



MORRISON HERSHFIELD

REPORT

**Canada Bank Note Limited**

**FINAL TREE INVENTORY AND  
PROTECTION PLAN**

Ottawa, Ontario

Presented to:

**Norm Sisson**

Director, Planning, Design and Construction

**Canada Bank Note**

975 Gladstone Avenue,  
Ottawa, ON K1S 5B6

## REVISION INDEX

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# 1. INTRODUCTION

## 1.1 Project Description

Morrison Hershfield Limited (MH) has been retained by the Canadian Bank Note Limited to provide professional arborist services associated with the design and construction for a warehouse and loading dock at 975 Gladstone Avenue. The purpose of this project is to design an addition of approximately 10,000 square feet of warehouse space. The warehouse is to have five (5) levels of racking served by a fork truck with a loading dock for truck loading.

The project study area exists within the jurisdictional boundaries of the Rideau River Conservation Authority (RVCA) and Geographic Township of Nepean. Refer to **Figure 1** for an overview of the project location.



**Figure 1: Key map of the Canadian Bank Note Limited project area.**

## 1.2 Schedule of the Proposed Works

The project is expected to be initiated in January 2021, and to be completed by December 2021.

### **1.3 Other Applications Affecting the Trees**

We are not aware of any other projects planned that may injure or destroy the trees within the project area.

### **1.4 Purpose of Report**

In order to determine the number of trees that may be impacted by the project, surveys and analysis were undertaken within areas that may be affected within the proposed construction footprint within the study area. All trees within approximately 5 m of the proposed footprint were inventoried. The inventory included the tree species, location, condition, and size. An analysis of the tree inventory data was carried out in order to pursue reasonable measures to effectively protect or compensate for all trees affected by the project. If required, the successful proponent for the construction of this project will compensate for tree loss if required by the City of Ottawa. This report outlines the impacts anticipated to occur within treed areas surrounding the project and recommends mitigation measures necessary to protect the existing landscape values based on the proposed design.

The tree inventory was undertaken by an MH terrestrial biologist, Casey Little, who has the necessary expertise to complete tree inventories and is trained in ecology, tree biology, and tree identification. The work was verified by professional ecologist and Certified Arborist, Bettina Henkelman, who is also a Certified Tree Risk Assessor, certified by the International Society of Arboriculture (#ON-1266A). She is trained in forestry, ecology, biology, and horticulture in accordance with the definition of 'arborist' included in the City of Ottawa's By-law No. 2009-200.

## 2. METHODOLOGY

An approximate 5 m buffer was applied to the proposed construction footprint within the study area to represent the area within which trees are likely to be impacted by project activities. This distance – the radius of the Critical Root Zone (CRZ) of a 50 cm Diameter at Breast Height (DBH) tree (calculated as 10 cm of CRZ for every 1 cm of DBH; City of Ottawa, 2006) – includes trees with trunks outside the proposed footprint but have root zones that may extend into it. For the purposes of this tree quantity estimation exercise, as per the City of Ottawa Tree Conservation Guidelines (City of Ottawa, 2016), a tree was defined as any woody vegetation with a DBH of at least 10 cm. A detailed inventory was conducted, on foot, of all trees within the proposed footprint, including staging areas/temporary easements. The inventory was conducted during a site visit on May 20<sup>th</sup>, 2020. The location of each tree was documented on the construction plans.

The assessment presented in this report was made using standard arboriculture techniques, and consisted of a visual examination of the above-ground parts of each tree. Detailed root to crown inspection of trees was not conducted using techniques such as climbing, probing, coring, dissection, and excavation. Instead, binoculars were used for assessing the health of the crown.

Characteristics that were documented included species, DBH (cm), number of stems, approximate height (m), and approximate crown diameter (m). Additionally, the general health condition was determined through an examination of each tree, including physical signs of pests, disease, and injuries arising from a range of causes. Based on these signs, each tree was assigned one of five health condition ratings: 1 – Excellent, 2 – Good, 3 – Fair, 4 – Poor, and 5 – Dead. These health condition ratings are defined in **Table 1** below.

