South March BESS Station
Tree Conservation Report

June 10, 2025

Report Prepared For:

Brookfield Corporation

Brookfield

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Hatch Project #375142

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ACRONYMS

ANSI	American National Standards Institute
Arborist	An expert in the care and maintenance of trees including an arborist qualified by the Ontario Training and Adjustment Board Apprenticeship and Client Services Branch, a certified arborist qualified by the International Society of Arboriculture, a consulting arborist registered with the American Society of Consulting Arborists, a registered professional forester or a person with other similar qualifications as approved by the General Manager
BESS	Battery Energy Storage System
By-Law	Tree Protection (By-law No. 2020-340)
BMP	Best Management Practice
CFIA	Canadian Food Inspection Agency
COSSARO	Committee on the Status of Species at Risk in Ontario
City	City of Toronto
cm	Centimetre(s)
CRZ	Critical Root Zone
CS	Crown Structure
CSO	Combined Sewer Overflow
CV	Crown Vigour
DBH	Diameter at Breast Height
DR&CW	Don River & Central Waterfront
EA	Environmental Assessment
EAB	Emerald Ash Borer
ECCC	Environmental and Climate Change Canada
ELC	Ecological Land Classification
ESA	Endangered Species Act
GPS	Global Positioning System
EIS	Environmental Impact Study
ISA	International Society of Arboriculture
km	Kilometre(s)
m	Metre(s)
MBCA	Migratory Birds Convention Act
MBR	Migratory Birds Regulations
MECP (MOE/MOEE/ MOECC)	Ministry of the Environment/Ministry of the Environment and Energy/Ministry of the Environment and Climate Change. The Ministry of the Environment was created in 1972 and merged with the Ministry of Energy to form the Ministry of Environment and Energy (MOEE) from 1993 to 1997 and again in 2002. The Ministry of the Environment changed its name to the Ministry of the Environment and Climate Change (MOECC) on June 24, 2014. The Ministry changed its name to Ministry of the Environment, Conservation and Parks (MECP) on June 29, 2018. Thus, the MOE/MOEE/MOECC and MECP are considered to be synonymous for the purposes of this Report.
mm	Millimetre(s)
O. Reg.	Ontario Regulation
PPF	Propose Project Footprint
PTE	Permit to Enter

ROW	Right of Way
SAR	Species at Risk
SARO	Species at Risk in Ontario
TCR	Tree Conservation Report
TI	Trunk Integrity
TIP	Tree Inventory Plan
TPP	Tree Preservation Plan
TPF	Tree Protection Fence

1. EXECUTIVE SUMMARY

Brookfield, a Canadian multinational company that owns and operates renewable power assets, is proposing to develop approximately 5.65ha at 2555 & 2625 Marchurst Rd in the Fitzroy Township of Ottawa Ontario (the Project). Hatch understands the Project will consist of Battery Energy Storage System (BESS), a substation, access roads, and associated electrical infrastructure.

Hatch Ltd. (Hatch) has been retained by Brookfield (the Client) to undertake a tree inventory and produce a Tree Conservation Report (Report) to satisfy the City of Ottawa (City) Pre-Consultation comments (November 12, 2024) in support of the planning application.

Communications with the City of Ottawa stated that:

“the TCR should complement the EIS and indicate the areas of tree preservation and retention as indicated in the constraints and development plan. I would not expect the TCR to undertake additional tree survey information on private property on top of what is done for the EIS.”

However, Brookfield believed it would be in the City’s best interest to include stand descriptions for any impacted private lands to assist the City in detailing removals to provide adequate compensation requirements.

Hatch completed a review of 3 individual trees were assessed within or adjacent to Municipally owned lands, and a review of trees on private lands, as indicated within the Environmental Impact Study (EIS,completed by Stantec, March 2025). The EIS includes an Ecological Land Classification (ELC) of the trees, along with land constraints, this was used to determine areas of tree preservation and retention in relation to proposed Project design for the TCR.

To meet the requirements for construction activities, based on 30% design drawings for the project site, it is anticipated that across Municipally owned lands; one tree will require removal, one tree will be preserved, and no trees will be expected to be injured (See Table 1-1).

Table 1-1: Tree (>=10cm DBH) Removal, Injury and Preservation Chart Summary

Area of Impact	Inventory Method	Potential Removals	Potential Injuries	Potential Preserved
Marchurst Rd. RoW and adjacent lands	Detailed Inventory	1	0	1

The preservation and retention areas within private lands has been identified in Appendix B. To mitigate against potential effects to trees associated with the construction and operations/maintenance of the proposed Project, a number of mitigation measures have been prescribed. Mitigation measures relate to construction timing, tree protection measures (Critical Root Zone barriers), and preservation, proper pruning practices, construction monitoring and reporting, woody material removal and wildlife management.

The primary impact identified on Municipal Lands as part of this Report is overall canopy cover loss within the City. Canopy loss on municipal lands as a result of the removals for this project should be considered minimal, as only one tree is to be removed. Permits will be required for impacted trees on Municipally owned lands. The City of Ottawa requires a compensation replacement of 1:1, for a total of 1 trees. A compensation value of the tree is determined by CTLA Trunk Formula, with a minimum of 400$ per tree being charged.

2. INTRODUCTION

2.1 PROJECT BACKGROUND

The South March Battery Energy Storage System (BESS) project is directly responding to the Independent Electricity System Operator's (IESO) request to increase supply and capacity to meet Ontario's growing electricity expenditure and demand by constructing an energy storage facility. The facility will increase renewable grid capacity and storage, enhance flexible grid operations, and provide a low carbon initiative to avoid greenhouse gas emissions by reducing reliance on higher carbon intensive facilities.

The Owner was awarded two contracts in the Independent Electric System Operator (IESO) Long Term 1 – Request for Proposal (LT1-RFP) competitive bidding process in 2024. The assets will participate in the IESO market programs. The main use case for the BESS will be to provide capacity to the grid, participating in the energy markets to provide year-round capacity services. In addition, the BESS will also be used to provide energy arbitrage and ancillary services.

