

**18 – 20 Hickory Street West
Waterloo, Ontario**

ARBORIST REPORT

Submission:

1. Zoning Amendment – April 29, 2024

Prepared for:

Dennis Home Corp.
8220 Bayview Avenue, Suite 206
Thornhill ON, L3T 2S2

Prepared by:

JK Consulting Arborists
89 Aberdeen Rd S
Cambridge, ON N1S 2X8
(519) 778-5502



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1.0 INTRODUCTION

JK Consulting Arborists has been retained by Dennis Home Corp. (the Client), to prepare an Arborist Report and Vegetation Management Plan (VMP) for the proposed townhouse development located at 18 – 20 Hickory Street West in Waterloo, Ontario. The Arborist Report has been prepared to support the Zoning Bylaw Amendment application and satisfy the City of Waterloo submission requirements. The report will provide recommendations for tree management based on the proposed site plan design.

1.1 EXISTING SITE

The Project is located north of downtown Waterloo, within the northwest block of University Avenue West and King Street North. The Project property is made up of two residential lots, 18 and 20 Hickory Street West, each with a single one-storey house. The property includes isolated trees which are growing along the property boundary. The Project is bordered by a private residential property with a 3-storey multi-residential building to the north, Hickory Street West to the south, Spruce Street to the east, and a private residential property to the west.

1.2 PROJECT PURPOSE

The Project is for the development of an 8-unit, 3-storey townhome building, with associated ground level parking and front and backyard yard space. The Arborist Report and Vegetation Management Plan has been prepared to support the ZBA application as required by the City of Waterloo and will include recommendations to protect existing healthy trees where available, and to provide direction on trees impacted by the Project and construction.

2.0 METHODOLOGY

A tree inventory was completed for the trees located on the project site, and trees located directly adjacent to the project site (6m from the limit of proposed work), which could potentially be impacted by construction. The tree inventory was completed by Ms. Jennifer Koskinen, ISA Certified Arborist, ISA TRAQ, on April 10th, 2024. The trees included in the inventory were tagged with a numbered steel tree tag, (e.g., #1, #2, #3 etc.). Trees included in the inventory that were located on private property or were not physically tagged have been identified with an 'ID' code: 'A,' 'B' 'C' etc.

The tree inventory data has been compiled in Table 1. Tree Inventory for 18-20 Hickory Street West, located on drawing VMP-2, in Appendix 'A'. The tree locations and tree identification corresponding with the inventory data in Table 1, have been illustrated on the VMP, drawing VMP-1. Most of the tree locations have been legally surveyed, however trees not included in the legal survey have been located onsite and have been differentiated on drawing VMP-1. The VMP drawing also includes existing site information, and proposed site plan information, along with preliminary grading and servicing design.

The Arborist Report provides a summary of site observations, impacts based on Project design

and construction, and recommendations for tree management throughout the Project cycle where applicable.

2.1 TREE ASSESSMENT

The following identifies the assessment and information completed for each tree that has been included in Table 1.

Botanical and Common Name: The scientific and common name are identified for each tree.

Diameter at Breast Height (DBH): Tree diameter measurement in centimetres taken 1.4 metres up the tree's trunk from existing grade.

Condition Assessment: Assessment completed from ground review.

Trunk Integrity (TI) – Assessment of root flare, trunk, and main stem.

Canopy Structure (CS) – Assessment of branches and overall canopy.

Canopy Vigor (CV) – Assessment of general health and vigor of live buds or leaves throughout the canopy.

Overall Condition (OC) – Final condition rating based on TI, CS, and CV. One poor rating will result in an OC of poor. If two of the three are rated good and one is fair the OC will be fair, and so on.

Condition Rating:

Excellent: (Vigour Class 6: Healthy)

No major branch mortality: crown is reasonably normal with less than 10% branch or twig mortality; no signs of decay or defects.

Good: (Vigour Class 5: Light Decline)

Branch mortality, twig dieback in 11-25% of the crown: broken branches or crown missing based on presence of old snags is less than 26%; minor evidence of decay or defects.

Fair: (Vigour Class 4: Moderate Decline)

Branch mortality, twig dieback in 26-50% of the crown: broken branches or crown area missing based on presence of old snags is 50% or less; decay evident.

Poor: (Vigour Class 3: Severe Decline)

Branch mortality, 50% or more of the crown dead: broken branches or crown area missing based on presence of old snags in more than 50%; decay may result in high hazard assessment or recommendation for tree removal.