**Table 1: Five (5) Health Condition Ratings Assigned to Inventoried Trees**

Rating	Condition	Description
1	Excellent	No apparent health problems; good structural form
2	Good	Minor problems with health and/or structural form
3	Fair	More serious problems with health and/or structural form
4	Poor	Major problems with health and structural form; typically with epicormic growth when affected by Emerald Ash Borer
5	Dead	Currently dead; includes trees that have minor epicormic growth from the base

Typically, trees with bark damage or large wounds are susceptible to decay and dieback (characterized by the death of young shoots, which can spread to larger branches), both of which may lead to future issues, such as structural weakness, loss of limbs, or even death. Thus, any damage to bark was noted. As well, topped trees (when the main leader is broken off), major die-back (when more than 1/3 of the tree's crown is dead), and branches that tore off bark when they broke off leaving a long stub may also lead to future issues such as

structural weakness, loss of limbs, or death. Other structural issues, such as co-dominant stems with included bark (bark growing within the angle between two or more branches or stems, prohibiting the growth of fibrous tissue which connects and strengthens the branch union), may arise from natural causes. All of the above noted conditions, if apparent, were documented and used to determine the rating of each tree.

Vigorously healthy trees will compartmentalize wounds and grow compensation wood, which can partly or mostly offset damages. Thus trees were inspected for signs of callus tissue (a sign that the tree is able to compartmentalize wounds) and were assessed accordingly.

The tree height and crown spread was estimated and placed into height and spread categories:

- A: 1-2 m
- B: 3-5 m
- C: 6-8 m
- D: 9-12 m
- E: 13-16 m
- F: >16 m

The health and vigour of trees continually change over time due to seasonal variations in weather, changes in site conditions, phenology<sup>1</sup>, 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 currently deemed to be in good condition. It is recommended that the trees be re-assessed prior to project activities. While every standing tree has potential for failure and, therefore, poses some risk, a tree assessment provides valuable information regarding current health, as well as any potential problems.

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<sup>1</sup> Periodic plant and animal life cycle events and how these are influenced by seasonal and interannual variations in climate, as well as habitat factors



## 3. RESULTS

### 3.1 Tree Inventory

Based on the survey of trees within the proposed construction footprint, a **total of 5 trees** were located within 5 m of the study area. Of these, **all 5 will be protected**.

Healthy trees outside of the study area may be marked for removal at the discretion of the contractor if they are leaning directly into the construction area or where more than 30% of the CRZ is within the boundary, depending on their location based on the professional land survey<sup>2</sup>. These trees are tentatively retained, and are not included in compensation at this time. The City of Ottawa Forestry group will be kept apprised of any additional tree removals proposed as construction proceeds.

As well, 4 trees may require pruning based on the estimated overlap of the crown into the construction area. Where pruning is required to avoid conflicts with equipment, the tree must first be assessed by a certified arborist to determine which branches require pruning, and the methods to be used following ANSI A300 Pruning methods and best management practices identified by the International Society of Arboriculture.

A photo record, detailed tree inventory data, and tree location figure are included in **Appendix A, Appendix B, and Appendix C** respectively.

### 3.2 Description of the Environmental Value of the Trees within the Site

The Canadian Bank Note Limited is located in Centretown West, a residential community in Ottawa, Ontario. The study area is comprised of residential and commercial properties lined with city trees and lawns. All trees within the study area are located along Breezehill Avenue, Laurel Street, and Loretta Avenue and are not situated near any wetlands or watercourse.

There are no natural surface water features, wetlands, watercourses, or ditches within the project footprint. There were no steep slopes (including valleys and escarpments), valued woodlots designated as Urban Natural Features or Natural Environment Areas, areas evaluated in the Urban Natural Areas Environmental Evaluation Study (UNAEES), or other areas that meet the criteria used in the UNAEES.

The site was not near and did not provide greenspace linkages as identified in the Greenspace Master Plan or as may occur in the larger landscape. The area currently contains highly manicured landscape features.

A review of the Land Information Ontario and official plans identified no Provincially Significant Wetlands or areas of significance or Interest on or adjacent to the site. A site review confirmed

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<sup>2</sup> Tree locations from the tree survey has a typical 1 m or higher accuracy; precision from the professional land survey is presumed to be within centimetres, thus some trunks of trees may be actually outside the proposed removals area

that no rare vegetation communities, significant woodlands, significant landforms (valleylands, groundwater discharge) were on the site.

The site contained one (1) tree with a dbh of greater than 50 cm. This was a Sugar Maple with a dbh of 51 cm in Fair condition with dieback in the crown. This tree does not require removal as it is outside the limits of construction and therefore, is not anticipated to require compensation. If this tree is damaged during construction, the contractor will be required to obtain a Distinctive Tree Permit from the City of Ottawa.

Natural Heritage Information Centre (NHIC), listed the following Natural Area occurring within one 1 km<sup>2</sup> x 1 km<sup>2</sup> grid square (18VR4328) encompassing the site: Lac Deschenes-Ottawa River Natural Area. This feature is located on the Ottawa River and will not be impacted by this project.