Brookfield is proposing to develop approximately 5.65ha of two 42.44 ha and 42.27ha properties at 2555 & 2625 Marchurst Dr. in the Fitzroy Township, Ontario. Hatch understands the Project will consist of a Battery Energy Storage System (BESS), a substation, access roads and associated electrical infrastructure.

The following Tree Conservation Report and described field studies undertaken by Hatch Ltd. serves to complement the Environmental Impact Study (EIS) undertaken by Stantec to support the Planning Application for the proposed South March BESS project, hereby referred to as the Project, with a 250 MW/1000 MWh capacity located in Ottawa, Ontario.

2.2 PROJECT FOOTPRINT

2.2.1 *NORTH PROPERTY BESS*

The BESS site is located over two private land parcels, with the Northern Property (2625 Marchurst Drive) holding no trees that require removal. The proposed BESS site is not accessible to the public and was identified OAGM4 (Open Pasture) in the projects EIS (EIS by Stantec, March 2025). Land use adjacent to the Project Footprint is also predominantly agricultural.

2.2.2 *SOUTH PROPERTY BESS*

The Southern Property (2555 Marchurst Drive) BESS footprint also holds no trees that require removal. The proposed BESS site is not accessible to the public and was identified OAGM4 (Open Pasture) in the projects EIS (EIS by Stantec, March 2025). Land use adjacent to the Project Footprint is also predominantly agricultural.

2.2.3 *ACCESS ROAD*

Finally, the Southern Property (2555 Marchurst Drive) holds multiple trees that require removal outside of the BESS footprint to accommodate the access road. The proposed access road was identified CVR_4 (Rural Property) in the projects EIS (EIS by Stantec, March 2025). It is a linear feature with a point of origin on the proposed BESS and runs ~290m directly to Marchurst Rd. A cleared path trail serves as a marker for its location and is also expected to limit the amount of cutting required to accommodate the proposed 8m roadway and associated 3m culverts on either side of the feature.

3. ASSUMPTIONS/LIMITATIONS

This Report was prepared based on existing information collected during the field inventory completed on February 20th, 2025, with the 30% design drawings used as the Study Area to understand tree impact areas. Should there be any changes to the Project design drawings, the Study Area would need to be revised, all additional work will be approved by the general manager prior to the commencement of work.

3.1 PERMISSION TO ENTER

Two trees at risk of impact whose Critical Root Zones (CRZ) were potentially found on municipally owned lands were determined to be within 7 m of the existing ROW of Marchurst Rd, where the Access Road originates. Trees up to 7 m away from the RoW property line were included in this inventory as being potential boundary trees risk of impact if mitigations were not in place. Permissions to detail these trees as well as collect data pertaining to any trees found on private lands were granted by the current landowner.

3.2 TREE IMPACTS

The 30% preliminary Project design was used as the basis to prepare this Report. It is assumed that the Projects EIS and TCR will be revised in conjunction with updated design drawings.

4. POLICY CONTEXT

This Section summarizes the various federal, provincial, and municipal planning policies and regulations that apply to the Arborist Report and Tree Protection Plan (TPP) for the proposed Project, thus providing the policy context for this Report.

4.1 MIGRATORY BIRDS CONVENTION ACT, 1994

The *Migratory Birds Convention Act* (MBCA) was passed in 1917 and updated in 1994 (Environment and Climate Change Canada, 1994). The MBCA protects migratory bird populations by regulating potentially harmful anthropogenic activities. The MBCA (1994) and the Migratory Birds Regulations (MBR) (Environment and Climate Change Canada, 2020) are federal legislative requirements that are binding on members of the public and all levels of government, including federal and provincial governments.

Protected bird species are listed under Article I of the MBCA, are native or naturally occurring in Canada, and are species that are known to occur regularly in Canada. Therefore, if a listed species or their nest are encountered during Project works, compliance with the Act is required. As described in Section 6 of the associated MBR:

"Subject to subsection 5(9), no person shall:

Disturb, destroy, or take a nest, egg, nest shelter, Eider Duck shelter or duck box of a migratory bird, or

Have in his possession a live migratory bird, or a carcass, skin, nest, or egg of a migratory bird except under authority of a permit therefor."

The "incidental take" of migratory birds and the disturbance, destruction or taking of the nest of a migratory bird is prohibited. "Incidental take" is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds. No permit can be issued for the incidental take of migratory birds or their nest or eggs as a result of economic activities. These prohibitions apply throughout the year.

Environment and Climate Change Canada (ECCC) and the Canadian Wildlife Service have compiled nesting calendars that show the variation in nesting intensity by habitat type and nesting zone, within broad geographical areas distributed across Canada. While this does not mean nesting birds will not nest outside of these periods, the calendars can be used to greatly reduce the risk of encountering a nest. It is noted that ECCC advises that avoidance is the best approach.

4.1.1 *APPLICABILITY TO THE PROJECT*

The MBCA applies to all of Canada. As such, the MBCA is applicable to the entire Project Footprint. Therefore, if a species or their nest, that are listed under the MBCA are encountered during Project work, they must comply with the Act. As vegetation removal is part of future Project works, it is recommended that it occur outside of the core breeding time-period identified by the MBCA for the Project, which takes place from April 1st to August 31st in any given year.

Further discussion on the MBCA in relation to the construction phase of the Project has been included in Section 7.2.3.

4.2 CANADA FOOD INSPECTION AGENCY

The Canadian Food Inspection Agency (CFIA) Directive (D-03-08): Phytosanitary Requirements to Prevent the Introduction and Spread within Canada of the Emerald Ash Borer, (EAB) *Agrilus planipennis* (Fairmaire) applies to Ash (*Fraxinus spp.*) species that are located within the EAB Regulated Areas of Canada as prepared by the CFIA. All Ash (*Fraxinus* spp.) found in North America, including cultivars and additional introduced *Fraxinus* spp., are vulnerable to EAB infestation (CFIA, 2014). The intent of the Directive is to slow the spread of the EAB to new areas.