Dead: (Vigour Class 2: Dead due to Natural Causes)

Tree is dead, either standing or down: phloem under bark has brown streaks: few epicormic shoots may be present.

Dead: (Vigour Class 1: Dead due to Human Causes)

Tree removed: tree has been sawed or girdled by human activity.

Property/Location: Identifies if the tree is located on the development/Project site, property line or boundary tree, neighbouring property, or public property.

Comments: Additional information or observations of the tree.

3.0 OBSERVATIONS and ANALYSIS

3.1 OBSERVATIONS

The following observations are to be read in conjunction with drawings VMP-1 and VMP-2, as this will provide detailed information of each tree discussed in this section. Photos of the trees have also been provided in Appendix 'B'. There were fourteen, (14), trees included in the inventory. The following tree species were included in the detailed tree inventory:

Acer platanoides (Norway Maple), *Amelanchier sp.* (Serviceberry), *Picea pungens* (Colorado Blue Spruce), and *Pyrus sp.* (Pear).

The Project property included aging Norway Maple growing along the east and south boundary of the site. Many of the trees had structural defects in the trunks and main stems, along with deadwood in the copies. The vegetation growing along the north boundary included trees that were predominantly in poor condition. Some trees were owned by the adjacent property owner with one tree identified as a boundary tree, which is legally owned by the Client and the adjacent property owner. The following is a breakdown of the observations in relation to tree ownership.

Project Owned Trees

There were five trees growing on the Project property. These include trees #986, #988, #989, #992, and #993. These were all Norway Maple in poor condition with exception of one tree in fair condition. Trees had significant defects to the trunk or stems, with rot, and dieback in the canopies.

Boundary Trees (Shared with Private Property or the City)

There were two trees, #990 and #991, growing on the Project property line. Tree #990 (Norway Maple) is shared with the City and tree #991 (Pear) is shared with the property owner to the north (309 Spruce Street). These trees were in poor condition. Tree #990 was observed to have defects and rot in upper stems and deadwood in the canopy some over hanging the sidewalk. Tree #991 is the only live stem of a pear tree which is dead with no canopy. There is also a cluster of dead trees with no canopies growing directly adjacent to tree #991.

Neighbour Trees

Trees 'A' through 'D' were located on adjacent private property. Trees 'A' through 'C' were located within 6m from the Project impact limits on 309 Spruce Street, and tree 'D' was in the front yard of 22 Hickory Street West within 6m of the Project. Tree 'A', 12cm DBH Norway Maple, is growing within 0.5 metres from the project grading limits and is in poor condition.

City Trees

Trees growing on City property include trees #987, #994, and #995. Tree #987 is a Norway Maple observed to be in fair condition, with rot observed in stems in the canopy, and surface roots along the ground adjacent to the trunk. Tree #994 and #995 (<10cm DBH Serviceberry) were newly planted trees with stakes and ties still attached to the trees. Tree #995 was dead.

3.2 ANALYSIS

The Project will require grading and development within the entire property boundary, with no opportunity to retain trees within the Project, or directly adjacent to the project property line. Several trees were in poor condition with structural defects, along with construction impacts these trees would not be able to withstand impacts and were recommended to be removed. The tree inventory table on drawing VMP-2 provides a 'Justification for Action' column, with information on why trees were recommended to be removed.

Section 3.2.1 provides a detailed breakdown of tree impacts. Tree impacts were determined based on tree inventory data, proposed and existing information, along with anticipated construction requirements to implement the proposed design.

3.2.1 Tree Impacts

Trees to be Retained

Of the fourteen trees inventoried there were five trees identified to be retained: 'A' through 'D', and #994. However, it is recommended the Client discuss the removal of tree 'A' with the adjacent property owner. This tree is in poor condition, and it would be aesthetically pleasing, and a benefit to the properties if this tree was removed along with the dead stems located adjacent. It is recommended to explore the option of planting small trees or shrubs along this area.

Tree 'B' is a Colorado Spruce, approximately 45cm DBH in good condition. This tree is growing adjacent to the Property line and shouldn't be impacted by grading as this area will have an increase in grade. The area where there is an increase in grade should not impact the roots, however demolishing the existing shed may impact roots that could have been growing along the concrete base of the shed. As such, it is recommended that an Arborist review root impact during excavation adjacent to tree 'B'.