The NHIC, Ontario Breeding Bird Atlas 2001-2005 (OBBA), and the Ontario Reptile and Amphibian Atlas (ORAA) have historic records for the following species at risk (SAR) within one 10 km<sup>2</sup> x 10 km<sup>2</sup> grid square (18VR42) encompassing the project area: Bank Swallow (Threatened), Barn Swallow (Threatened), Bobolink (Threatened), Chimney Swift (Threatened), Common Nighthawk (Special Concern), Eastern Meadowlark (Threatened), Eastern Wood Pewee (Special Concern), Peregrine Falcon (Special concern), Wood Thrush (Special Concern), Blanding's Turtle (Threatened), Eastern Musk Turtle (Special Concern), Northern Map Turtle (Special Concern) and Snapping Turtle (Special Concern. Four (4) SAR Mammals are also known to occur in the Ottawa area and may be present, including: Little Brown Myotis (Endangered), Northern Long-eared Myotis (Endangered), Tri-colored Bat (Endangered), and Eastern Small-footed Myotis (Endangered).

In the early stages of the project a comment was provided by a local resident regarding the presence of Butternut (threatened SAR tree) in the vicinity of the study area. During the field investigation areas within 25 m of the study area were searched for the presence of Butternut. No Butternut, or other SAR tree species were observed.

Despite the presence of numerous SAR within the general area, the site does not contain rare communities or other unique ecological features, or species at risk and their habitat. Based on the site conditions, the proposed project area contains habitat for common wildlife species with a high tolerance for human activity, preferring manicured habitats with a mix of lawn, trees, shrubs, and ornamental beds. These species would include wildlife such as mice, shrews, voles, moles, squirrels, many common species of birds, insects, amphibians and reptiles.

## 4. MITIGATION AND COMPENSATION

The construction of a warehouse and loading dock at 975 Gladstone Avenue, including the construction staging areas, are expected to have minimal to no impacts to trees located in the vicinity of the study area. The trees that were inventoried are outside the proposed construction footprint within the study area and therefore, are not expected to be impacted by this project. However, mitigations are being recommended to ensure the protection of these trees prior to and during construction. The mitigations provided below apply to all trees inventoried as part of this assessment.

### 4.1 Recommended Mitigations

All five (5) trees within 5 m of the proposed project limits are situated outside the Canadian Bank Note Limited parking lot and are currently protected by a chainlink fence surrounding the property. It is recommended that this fence remain in place during construction to ensure the protection of the trees CRZ. If the fence is removed due to construction, the following sections provide mitigation measures to protect these trees.

#### 4.1.1 Protection Measures for the CRZ

Based on the health assessment of the inventoried trees, all five (5) trees are recommended for onsite protection.

In order to successfully protect trees that are recommended for onsite retention, the Critical Root Zone (CRZ) of trees must be protected. The CRZ is defined by the City of Ottawa's Municipal Trees and Natural Areas Protection by-law (2006) which stipulates that the CRZ of all trees and vegetation on adjacent properties as well as trees slated for retention within the study area be protected. The CRZ delineates the minimum area around a tree within which tree protection is to be implemented, and is measured as 10 cm from the trunk of a tree for every 1 cm of trunk diameter. The trunk diameter is measured at a height of 1.2 m for trees 15 cm diameter and greater. The following measures are being recommended in order to protect the CRZ of all trees slated for retention:

- Install Tree Protection fencing prior to commencement of construction activities, and retain fencing until construction activities have been completed:
  - Minimally, install orange snow fencing at the perimeter of the CRZ of all trees to be retained on the side where construction is to occur.
- The contractor is responsible for the maintenance of 'Tree Protection Fencing' at all times during construction. Maintenance includes the repair of damaged fence sections and the reinstatement of 'Tree Protection Fencing' as required.
- Do not place any material or equipment within the CRZ of the tree.
- Do not raise or lower the existing grade within the CRZ of a tree.
- Be sure to tunnel or bore when digging within the CRZ of a tree.