4.2.1 *APPLICABILITY TO THE PROJECT*

The Project Footprint is within a CFIA regulated area, which prohibits the movement of regulated materials (including but not limited to Ash wood or bark and Ash wood chips or bark chips) from a regulated area. As such, if any hazardous Ash trees remain at the time of construction, removal of ash trees will be the responsibility of the contractor to ensure they are disposed of according to restrictions under the CFIA.

4.3 ENDANGERED SPECIES ACT, 2007

Species designated as Threatened or Endangered by the Committee on the Status of Species at Risk in Ontario (COSSARO) otherwise known as the Species at Risk in Ontario (SARO) List, and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation and migration) are automatically afforded legal protection under the *Endangered Species Act* (ESA), 2007 (Government of Ontario, 2007).

The ESA (Subsection 9.(1)) states that:

"No person shall:

(a) kill, harm, harass, capture, or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade;

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered, or threatened species;

(ii) any part of a living or dead member of a species referred to in subclause (i);

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

(c) sell, lease, trade, or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii), (iii)."

Clause 10 (1) (a) of the ESA states that:

"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species."

In order to balance social and economic considerations with protection and recovery goals, the ESA also enables the Ministry of the Environment, Conservation and Parks (MECP) to issue permit and approval agreements with proponents in order to authorize activities that would otherwise be prohibited by subsections 9(1) or 10(1) of the ESA provided the legal requirements of the ESA are met.

4.3.1 *APPLICABILITY TO THE PROJECT*

Ontario Regulation (O. Reg.) 242/08 (as amended) (Government of Ontario, 2018) applies to select species on the SARO List. This regulation identifies exemptions under the ESA and associated directives required. Habitat in southern Ontario is conducive for the growth and establishment of SAR tree species (e.g., Black Ash (*Fraxinus nigra*) and Butternut (Juglans cinerea)). No SAR were identified by Hatch during the site investigations completed to inform this report, and any potential for SAR occurrences are detailed by Stantec in the Projects EIS.

4.4 HERITAGE ACT OF ONTARIO

The Ontario Heritage Act (OHA), enacted in 1975, provides standards and guidelines for municipalities and the provincial government to designate properties within Ontario as having cultural heritage value. This act promotes to the conservation, protection and preservation of properties designated as heritage within Ontario.

4.4.1 *APPLICABILITY TO THE PROJECT*

Heritage Act implications to the project are discussed in the Projects EIS (EIS by Stantec, March 2025).

4.5 CITY OF OTTAWA TREE PROTECTION BY-LAW

The primary purpose of the City of Ottawa's Tree Protection By-law is to ensure that trees are protected from injury or destruction. The by-law identifies guidelines to follow when working around trees since trees can be seriously injured if their roots are compacted, cut or damaged.

The Tree Protection By-law (City of Ottawa, 2022) requires that anyone working near protected trees must, unless otherwise authorized by the City:

- Erect a 1.2 m high fence around the outer edge of the critical root zone (CRZ) of trees prior to beginning other site work, and maintain the fence until the work is complete (see the City's Tree Protection Specification (Appendix D)
- Not place any material or equipment within the CRZ of the tree
- Not raise or lower the existing grade within the CRZ of a tree
- Not extend any hard surface or significantly change landscaping within the CRZ of a tree
- Not attach any signs, notices, or posters to any tree, except as required by this by-law for trees to be removed
- Not damage the root system, trunk, or branches of any tree
- Ensure that exhaust fumes from equipment are not directed towards any tree's canopy.

The critical root zone (CRZ) is established as being 10 centimetres from the trunk of a tree for every centimetre of trunk diameter. The trunk diameter is measured at a height of 1.3 metres for trees of 15 centimetres diameter and greater and at a height of 0.3 metres for trees of less than 15 centimetres diameter.

It is an offence under the Tree Protection By-law to fail to adequately protect a tree that has not been approved for removal.

4.5.1 *APPLICABILITY TO THE PROJECT*

Guidelines outlined in the City of Ottawa's tree protection By-Law are the primary criteria governing mitigation measures and compensation required to undertake the proposed Project, as well as the legislation that determined a need for the Tree Conservation Report. Given the project has a site plan control application under the Planning Act, trees on private land are exempt from the Tree Protection By-Law (By-Law No. 2020-340) under Part V, Section 55.

5. METHODOLOGY

5.1 FIELDWORK

The City of Ottawa Tree Protection By-Law Schedule E, namely the Tree Conservation Report Guidelines (City of Ottawa, 2020) as well as communication with City of Ottawa staff, guided the completion of field work, data collection, and report preparation.

Site visits were required to inventory individual trees within 7m of the Project footprint where it intersected with Municipal Lands and/or Right of Ways. In this case, municipal lands and ROWs were limited to Marchurst Rd. Species, DBH condition and condition of trees (inclusive of Deadwood, Vigour, Insects, Pathological Concerns, Decay, Fungus, Significant Lean and Uprooting where applicable) as well as ownership, were logged in a Microsoft Excel table labelled Appendix B: Tree Inventory Table - Municipal.

Communications with the City of Ottawa state that trees on private lands are intended to be characterised by the Projects EIS, suggesting that a detailed inventory is not required in this area. Therefore, Hatch reviewed trees on private lands to describe the potential impacts to the vegetative communities following removal, but did not gather any information that could quantify the impact to individuals.

Fieldwork was completed on February 20th, 2025. Assessments were conducted from the ground level only. The work was completed by Michael Babin and Nathan Simpson, Terrestrial Ecologists employed by Hatch Ltd. Data, as well as the contents of this TCR were verified by Ms. Jennifer Koskinen (ON-1234A), an International Society of Arboriculture (ISA) Certified Arborist in good standing.

Location information was collected for trees utilizing a handheld GPS (+/- 7m) and ground truthing for the inventory and stand description, with a Tree ID Number being given to each individual. Only trees >=10 cm DBH were captured during this investigation as per the City of Ottawa Tree Bylaw (City of Ottawa, 2020). Trees adjacent to the RoW where it was believed that the CRZ could reach into municipal lands were also included in the inventory.