Tree Protection Fence has been proposed on the DVP drawings adjacent to retained trees, to mitigate impact during construction.

Trees to be Removed

Of the fourteen trees inventoried nine were recommended to be removed. Project owned trees to be removed include trees #986, #988, #989, #992 and #993. These trees will be removed to facilitate construction and grading for the Project. A review was completed for each individual tree to determine impacts, and it was determined that more than 50% of the trees TPZ will be impacted. The construction impact along with the trees current condition resulted in recommendation for removal.

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City owned trees #987 and #995 will be removed. Tree #995 is dead, and the removal of this tree will provide an open space on the boulevard for a new healthy tree to be planted. Tree #987 will be impacted by the demolition of the existing house as the tree has surface roots that extend toward the existing house. Development of the townhomes will impact approximately 40% of its rootzone, which would lead to decline in the tree due to its current condition. Also impacting surface roots, as shallow root systems are typical for Norway Maple, can create a structural unsound tree. The proposed walkway to the north of the tree would increase TPZ impact to greater than 50%. It is requested that this tree be removed, and replaced with a native species which would be tolerant to the proposed conditions. If the City does not provide approval for tree removal, that would require eliminating the walkway for Townhouse 5, with a redesign of the Project to ensure that there is no decrease in grade that would impact the surface roots.

Boundary trees recommended to be removed include #990, shared with the City, and #991, shared with 309 Spruce Street. Tree #990 was assessed to be in poor condition. The existing condition of the tree and the proposed grading for the Project, and construction of two walkways within the TPZ has resulted in the recommendation for removal. It is requested that the City provide approval for tree removal. It is recommended that tree replacement include a native species with tolerance to proposed conditions. Tree #991 is in poor condition and will be impacted by grading and construction of the proposed walkway which extends along the north property boundary. Removal would require written permission from the adjacent property owner of 309 Spruce Street. It is also recommended that permission be requested to remove tree 'A', which has been recommended to be retained as it does not have to be removed for construction, however removal is desired for aesthetics and future planting.

3.2.2 Summary of Tree Impacts

Tree removals and trees to be retained have been identified on the VMP drawings, and in the tree, inventory table, Table 1. The following table provides a summary of the tree impacts for this Project.

Table 3-1. Summary of Tree Impacts

Tree Impacts	# of Trees (10cm dbh and greater)
Retain	5
Remove	9
Total Trees Inventoried	14

4.0 TREE PROTECTION

The proposed locations for Tree Protection Fence have been identified on drawing VMP-1, and City of Waterloo TPF details, CW-701 and CW-702, have been identified on drawing VMP-2, in Appendix 'A'. Tree 'D' did not have TPF proposed as the tree is located on the backside of the neighbours driveway, and will be outside fast fence/construction site fencing which will contain

the Project during construction. Fencing shall be installed prior to the start of construction and remain until construction has been completed.

5.0 RECOMMENDATIONS DURING CONSTRUCTION

1. The following is the process that shall be carried out if tree removals are requested during the restricted time indicated in the Migratory Birds Convention Act (for Southern Ontario this timing is estimated for April 1 to August 31):
 - It is to be determined if nesting birds are within the tree removal disturbance area.
 - If it has been determined that there are nesting birds onsite, there will be no tree removals/chipping conducted within a boundary set out in conjunction with City staff. Tree removals can resume within this area at the end of the nesting season, August 31, or if it has determined the birds have left.
 - If it has been determined there are no migratory birds nesting within the disturbance area, the contractor has 7 days to conduct removals. At the end of 7 days, if removals and chipping is not complete, the area shall be reassessed and if there are still no birds, work can resume for another 7 days. This process will continue until all removals and chipping are complete.
2. Tree branches to be pruned shall be completed by a Certified Arborist or under the direction of one. Branches shall be pruned using current International Society of Arboriculture (ISA) Best Management Practices. Pruning shall occur on the Project property for branches located on the Project property. Only if permission has been given by the owner of the abutting property and/or owner of the tree can pruning then occur on adjacent lands.
3. Additional notes provided by the City of Waterloo have been included on drawing VMP-2.

6.0 STATUTE OF LIMITATIONS

The assessment of the trees presented within this report has been made using accepted arboricultural techniques. These include a visual examination of the above-ground parts of each tree for structural defects, scars, external indications of decay, evidence of insect presence, discoloured foliage, the general condition of the trees and the surrounding site, as well as the proximity of property and people. None of the trees examined were dissected, cored, probed, or climbed, and detailed root crown examinations involving excavation were not undertaken.