- Any work carried out within the CRZ must be performed under the supervision and guidance of a Certified Arborist or Registered Forester.
- Do not damage the root system, trunk or branches of any tree; if any roots are encountered during excavation while working outside the CRZ, they should be cut off cleanly under the direction of a Certified Arborist or Registered Forester who should be on-site to perform or supervise this work.
- All exposed roots of trees to be retained should be covered in a minimum of 5 cm of firm soil within 24 hours of exposure.
- If root pruning is implemented, the crown of the tree should be reduced proportionately under the direction of a Certified Arborist or Registered Forester, in order to decrease wind sail. Pruning should be kept to thinning cuts (no major limb removal), and crowns should be monitored and maintenance carried out for two (2) years after root pruning to remove any die-back under the direction of a Certified Arborist or Registered Forester.
- For any trees which have had work done within the CRZ, follow-up care is to be provided. Maintain adequate soil moisture, nutrition, and aeration throughout the following year; trees should be monitored on a yearly basis, during an appropriate time of year, for 2 years following work within the CRZ, to determine whether further follow-up action is required.
- Do not attach any signs, notices or posters to trees.
- Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy.
- Ensure that site clearing is carried out only in areas where it is specifically required, and that the areas to be cleared are carefully and clearly delineated.
- It is recommended that for trees designated to be preserved and that have become damaged, or die throughout the construction period as a result of construction activities (excludes trees dying from drought, disease, vandalism, or other causes not directly associated with construction), the proponent submits landscaping or restoration plans and associated maintenance plans. Also, such trees should be compensated via replacement plantings at another suitable location, or *in lieu* cash payment where restoration planting is not physically possible on the site.
- It is important to note that some trees may be worthwhile for retention based on their location and condition, but complete avoidance of impacts due to construction may not be achievable; in those cases, an arborist or registered forester should be consulted to review the potential for retaining trees that are deemed to be worthwhile.

#### **4.1.2 Tree and Root Pruning**

- All pruning work must be performed under the supervision and guidance of a qualified tree professional in accordance with the latest ANSI A300

Pruning Standards and best management practices identified by the International Society of Arboriculture.

- Do not damage the root system, trunk or branches of any tree; if any roots are encountered during excavation, they shall be cut off cleanly under the direction of a certified arborist or forester who shall be on-site to perform or supervise this work.
- Undertaking the tree cutting work must only be carried out under the supervision of an arborist.
- If root pruning is implemented, the crown of the tree should also be reduced proportionately, in order to decrease wind sail and balance the crown. Pruning should be kept to thinning and small reduction cuts (no removal of limbs with a higher than 1:2 size ratio with the main stem, targeting limbs of the smallest diameter that achieve the intended goal for clearing within the vegetation clearing zone), and crowns should be further maintained at two (2) years prior to root pruning to remove any die-back, and to correct structural issues created by pruning.

#### **4.1.3 Measures to Avoid Harm to Wildlife during Tree Removal**

Based on the health assessment and location of the inventoried trees, **no trees** must be removed to allow the construction to proceed. The City of Ottawa Forestry group will be kept apprised of any additional tree removals proposed as construction proceeds. Signage should be installed on site notifying residents and bystanders of the timing of tree removals. The following measures are being recommended for the protection of wildlife during tree removal, if required:

- Conduct tree and vegetation clearing in a manner that does not contravene the *Migratory Birds Convention Act, 1994*.
- Prior to removing trees in winter, spring and early summer, a qualified biologist should inspect the trees for wildlife residing in the trees or rearing young. Refer to the City of Ottawa's (City of Ottawa, 2000) *Protocol for Wildlife Protection during Construction* for other recommendations and mitigations.

#### **4.1.4 Measures to Minimize Tree Disease and Invasive Species**

- Due to the presence of Emerald Ash Borer in the region, remove all Ash trees (*Fraxinus* spp.) strictly in compliance with Canadian Food Inspection Agency (CFIA) regulations regarding the restrictions to movement within Canada; these regulations prohibit the movement of Ash trees, branches, logs, wood, and bark to unregulated areas.
- Report any incidence of Asian Longhorned Beetle to the CFIA (Telephone 1-800-442-2342), immediately.
- Do not plant any invasive tree/plant species as compensation for trees that will need to be removed as a result of project activities.

- Fully inspect all trees being planted for invasive pests or diseases prior to planting

## **4.2 Recommended Compensation**

As no trees will be removed as a result of this project, no compensation is required. However, if tree removal is required, the trees to be compensated are those that are slated for removal and have a health condition rating of Excellent, Good, or Fair (1, 2, or 3 respectively). Those with a health condition rating of Poor (4) or Dead ( $\geq 5$ ) do not require compensation.

## **5. PERMITTING REQUIREMENTS**

The City of Ottawa Urban Tree Conservation By-law (2009-200) states that no person shall injure or destroy a tree or cause injury or destruction to a tree on private property unless a permit has been acquired. The purpose of this report is to accompany a permit application and provide the required information should any trees get damaged during construction requiring compensation.