On private lands, dead trees were not provided a Tree Identification (ID) number but were included in the overall removal count. Tree locations were collected using a Global Positioning System (GPS) collection unit.

5.2 DEFINITIONS AND ASSESSMENT CRITERIA

The following parameters will be collected/assessed during the Tree Inventory to provide a holistic assessment of tree condition:

Tree ID Number: Refers to the number, i.e., 723, provided to an inventoried tree that will be listed on the data collection sheets used during the fieldwork.

Plot: A randomly selected 12.9 m radius area where trees =>10 cm DBH underwent a rapid inventory.

Species: Each tree will be identified by botanical and common name.

DBH: Refers to diameter (in centimetres) at breast height and is measured at 1.4 m above the ground for each tree.

Critical Root Zone (CRZ): The critical root zone (CRZ) is established as being 10 centimeters from the trunk of a tree for every centimeter of trunk DBH measured in a radius around the tree. The CRZ is calculated as DBH x 10 cm (City of Ottawa, 2020).

Insect Damage: Signs or damage that suggest a current or historic insect infestation.

Pathological Concerns: Signs and symptoms of disease that were visible on the trunk or branching at the time of survey, inclusive of fungus.

Uprooting: Determined as whether or not a tree had succumbed to a pull test.

Significant Lean: Described as a tree that no longer holds itself upright, to a point where the threat of collapse should be considered a safety concern if people are nearby.

Deadwood: Described as a part of the tree that is dead.

Crown Vigour (CV): Assessment of the health of the tree and assesses the amount of canopy deadwood and live growth in the crown as compared to a 100% healthy tree. Given foliage was not available at the time of the survey for deciduous species, vigour was determined through the number of dead and dying branches where buds were not visible. CV was expressed as a % of living material.

The above criteria that describe condition will be expressed per the following definitions:

Excellent: Overall, the tree is very healthy and in excellent condition, vigor and form based on the given tree assessment criteria. The tree has no structural problems, no mechanical damage, and no aesthetic, insect, disease, or structure problems. Small amounts of dead wood may be present in the secondary branches, but account for less than 5% of the canopy.

Good: Overall, the tree is healthy and in satisfactory condition, vigor, and form based on the given tree assessment criteria. The tree has no major structural problems, no mechanical damage, and may only have insignificant aesthetic, insect, disease, or structure problems. Small amounts of dead wood may be present in the secondary branches, but account for less than 15% of the canopy.

Fair: The tree has no major structural problems, no significant mechanical damage, may have only minor aesthetic insect, disease, or structure problems, and is in good health. Trees in fair condition show moderate symptoms of decline in the lower canopy or scaffold branches, but more than 40% of the scaffold branches are viable.

Poor: The tree may exhibit the following characteristics: major structural problems, mechanical damage, significant damage from diseases, thin crown, or stunted growth compared to adjacent trees. This condition also includes trees that have been topped but show reasonable vitality with no obvious signs of decay. Sixty percent and greater of the main scaffold branches are dead yet still include live branches, or in a severe diseased state. Poor condition rating can be applied to trees where the trunk shows evidence of advanced rot, deadwood or is hollow and/or there is no twig development on the main branches.

Dead: Dead condition rating can be applied to trees where the trunk shows evidence of advanced rot, deadwood or is hollow and there is no evidence of live buds or branches.

5.3 TREE CONSERVATION REPORT

The TCR was prepared based on the City of Ottawa Tree Conservation Report guidelines (City of Ottawa, 2021), for the trees located on public lands, and based off criteria set out by the City for identifying impacts to trees on private lands. The TCR identifies tree impacts based on the Project design and the understanding of construction requirements. The Report provides general observations and understanding of the Project site conditions. The Report is to be read in conjunction with the supporting figures and appendices (Appendices A through D). The Report provides a summary of tree impacts (tree removal quantities) and requirements for City permitting and compensation.

The Tree Inventory Table is located in Appendix A and includes the tree inventory data collected during the field assessments. It also includes impact assessments based on the data and the locations of the trees in relation to the Project Footprint as displayed on the Figures in Appendix A. The following is a summary of what has been included in the Tree Inventory Table:

- Tree ID numbers (i.e., 49).
- Data sheets used for fieldwork are prepared in excel and inserted into ArcGIS showing species (common and botanical name), DBH, condition (deadwood, vigour, pathology, insects, decay, fungus, significant lean, and uprooting), location and ownership.
- Recommendations (preserve, remove, injure) for trees and critical root zones.

6. EXISTING CONDITIONS

6.1 DESCRIPTION OF TREES – MUNICIPAL

ROW trees along the Marchurst Road access road entrance were composed entirely of Red Maple, Red Oak, and Balsam Poplar for a total of 3 tree species observed in or adjacent to the ROW. Trees were generally healthy, with any individuals that are recommended for removal being described in Section 1.7.

A total of 100% of all inventoried municipally owned trees were found to be in Excellent condition. No Municipally owned trees were described as being in fair or poor condition, which would have included signs and symptoms of abiotic and biotic defects leading to decline including:

- Deadwood.
- Weakly formed unions (i.e., included bark).
- Poor tree form due to abnormal development of scaffold branches causing injury to other branches.
- Significant Lean
- Lack of vigour.
- Broken branches.
- Trunk wounds and cracks.

- Defoliation from pests.

6.2 DESCRIPTION OF TREES – PRIVATE LANDS

Stand composition within private lands was determined to be pioneer Red Maple-Shrub dominant, described as CVR_4 (Rural Property) in the Projects EIS. Associate species are inclusive of Green Ash, Trembling Aspen, White Birch, Red Oak and Manitoba Maple for a total of 6 species observed on private lands. Trees were generally healthy, apart from Green Ash who on average sustained some form EAB damage. Given the young age of the woodlot, there was a distinct lack of standing snags present.