Notwithstanding the recommendations and conclusions made in this report, it must be realized that trees are living organisms and their health and vigour is constantly changing. They are not immune to changes in site conditions or seasonal variations in the weather.

While reasonable efforts have been made to ensure the trees recommended for retention are healthy, no guarantees are offered or implied that these trees or any part of them will remain standing. It is both professionally and practically impossible to predict with absolute certainty the behavior of any single tree or group of trees in all circumstances. Inevitably, a standing tree will always pose some risk. Most trees have the potential for failure if provided with the necessary combinations of stresses and elements. This risk can only be eliminated if the tree is removed.

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



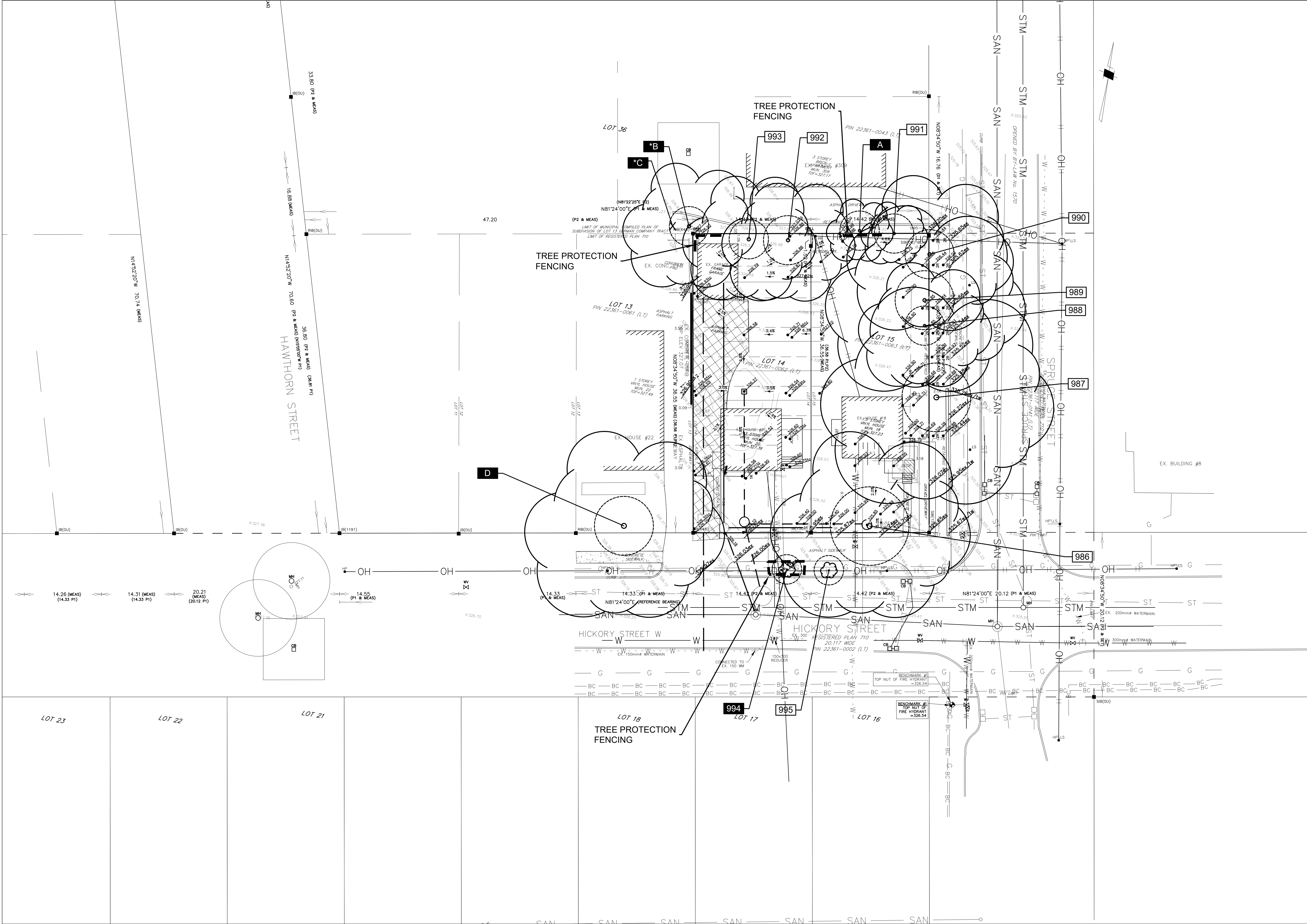
Prepared by: _____

Ms. Jennifer Koskinen
ISA Certified Arborist ON-1234A
Phone: 519-778-5502
Email: jennifer@jkconsultingarb.com

