and adjacent to the proposed work area were inventoried.

Trees were numbered and identified, measured, and assessed for condition either as individuals or as groups where the trees were located close together. The Tree Inventory Table containing this information and Tree Location Drawings are included in **Appendix A**.

The assessment in this report has been made using accepted standard visual arboriculture techniques as outlined in Chapter 4 (Data Collection) of the Council of Tree and Landscape Appraisers Guide for Plant Appraisal, 10th Edition, Revised (2020). 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.

4.1 Tree Size

Size refers to trunk (stem) diameter (dbh) which is measured in centimetres at approximately 1.37 meters (m) above the ground. Where trees included more than one stem, each stem was measured.

Tree symbols shown on the drawings indicate the approximate canopy size as determined by topographic survey.

4.2 Tree Condition

General tree condition was assessed based on visual observation of health indicators which included canopy vigour, dieback, structural defects, signs of decay and presence of disease or insect infestation.

Each tree was given a subjective condition rating. The following is a summary of how the ratings are determined:

Excellent (E): High vigour and nearly perfect health with little or no twig dieback, discolouration, or defoliation; nearly ideal structure and free of defects; nearly ideal form for the species, generally symmetric, and consistent with the intended use.

- Good (G): Vigour is normal for the species, no significant damage due to diseases or pests; any twig dieback, defoliation or discolouration is minor; well-developed structure, defects are minor and can be corrected; minor form asymmetry/deviations from species norm; mostly consistent with the intended use; function and aesthetics are not compromised.
- Fair (F): Reduced vigour, damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal; twig dieback, defoliation, discolouration, and/or dead branches may comprise up to 50% of the crown; a single structural defect of a significant nature or multiple moderate structural defects; structural defects are not practical to correct or would require multiple treatments over several years; major form asymmetries / deviations from species norm and/or intended use; function and/or aesthetics are compromised.
- Poor (P): Unhealthy and declining in appearance; poor vigour; low foliage density and poor foliage colour are present; potentially fatal pest infestation; extensive twig and/or branch dieback; a single serious structural defect or multiple significant structural defects; recent change in tree orientation; observed structural problems cannot be corrected; largely asymmetric/abnormal form, detracts from intended use and/or aesthetics to a significant degree.
- DEAD (D): No visible sign of life.

4.3 Definitions

Observed structural defects and health problems are included in the Comments section of the tree inventory table.

Structural defects are often insignificant when a tree is small but can pose problems when the tree grows larger and the weight of branches puts added stress on defects that can cause weakness. Larger trees also have the potential to cause more damage should they fail due to weight and height. The following is an explanation of some of the observations that may be 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.
- *Asymmetrical trunk cross-section* can indicate internal decay.
- *Black knot* is a fungal disease of Prunus species (Cherry, Plum, Chokecherry) that causes blackened swelling and discolouration of branches, resulting in girdling and dieback.

- *Burl* is a localized area of swelling on the trunk, or branches made up of deformed growth, generally not considered a defect.
- *Codominant leaders* (2 or more trunks of approximately equal size) can be associated with weak branch attachment.
- *Crossing branches* can be associated with narrow branch angles and can include weakness to one or both branches.
- *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.
- *Dieback* refers to dead branches or twigs.
- *Emerald Ash Borer* (EAB) refers to a species of beetle that feeds on ash trees (*Fraxinus* spp.) during its larval stage. Typical symptoms of infection include heavy seed set, dieback, splitting bark, D-shaped holes in the trunk.
- *Exposed surface roots* are visible roots above the ground surface. They can be a result of soil compaction or limited soil volume for growth. It is important to protect exposed roots from pedestrian and vehicular traffic, and lawn mowers. Damage to roots can cause stress, canopy dieback and destabilization of the tree.
- *Frass* is the excrement of insect larvae, with an appearance similar to sawdust or small wood chips at the base of a tree where wood boring insects are feeding. Frass can be an indicator of internal decay.
- *Frost cracking* is a winter injury caused by temperature fluctuations on bark and inner wood when the sun warms a tree trunk and then temperatures drop quickly, causing splitting of the bark. It particularly affects young trees and species with thin bark.
- *Fruiting bodies* are often recognized as mushrooms or conks on trees. Presence of fruiting bodies is an indicator of wood decay, however the decay can be of little significance or an indicator of imminent failure. Decay fungi only grow fruiting bodies during certain seasons and are not always visible.
- *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.
- *Heavy seed set*, or an abundance of seed production, can be the result of a stressed tree putting energy reserves into seed production in an effort to reproduce while it is still able.

- *Included bark* is bark that has become embedded in a branch or trunk junction where limbs or co-dominant stems join. It can indicate weakened attachments.
- *Leaf chlorosis* is yellowing of interveinal leaf tissue that can be caused by nutrient deficiencies, pH imbalance, poor drainage, or root damage.
- *Lean* indicates a primary stem leaning predominantly on one side and not balanced in an upright position. It can cause the tree to be more susceptible to windthrow and soil failure. However, trees can also grow reaction wood at their base and alter their growth habit over time with new growth to create structural balance. 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.
- *Lion-tailing* refers to branches that have a tuft of foliage at the end like a lion's tail, due to incorrect pruning. Branches that have been pruned in this way are end-heavy and more likely to fail.
- *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 shaded 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.
- *Multiple branches from the same point of attachment*, indicates that 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.
- *Oak Wilt* is caused by a fungus that blocks the vascular system of the tree and eventual death. Symptoms include wilting and bronzing of foliage, starting at the tree top and tips of branches, and spreading rapidly throughout the crown.
- *Ribs and seams* are often associated with included bark but can also indicate internal defects or decay that cause irregular growth.
- *Root flare* refers to the base of the trunk where it widens as it transitions to the root system.
- *Sapsucker holes* refer 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.