7. CONSTRUCTION, OPERATION AND POST CONSTRUCTION MONITORING

7.1 POTENTIAL EFFECTS

Trees recommended to be preserved are those that will not be affected and shall be fully protected by the Project once the recommended mitigation measures have been implemented. Trees recommended to be removed are those deemed to be within the construction envelope (Project Footprint) and would not be able to withstand construction related activities or changes to grading within the proposed Project Footprint (PPF). This designation may also be applied to trees that are dead, in poor condition, or trees that could pose future safety concerns. Trees in good condition,10 cm DBH or smaller, have potential to be transplanted. Transplanting is one of several compensations strategies that could be implemented following discussion with the City of Ottawa.

Trees identified with the potential for injury are those where the CRZ is encroached by construction, and the CRZ cannot be completely protected with Tree Protection Fencing (TPF). Trees with injuries are trees that were individually assessed and believed to be able to withstand construction encroachment, with tree health and condition not being compromised. In order to identify appropriate CRZs, the City of Ottawa CRZ definition (City of Ottawa, 2020) as well as was used to determine the minimum requirements for the TPF of city owned trees illustrated in Table 7-1.

Table 7-1: Tree Protection Fencing Requirements

City of Ottawa Tree protection By-Law Units (City of Ottawa, 2020)
“Tree” is defined as any species of woody perennial plant, including its root system, which has reached or can reach a minimum height of at least 450 cm at physiological maturity.
The critical root zone (CRZ) is established as being 10 centimetres from the trunk of a tree for every centimetre of trunk DBH measured in a radius around the tree. The CRZ is calculated as DBH x 10 cm.
Where critical root zones are not impacted by the initial clearing activities, critical root zones will be protected by a 1.2 m fence around the outer edge of the critical root zone.

Encroachment into CRZ will result in an injury or require removal depending on the extent of the encroachment, a tree species tolerance to impact, and the inventoried condition. The Tree Protection Bylaw states that the CRZ shall not be compromised on trees that are not approved for removal, and that doing so is considered an offence under the By-Law (City of Ottawa, 2020).

7.1.1 *CONSTRUCTION AND TREE REMOVAL*

Tree removal is required to accommodate the Project Footprint for the access road only. Trees whose CRZ is located within the construction limit will be removed. As previously stated, specific design details can be found in the Project's engineering design drawings. It is important to note with respect to tree removal that the clearing of trees also has the potential to disturb or destroy nests of migratory birds which are protected under the MBCA. Disruption to migratory breeding birds can be mitigated by ensuring vegetation removal takes place outside of the MBCA active breeding season (further discussed in Section 7.2).

Section 7.1.4 details the quantity of tree removals per applicable tree in relation to their location and land ownership classification. For further details relating to species type, size and condition, refer to Appendix A of this Report.

7.1.2 *CONSTRUCTION AND TREE INJURY*

Tree injury occurs when either tree protection hoarding cannot be placed at the minimum required distance from the trunk due to constraints or conflicts, or where the root system/canopy overlaps with the construction limits.

As stated in the Tree Protection by-Law, if the General Manager determines the fenced tree protection area must be reduced to facilitate construction, appropriate mitigation measures shall be prescribed by an arborist.

7.1.3 *CONSTRUCTION AND TREE PRESERVATION*

Trees to be preserved are trees with above grade features as well as their CRZ are not expected to be at high risk of impact during construction activities after mitigation measures have been implemented.

If a tree with potential to be preserved was determined to be a hazard to the project, public or other trees post-construction, a recommendation for its removal will have been made by an arborist.

7.1.4 *SUMMARY OF TREE IMPACTS*

The current inventory of trees located within the Project Footprint have been identified for preservation (i.e., retention). Table 7-2 below details the trees to be preserved. Given the Access Roads proposed location has been historically subject to clearing and maintained as a path wide enough for small vehicles, tree removal required to fit the proposed 290m long access road and associated drainage ditching is expected to be minimal.

Table 7-2: Tree Removal, Injury and Preservation Chart Summary - Municipal

Area of Impact	Inventory Method	Potential Removals	Potential Injuries	Potential Preserved
Marchurst Rd. RoW	Detailed Inventory	1	0	0
Marchurst Rd. Adjacent to ROW	Detailed Inventory	0	0	1

Table 7-3: Tree Removal, Injury and Preservation Chart Summary - Private

Area of Impact	Inventory Method	Area Removed (ha)
Access Road	Plots	0.41
North Property BESS	Desktop	3.06
South Property BESS	Desktop	2.40

7.1.5 *OPERATIONS AND TREE MAINTENANCE*

The operations and/or maintenance phase of the Project identifies for private lands, the tree edge that will be created within the wooded area from tree removal. The trees along then new edge will be more exposed to the elements (i.e., exposure to wind, sunscald, root damage) may result in failure of trees or their branches. It is recommended that management of the edge is included in the post tree removals phase, and the edge is managed to mitigate tree failure damage.

7.2 PERMIT AND COMPENSATION REQUIREMENTS

7.2.1 *CONSTRUCTION AND PERMITS*

To facilitate Project construction, 1 municipally owned trees will be removed. A City tree removal permit will be required to remove and/or injure the aforementioned trees, as per the cities general rules for considering tree permits. Upon submission of the TCR, the general manager will give feedback on the proposed tree removals and retentions as well as comment on requirements for compensation if required. The contractor is solely responsible to communicate with the property owners for any impacts to private trees that measure less than 10 cm DBH.

7.2.2 *CONSTRUCTION AND COMPENSATION*

Tree compensation for removal of trees in lands owned by the City of Ottawa are to be compensated for at a ratio of 1:1. There will be 2 trees removed on municipally owned lands, as such, 1 is to be compensated for the City in or adjacent to the right of way. In the event replacing a tree is not possible, up to 400$ compensation will be required for each tree subject to removal without compensation.