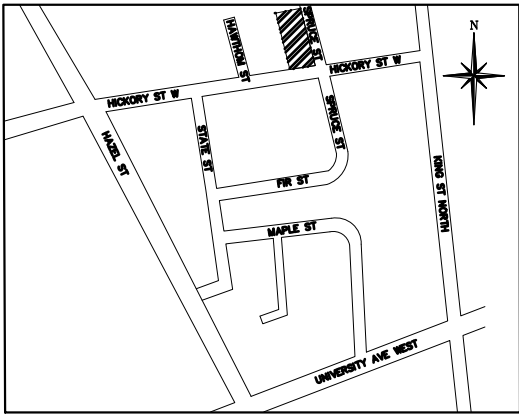
Appendix A

- DRAWING VMP-1
VEGETATION MANAGEMENT PLAN

- DRAWING VMP-2
DETAILS, NOTES AND TREE
INVENTORY

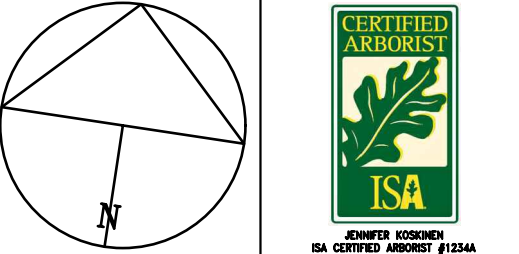


NO.	REVISION/ISSUE	DATE
1.	ISSUED: ZONING AMENDMENT	APR 18/24



LEGEND	
990	TREE IDENTIFICATION TAG EXISTING TREE TO BE REMOVED
994	TREE IDENTIFICATION TAG EXISTING TREE TO BE RETAINED
A	EXISTING TREE NOT TAGGED
*	TREE NOT SURVEYED
	EXISTING TREE
X	DEAD TREE
	TREE PROTECTION ZONE (TPZ)
	TREE PROTECTION FENCE

CLIENT:
DENNIS HOME CORP.