- *Staghorn effect* refers to dead branches protruding through the crown of a tree and often indicates a state of significant decline.
- *Sunken areas under scaffold branches* are often an indication of internal decay.
- *Suppressed trees* are shaded by growing under the canopies of neighbouring trees, which causes diminished vigour and affects structural form.
- *Tar spot* is a fungal disease but it does not usually have an adverse effect on the tree health and is generally a cosmetic problem.
- *Topping* is the cutting of the primary or main stem (trunk) which prevents the tree from growing upwards. Topping leads to trees being stressed, disfigured, and susceptible to decay. Structural issues caused by topping typically require corrective pruning and can lead to unacceptable risk.
- *Witches' broom effect* is a dense proliferation of short twig or branch shoots, which appears stunted. Witches' broom can have several different causes, including poor pruning practices, disease and insect infestation.
- *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 following is an explanation of several understorey species of concern that may be noted in the Tree Inventory and Assessment Table:

- *Buckthorn* is a thorny, invasive exotic shrub species that out-competes native vegetation.
- *Cucumber vine, grapevines, deadly nightshade, and dog-strangling vine* growing over the canopy of trees suppress vigour and eventually kill trees by blocking sunlight and restricting growth. They also add weight that can make trees more susceptible to breakage during storms.
- *Garlic mustard* is an invasive exotic vegetative species.
- *Japanese knotweed* is a non-native semi-woody perennial plant with aggressive growth. It out-competes native vegetation, degrades wildlife habitat, and its roots can damage pavements and underground structures.

5 Summary of Observations

A total of 807 trees and tree groups were surveyed at the Halton site, and include all trees numbered 1 through to 807.

No species at risk were found at the inventory sites.

The Bronte Road White Oak tree (tree no.79 in this report) located in the median near the Halton Regional Centre was designated as a Heritage Tree under the Ontario

Heritage Act in 2010. No impacts to the tree are expected as a result of this project, and the tree will be protected from injury during the project works.

Species commonly found as planted street trees on streets or private property include Austrian Pine, Red Pine, White Fir, White Spruce, Norway Spruce, White Cedar Kentucky Coffee Trees, Red Oaks, Bur Oak, Hackberry, American Elm, Willow, Red Maple, Silver Maple, Freeman's Maples, Sugar Maple, Amur Maple, Flowering Crab Apple, Serviceberry, Maidenhair Tree, River Birch, Sweet Birch, Norway Maple, Honey Locust, Ornamental Pear, Ohio Buckeye, Basswood, Mountain Ash and Ivory Silk Lilac Blue.

Tree species commonly found in naturalized areas included Shagbark Hickory, Black Walnut, Willow, Pear, Red Cedar, White Cedar, American Elm, Siberian Elm, Green Ash, Sumac, Apple, Hawthorn, Norway Maple, Siberian Elm, White Oak, Red Oak, Bur Oak, Norway Maple, Manitoba Maple, Russian Olive, Eastern Cottonwood, Basswood, Hawthorn, with an understory composed of Buckthorn, Sumac, Poison Ivy, Ninebark, Grey Dogwood, Creeping Virginia, Grapevine, Honeysuckle, Pear, and Rose.

Most trees on site were in Good or Fair condition; however, a small number were in Poor or Dead condition. The most noted issues were dieback, adventitious shoots, small dead branches, decay at pruning wounds, and mechanical injury because of tree stakes and lawn mowers.

Refer to the Tree Inventory Table A1 and Drawings in **Appendix A** for further information about the locations and descriptions of these trees.

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, sometimes up to 2 or 3 times the height of the tree. Compaction of the soil around the roots compresses the air pockets, inhibiting the tree from absorbing sufficient nutrients and water. Trees can be damaged during construction without showing signs of damage until some years later.

6.1 Tree Protection and Compensation

Generally, to protect trees, grade changes and construction activities that could cause soil compaction should be kept as far away from trees 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 be damaged by

equipment required to complete the work, the branches should be pruned by a qualified arborist to avoid tearing and undue injury to the tree.

Areas near trees must not be used for any type of storage during construction (such as stockpiling of material, storage of debris, surplus soils, construction equipment). Equipment must not be left idling where exhaust could burn foliage.

Tree Protection Fencing should be installed as far as possible from trees to be retained, prior to the commencement of construction activity in accordance with a Tree Protection Fence detail approved by Halton Region and the Halton Region Tree By-law 12105.

7 Limitations

Visual observations made may be limited by the time of year in which the inspection took place as symptoms may only be present seasonally. 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.

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8 Certification

We certify that all the statements of fact in this assessment are true, complete, made in good faith, correct to the best of our knowledge and belief, and valid at the time of inspection.

9 References

Environment and Climate Change Canada, 2023, Guidelines to Avoid Harm to Migratory Birds

Migratory Birds Convention Act, 1994. Government of Canada

Migratory Birds Regulations, 2022. Government of Canada

Species at Risk Act (SARA), S.C. 2022, c.29

Species Conservation Act, 2025, S.O. 2025, c.4, Sched.10. Government of Ontario

Ont. Reg. 60/26: Protected Species in Ontario List

Halton Region Bylaw No. 121-05 (2026)