## 6. SUMMARY

All areas which may be potentially impacted by the proposed Canadian Bank Note Limited warehouse and loading dock project were assessed for tree quantities. A total of **five (5) trees were present** adjacent to the study area. Of these, all five (5) trees will require protection as they are immediately adjacent to the clearing area. Extra care will be needed to ensure these trees are not damaged or accidentally removed. There is potential that trees may require removal at the discretion of the contractor during construction if they pose a hindrance to the project. If that is required, it may only be carried out under the authorization of City of Ottawa Forestry group, and the planting of additional trees will likely be required to replace the healthy trees being removed as a result of this project.



## 7. REFERENCES

City of Ottawa. 2016. Tree Conservation Report Guidelines. <https://ottawa.ca/en/living-ottawa/environment/trees-and-forests/tree-protection>

City of Ottawa. 2006. Municipal Trees and Natural Areas Protection (By-law No. 2006-279). <http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/municipal-trees-and-natural-areas-protection-law-no-2006>.

City of Ottawa, 2000. Protocol for Wildlife Protection During Construction. City of Ottawa. [https://documents.ottawa.ca/sites/documents/files/documents/construction\\_en.pdf](https://documents.ottawa.ca/sites/documents/files/documents/construction_en.pdf).

## **APPENDIX A: Photo Record**



**Photo 1.** Tree #1 – Sugar Maple in Fair condition along west side of Canadian Bank  
Note Limited building, facing north. May 20, 2020



**Photo 2.** Tree #1 – Sugar Maple in Fair condition along west side of Canadian Bank  
Note Limited building, facing east. May 20, 2020



**Photo 3.** Tree #1 – Sugar Maple in Fair condition along west side of Canadian Bank Note Limited building, facing south. May 20, 2020



**Photo 4.** Tree #2 – Horsechestnut in Excellent condition along west side of Canadian Bank Note Limited building, facing south. May 20, 2020





**Photo 5.** Tree #2 – Horsechestnut leaves and flowers along west side of Canadian Bank Note Limited building, facing south. May 20, 2020



**Photo 6.** Tree #3 – Serviceberry in Excellent condition along west side of Canadian Bank Note Limited building, facing north. May 20, 2020



**Photo 7.** Tree #3 – Serviceberry behind cut tree stump along west side of Canadian Bank Note Limited building, facing south. May 20, 2020



**Photo 8.** Tree #4 – Siberian Elm in Good condition located along northern limits of Canadian Bank Note Limited building, facing south. May 20, 2020





**Photo 9.** Tree #4 – Siberian Elm in Good condition showing tree roots being girdled by fence, facing west. May 20, 2020



**Photo 10.** Tree #4 – Siberian Elm in Good condition showing healthy crown. May 20, 2020



**Photo 11.** Tree #5 – Maple species in Fair condition located along eastern limits of Canadian Bank Note Limited building, facing south. May 20, 2020



## **APPENDIX B: Tree Inventory Data**

Table 2: Canadian Bank Note Limited Tree Inventory Data

Tree ID	Common Name	Scientific Name	DBH (cm)	Condition	Crown Radius (m)	Height Category (m)	CRZ (m)	Lean Direction	Leaning into Project Area	Symptoms	Symptom Location	Cause	Structural Issues	Action	CRZ % Overlap	Crown % Overlap
1	Sugar Maple	<i>Acer saccharum</i>	51	Fair	4	13 - 16 m	5.1	-	-	D2: Dieback 16 – 30%	C: Crown	Overpruning	Unbalanced Crown	Protect	-	-
2	Horsechestnut	<i>Aesculus hippocastanum</i>	21	Excellent	3	9 - 12 m	2.1	-	-	-	-	-	-	Protect	-	-
3	Serviceberry	<i>Amelanchier species</i>	6	Excellent	1	3 - 5 m	0.6	-	-	-	-	-	-	Protect	-	-
4	Siberian Elm	<i>Ulmus pumila</i>	23	Good	2	9 - 12 m	2.3	-	-	D1: Dieback 5-15%	R: Roots	Girdling	-	Protect	-	-
5	Maple species	<i>Acer species</i>	31	Fair	3	9 - 12 m	3.1	-	-	D2: Dieback 16 – 30%, Bark Removed	C: Crown	-	-	Protect	-	-



## **APPENDIX C: Tree Location Figure**





Canadian Bank Note Limited Tree Inventory Location