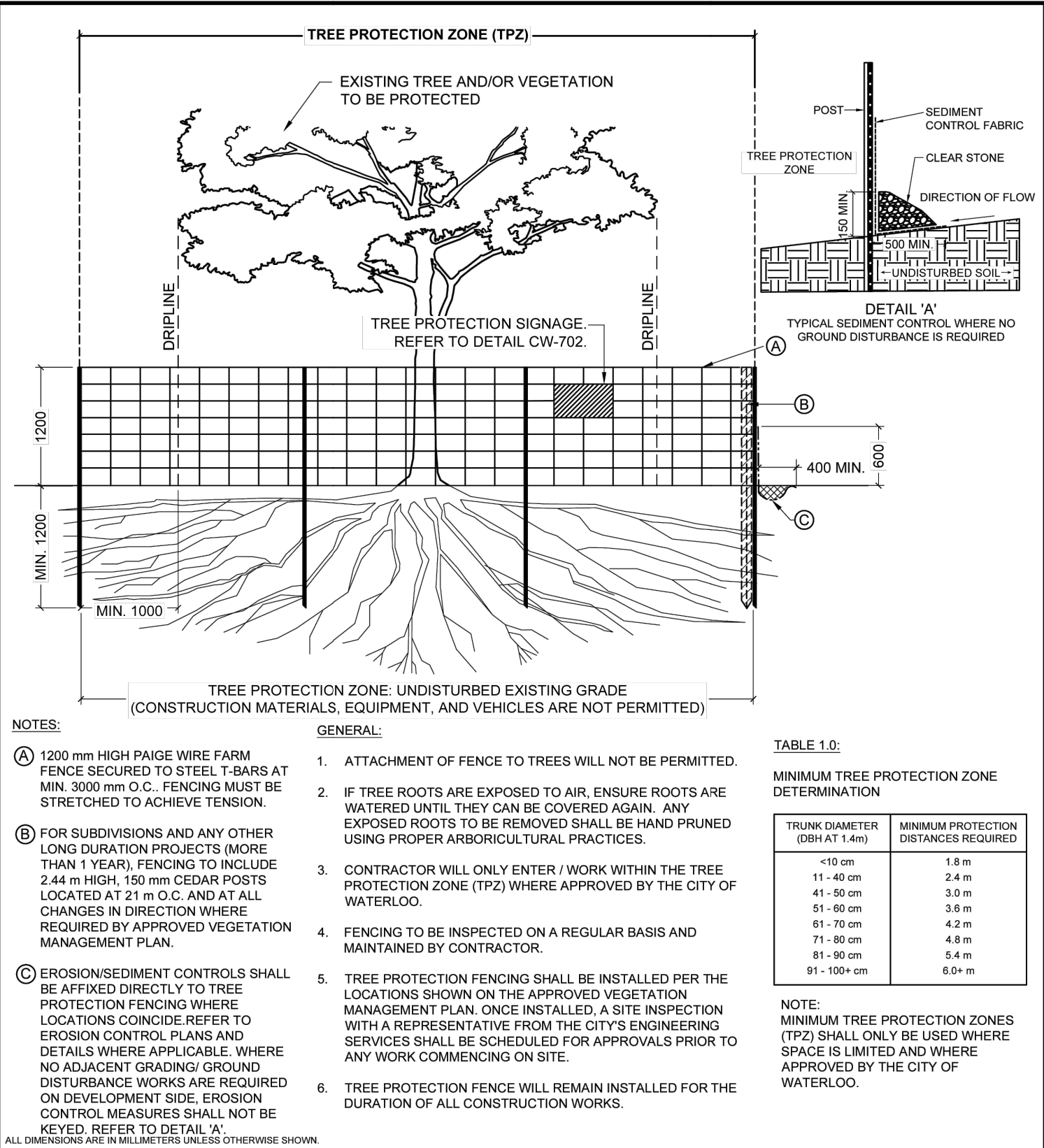
CONSULTING ARBORISTS

PROJECT TITLE:
18-20 HICKORY STREET WEST
18-20 HICKORY STREET WEST WATERLOO, ON

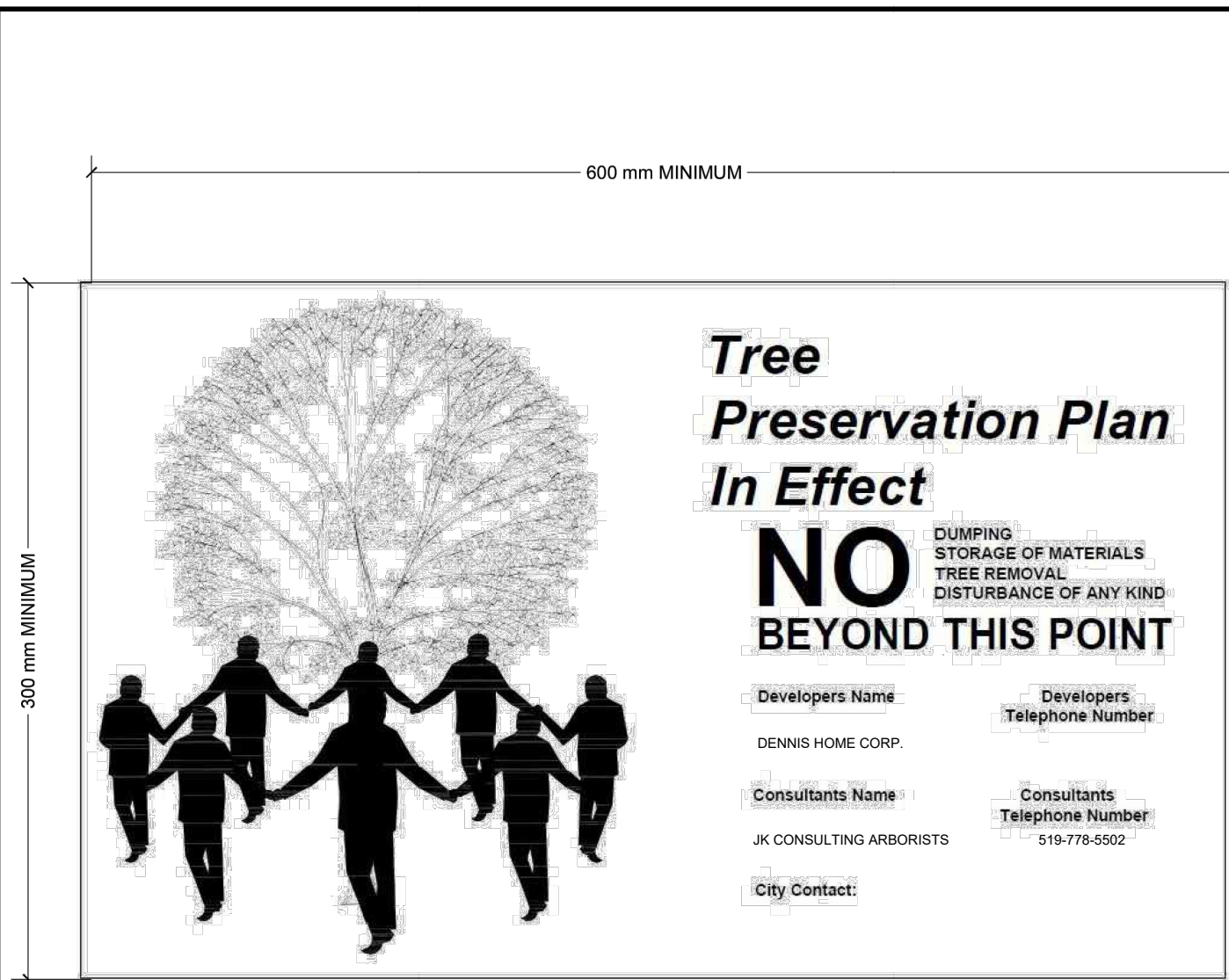
DRAWING TITLE:
VEGETATION MANAGEMENT PLAN