Schedule B of the tree protection by-law states that for municipally owned trees, City wide, regardless of the reason for removal:

- You are required to pay the compensation value of the tree and plant a replacement tree in the Right of Way
- The compensation value of the tree is determined by CTLA Trunk Formula method or a replacement ratio, whichever is greater

- If a replacement tree cannot be planted then, in addition to the compensation value of the tree, the applicant must pay the cash value of a replacement tree, which is $400
- Note that a minimum compensation value of $400 per tree will be charged
- For unique scenarios, the valuation method may be determined by the General Manager
- Compensation amounts may be adjusted where trees are proposed on a landscape plan.

For wooded natural areas, or where there is a substantial number of trees to be removed, a different valuation method may be considered.

It is understood the private trees are exempt under the Planning Act, however, the general manager will provide directions for compensation upon their review in line with the City of Ottawa's planning process.

7.2.3 *TREE PRESERVATION AND IMPACT MITIGATION MEASURES*

The City of Ottawa details preservation measures in the City's Tree Protection Specification document (City of Ottawa, 2021). A potential location for tree protection fence is specified in Appendix B. The protection requirements state that:

- Prior to any work activity within the Critical Root Zone (CRZ = 10 x diameter) of a tree, tree protection fencing must be installed surrounding the critical root zone and remain in place until the work is complete.
- Unless plans are approved by city forestry staff, for work within the crz: - do not place any material or equipment - including outhouses;
    - do not attach any signs, notices or posters to any tree
    - do not raise or lower the existing grade
    - tunnel or bore when digging
    - do not damage the root system, trunk, or branches or any tree
    - ensure that exhaust fumes from all equipment are not directed toward any tree canopy
    - do not extend hard surface or significantly change landscaping.
- Tree protection fencing must be at least 1.2 m in height and constructed of rigid or framed materials (e.g. moduloc – steel, plywood hoarding, or snow fence on a 2"x4" wood frame) with posts 2.4 m apart, such that the fence location cannot be altered. All supports and bracing must be placed outside of the CRZ, and installation must minimise damage to existing roots. (see detail)
- The location of the tree protection fencing must be determined by an arborist and detailed on any associated plans for the site (e.g. tree conservation report, tree information report, etc.). The plan and constructed fencing must be approved by city forestry staff prior to the commencement of work.

- If the fenced tree protection area must be reduced to facilitate construction, mitigation measures must be prescribed by an arborist and approved by city forestry staff. These may include the placement of plywood, wood chips, or steel plating over the roots for protection or the proper pruning and care of roots where encountered.

7.2.4 *CONSTRUCTION TIMING*

Timing windows for trees that have been identified as part of the habitat of a SAR will be confirmed by the MECP. Where MECP timing windows are not applicable, the City of Ottawa Protocol for Wildlife Protection during Construction (City of Ottawa, 2022) sensitive timing window for thickets and woodlands (restrictions March through mid-August and Mid-October through March) should be utilized unless mitigations deemed appropriate are implemented during construction.

To reduce the possibility of contravention of the MBCA, vegetation removal should be scheduled to occur outside of the overall bird nesting season of April 1 and August 31 in any given year. Some birds may nest before or after this peak bird nesting season due to annual seasonal fluctuations. Therefore, if a nest of a migratory bird is found within the construction area outside of this nesting period it will receive protection:

If vegetation must be removed during the overall bird nesting season:

- Nesting activity searches will be conducted in areas defined as simple habitat by a qualified Ecologist/Avian Biologist no more than 24 hours prior to vegetation removal. Nesting activity will be documented when it consists of confirmed breeding evidence, as defined by Atlas of the Breeding Birds of Ontario criteria (Cadman, Sutherland, Beck, Lepage, & Couturier, 2007).
- If an active nest or confirmed nesting activity of a migratory bird is observed in simple habitat, regardless of the timing window recommended, a species specific-buffer area following ECCC guidelines will be applied to the nest or confirmed nesting activity wherein no vegetation removal will be permitted until the young have fledged from the nest. The radius of the buffer will depend on species, level of disturbance and landscape context (Government of Canada, 2020) which will be confirmed by a qualified Ecologist/Avian Biologist but will protect a minimum of 10 m around the nest or nesting activity.
- The results of all nest searches will be documented at the end of each survey day in a Technical Memoranda, including information on the searcher, date, time conducted, weather conditions, habitat type, vegetation community type, observations of breeding activity, observations of confirmed nests including coordinates, and, if required, the buffer applied to identified breeding/nesting sites. If vegetation removal must occur in complex habitats within the above-listed timing windows and absolutely cannot be avoided, the same Best Management Practice (BMP) such as nest and nesting activity searches described above will be undertaken.
- If a nesting migratory bird (or species at risk protected under the ESA) is identified within or adjacent to the construction site, regardless of the timing window recommended, all activities will stop and the Contractor (with assistance from a qualified Ecologist/Avian Biologist) will discuss mitigation measures with the Certified Arborist.

7.2.5 *CONSTRUCTION IMPLEMENTATION*

There are several common impacts to trees that can occur during construction, especially in urban settings due to the already limited growth space for root systems. The following are standards listed in the City of Ottawa Tree Protection By-Law (City of Ottawa, 2020).

Where critical root zones are not impacted by the initial clearing activities, critical root zones will be protected by a 1.2 m fence around the outer edge of the critical root zones prior construction to ensure any impacts from grading, laydown, expansion of hard surfaces or any other activities will not impact individual trees. On Roadside ROW where existing fencing was observed, Hatch believes that impacts to retained trees will be mitigated by the existing fencing given it will act as a barrier to damage critical root zones.

Signage will be attached to the tree protection fencing and any tags utilized to mark trees will not penetrate the trunk to avoid tree damage. During construction, exhausts will always be pointed away from tree canopies.

In addition to sensitive timing windows, the City of Ottawa requests the checking sites for wildlife prior to construction (inclusive of nest checks), ensure fencing in Project design will exclude wildlife from infrastructure and that general BMPs during construction inclusive of limiting food waste, ensuring proper site drainage and making sure equipment/materials are secured at the end of each day to avoid attracting wildlife.

As the site is directly adjacent to natural areas on all sides of the development where any private tree removals are taking place, the maintenance of dispersal corridors during clearing is not required. However, clearing must occur from one end of the site to the other to allow wildlife to evacuate to safe areas throughout the duration of the clearing, grubbing, and/or grading.