DRAWN BY: GK
CHECKED BY: JK
DATE: SEPTEMBER 2022
SCALE: 1:3000
PROJECT NO. DWG. NO.

VMP-1



STANDARD DRAWING	REV 1	MAY 2023
TREE PROTECTION FENCING	THE CITY OF Waterloo CW-701	



STANDARD DRAWING	REV 1	MAY 2023
TREE PROTECTION ZONE SIGNAGE	THE CITY OF Waterloo CW-702	

TABLE 1. Tree Inventory for 18-20 Hickory Street West, Waterloo, ON
Date Data Collected: April 10, 2024

Tree Tag # or ID	Botanical Name	Common Name	DBH (cm)	Dripline Radius (m)	City of Waterloo Minimum Tree Protection Zone Radius (m) for Retained Trees	Condition				Ownership	Comments	Action	Justification for Action
						trunk integrity	crown structure	crown vigor	overall condition				
986	<i>Acer platanoides</i>	Norway Maple	71	6	4.8	Poor	Poor	Poor	Poor	Project	5 main stems in upper canopy with only one stem without rot.	REMOVE	Condition and Construction for amenity space. >50% TPZ impact from grading and construction.
987	<i>Acer platanoides</i>	Norway Maple	65	7	4.2	Good	Fair	Good	Fair	City	Surface roots; central rot in one stem.	REMOVE	Grading construction for walkway and townhouse building. >50% TPZ impact from grading and construction.
988	<i>Acer platanoides</i>	Norway Maple	37	4	2.4	Fair	Good	Good	Fair	Project	Leaking stem on one side from crack.	REMOVE	Grading construction for walkway and townhouse building. >50% TPZ impact from grading and construction.
989	<i>Acer platanoides</i>	Norway Maple	55	6	3.6	Poor	Poor	Fair	Poor	Project	One stem in centre of crotch has been removed previously; remaining stems in a wide 'V'; wound and rot in stem over sidewalk; surface roots observed; large rot with wound in other stem.	REMOVE	Condition and Construction. >50% TPZ impact from grading and construction.
990	<i>Acer platanoides</i>	Norway Maple	41	4	3	Fair	Poor	Fair	Poor	Boundary - City	Rot in upper stem and deadwood in canopy.	REMOVE	Condition and Construction. >50% TPZ impact from grading and construction.
991	<i>Pyrus sp.</i>	Pear sp.	16	2	2.4	Poor	Poor	Poor	Poor	Boundary - Private	A stem growing from a dead stem; and growing directly adjacent to two tree stubs.	REMOVE	Condition and Construction. >50% TPZ impact from grading and construction.
992	<i>Acer platanoides</i>	Norway Maple	46,30	5	3	Poor	Poor	Fair	Poor	Project	One stem is a stub; wound on onestem with rot on upper stem.	REMOVE	Condition and Construction. >50% TPZ impact from grading and construction.
993	<i>Acer platanoides</i>	Norway Maple	10,(3)20,24	5	2.4	Poor	Poor	Fair	Poor	Project	Rot and wounds on trunk.	REMOVE	Condition and Construction.>50% TPZ impact from grading and construction.
994	<i>Amelanchier sp.</i>	Serviceberry	<10	1	1.8	Fair	Fair	Fair	Fair	City	Tree still staked and tied. Tree appears stressed.	Retain	
995	<i>Amelanchier sp.</i>	Serviceberry	<10	1	1.8				DEAD	City	Tree still staked and tied. No live buds observed.	REMOVE	Assume City favour removal and replacement.
A	<i>Acer platanoides</i>	Norway Maple	12	2	2.4	Fair	Poor	Fair	Poor	Private - Neighbour	Top main stem broke with rot; suckering branches. Recommend remove if permission is possible, for asthetic purposes, also tree will not grow into a healthy form.	Retain	TPZ impact approx. 40%, tree will continue to be in poor condition, the grading shouldn't compromise structural integrity.
B	<i>Picea pungens</i>	Colorado Spruce	40-45	5	3	Good	Good	Good	Good	Private - Neighbour		Retain	Approx. 25% TPZ encroachment from grading. Tolerant to root loss. Review during construction during adjacent grading.
C		unknown	25-30	NA	2.4				DEAD	Private - Neighbour		Retain	
D	<i>Acer platanoides</i>	Norway Maple	50-50	4	3.6	Poor	Poor	Poor	Poor	Private - Neighbour		Retain	