7.3 MONITORING ACTIVITIES

No monitoring requirements are defined in the Tree Protection By-Law. However, the General Manager may approve a distinctive tree permit to the satisfaction of conditions inclusive of hazardous trees, removal for contaminated soil remediation, lack of reasonable alternatives to destruction or any other circumstance deemed appropriate.

As a result of the distinctive tree permit, the General Manager may impose conditions. These conditions can be inclusive of recommendations of good arboricultural practice, recommendations by an arborist, additional mitigation measures, timing considerations, monitoring and more. Monitoring could apply to construction, operation and/or post-construction monitoring. Monitoring requirements should be amended into a compensation plan following communication with the City of Ottawa.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 TREE REMOVALS, PROTECTION AND PRESERVATION

It is understood that development of the Project and associated construction will not occupy the proposed Project Footprint in its entirety. As such, it is anticipated that 1 municipally owned trees (1 x Red Oak) will be required for removal, 2 trees will be preserved, and 0 trees are expected to be injured on municipal lands.

On private lands, it has been determined that an estimated 5.46 ha will be removed to facilitate construction of the Project. Based on field investigations it is estimated that the species composition being impacted is as follows: 37.5% Red Maple, 6.25% Green Ash, 12.5% Trembling Aspen, 12.5% Manitoba Maple, 12.5% Red Oak, 18.75% White Birch.

A summary breakdown is provided in Table 7-3.

8.2 RECOMMENDED FUTURE STEPS

The following is a list of commitments that will occur during future phases of the Project either prior to, or during construction:

- Preparation of a compensation/planting plan to the satisfaction of the City of Ottawa to support the permit application for tree impacts.
- A qualified Environmental Inspector is required throughout the construction period to ensure that tree protection measures are implemented, maintained, and enforced. This inspector is responsible for determining the need and timing of additional expertise, such as an ISA Certified Arborist.
- Compensation planting should be amended to include soil stabilization species if a need arises or becomes evident during construction.

8.3 COMPENSATION

As compensation trees are to be planted on the same properties where removals occur, it is recommended to plant species that complement the existing treed communities to maximize likelihood of survival and avoid changing the function of the existing habitat.

This is most easily achieved by selecting the same native species that are present on site. In the event these species are not readily available at the time of planting, or that some species that are present on site can be described as undesirable (i.e. Green Ash); complement species to be planted should have a similar shade tolerance and similar wetness coefficient to the existing communities (See Table 8-1) to be considered suitable for compensation.

Table 8-1: Native Species Observed and Associated Wetness Coefficients

Observed Species	Wetness Coefficient
Red Maple	0
Balsam Poplar	-3
Green Ash	-3
Red Oak	3
Balsam Poplar	-3
Trembling Aspen	0

No diversity requirements for compensation plantings are written in the Tree Protection By-Law at the time of the Report, but the General Manager may impose a requirement as a condition of the permit prior to approval. It is important to note that the treed community present in the proposed access road area is quite young (dominated by trees <10cm DBH), so high exposure to sunlight and wind should be considered when selecting species for compensation. Given the sloped nature of the Access Road, any species planted in proximity to the projects footprint should be assorted by Wetness Coefficient, with species that prefer it dry (e.g.: Wetness Coefficient 3 3) at the top of the slope, species with a coefficient of 0 being at the mid slope, and species with a coefficient of -3 being at the bottom of the slope.

9. LIMITATIONS OF ASSESSMENT

The assessment of the trees and shrubs presented in this Report has been made using accepted arboricultural techniques and reflects those areas where PTEs were obtained at the time of the field inventory. This included a visual examination of all the above ground parts of the tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of attack by insects, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the trees and the surrounding site, and the proximity of property and people. Except where specifically noted, the trees were not cored, probed, or climbed and there was no detailed inspection of the root crowns involving excavations. Given the time of year of the assessment, foliage was not able to be observed on deciduous species.

Notwithstanding the recommendations and conclusions made in this Report, it must be recognized that trees and shrubs are living organisms, and their health and vigour constantly change over time. They are not immune to changes in site conditions or seasonal variations in the weather conditions.

While reasonable efforts have been made to ensure that the subject trees are healthy, no guarantees are offered, or implied, that these trees or any of their parts will remain standing. It is both professionally and practically impossible to predict with absolute certainty the behaviour of any single tree or its component parts under all circumstances. Inevitably, a standing tree will always pose some level of risk. Most trees have the potential for failure under adverse weather conditions, and the risk can only be eliminated if the tree is removed.

Although every effort has been made to ensure that this assessment is reasonably accurate, the trees should be reassessed periodically. The assessment presented in this Report is valid at the time of inspection.

10. REFERENCES

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Appendix A:
Tree Inventory Table - Municipal

Project: South March BESS | **Field Work Completed By:** Michael Babin, Nathan Simpson

Date of Field Work: February 20th, 2025

Tree Condition

Excellent: no apparent health problems; good structural form

Good: minor problems with health and/or structural form

Fair: more serious problems with health and/or structural form

Poor: major problems with health and structural form

Dead: Dead no live buds, leaves

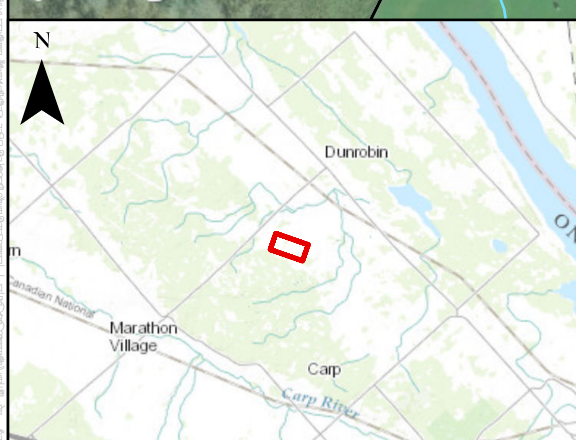
Legend

- Tree Retention / Preservation
- Injure
- Tree Removals

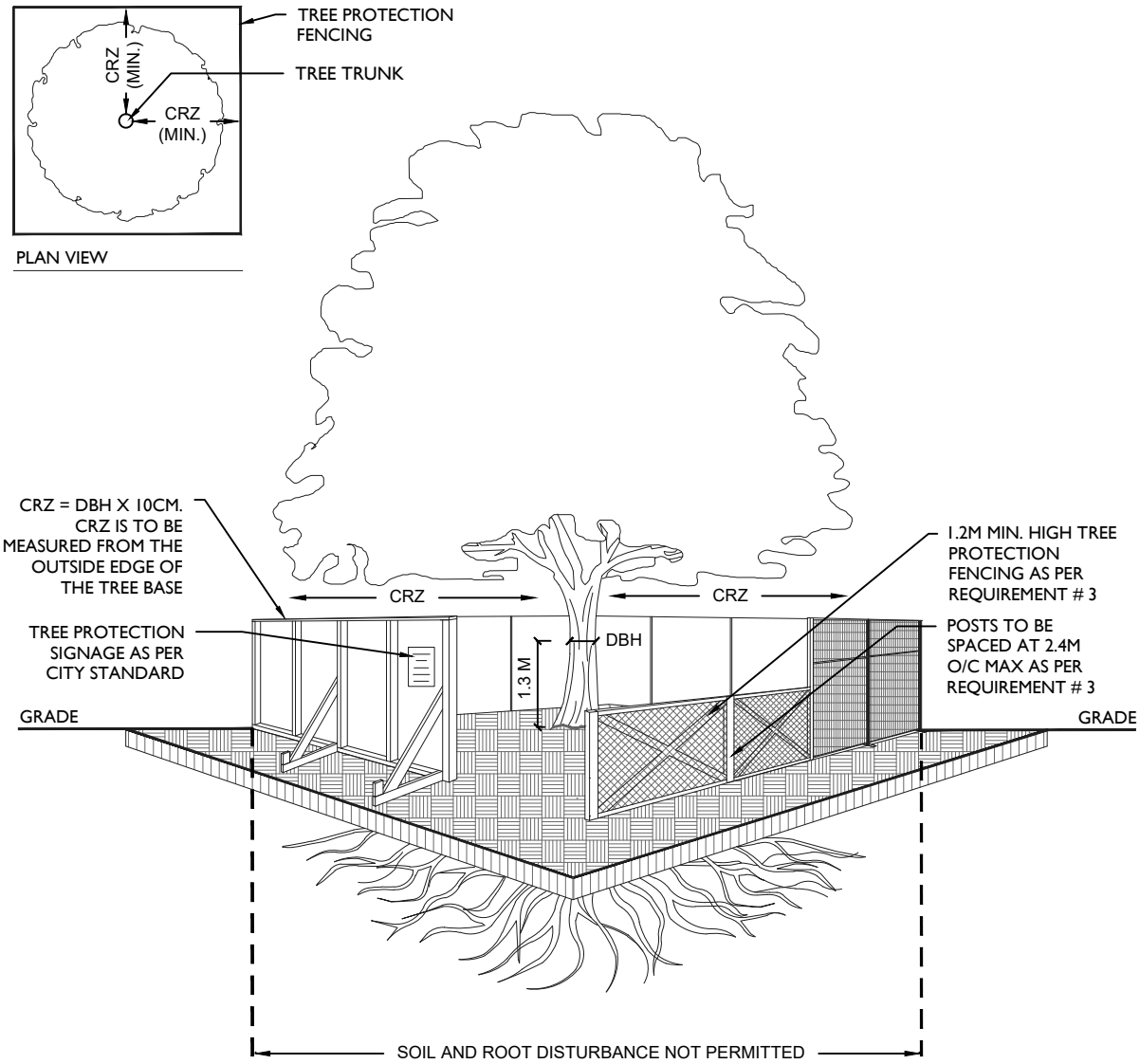
Tree ID Number	Common Name	Botanical Name	DBH (cm)	Critical Root Zone (m)	Tree Condition	Retention or Removal	Ownership	Arborist Reccomendation
1	Red Maple	Acer rubrum	18	1.8	Excellent	Removal	Municipal	
2	Balsam Poplar	Populus balsamifera	11	1.1	Excellent	Retained	Private	
3	Northern Red Oak	Quercus rubra	10 (multistem)	1	Excellent	Removal	Municipal	

Appendix B:
Figure 1 – Municipal Tree Inventory


N
bing
bing


N
Dunrobin
Marathon
Village
Carp
Carp River

Appendix C:
City Of Ottawa Tree Protection Specification



TREE PROTECTION REQUIREMENTS:

1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ = 10 X DIAMETER) OF A TREE, TREE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
   - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTHOUSES;
   - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
   - DO NOT RAISE OR LOWER THE EXISTING GRADE;
   - TUNNEL OR BORE WHEN DIGGING;
   - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OR ANY TREE;
   - ENSURE THAT EXHAUST FUMES FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY.
   - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.2M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULOC - STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"X4" WOOD FRAME) WITH POSTS 2.4M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMISE DAMAGE TO EXISTING ROOTS. (SEE DETAIL)
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE (E.G. TREE CONSERVATION REPORT, TREE INFORMATION REPORT, ETC). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION, MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PLYWOOD, WOOD CHIPS, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

THE CITY'S TREE PROTECTION BY-LAW, 2020-340 PROTECTS BOTH CITY-OWNED TREES, CITY-WIDE, AND PRIVATELY-OWNED TREES WITHIN THE URBAN AREA. PLEASE REFER TO WWW.OTTAWA.CA/TREEBYLAW FOR MORE INFORMATION ON HOW THE TREE BY-LAW APPLIES.

ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE, UPON REQUEST

Ottawa

TREE PROTECTION SPECIFICATION

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE:	NTS
DATE:	MARCH 2021
DRAWING NO.:	1 of 1