1.1 Summary of Tree Impacts

ACTION	TOTAL
Retain	5
Removal	9
Total # trees inventoried	14

City of Waterloo Tree Protection Notes:

1. All existing vegetation located on site, and on adjacent properties within 6m of the property line (both private and public) have been identified on the VMP (Arborist has signed this note).


April 18, 2024

2. The City requires tree replacement for removed trees, for as many trees as possible. Typically this could be at a 2:1 replacement ratio.
3. Any trees to be protected that are impacted by development will be replaced with the same species or an approved alternate, to the satisfaction of the City of Waterloo at a minimum of 70mm caliper size for deciduous trees and a minimum of 250cm height for coniferous trees.
4. Landscape Consultant to certify the installed tree preservation fence for compliance with the approved plans, and submit a written request to the City's Landscape Representative (Integrated Planning and Public Works, City of Waterloo) requesting a site inspection. This inspection must occur prior to issuance of Building Permit.
5. Tree Preservation Fencing must remain installed on site for the duration of construction.
6. Standard Tree Preservation Notation, including:
 - Within the Designated Tree Protection Zone:
 - i. There shall be no construction.
 - ii. There shall be no altering of grades.
 - iii. There shall be no compaction of soils.
 - iv. There shall be no storage of construction materials, equipment, soil, construction waste or debris.
 - v. There shall be no disposal of any liquids (oils, paints, gas, etc.).
 - vi. There shall be no access by vehicles (parking, construction, or other).
 - If minor works are required within the Designated Tree Protection Zone:
 - i. The contractor shall use hand tools.
 - ii. There shall be no machinery access.
 - iii. Exposed tree roots shall be cleanly pruned by a qualified arborist and shall be protected with mulch and soil to prevent roots from losing moisture.
 - iv. Tree roots located outside of the Designated Tree Protection Zone shall be properly pruned and protected from moisture loss during site construction activity as noted above.
7. No vegetation removals may occur from the site until time of final site plan approval (inclusive of final Engineering acceptance).

NO.	REVISION/ISSUE	DATE
1.	ISSUED: ZONING AMENDMENT	APR 18/24

CLIENT: DENNIS HOME CORP.


ISA
CERTIFIED ARBORIST
ON COMPLETION OF 120 HOURS

PROJECT TITLE: 18-20 HICKORY STREET WEST
18-20 HICKORY STREET WEST WATERLOO, ON
DRAWING TITLE: DETAILS, NOTES & TREE INVENTORY LIST

DRAWN BY: GK
CHECKED BY: JK
DATE: APRIL 2024
SCALE: AS NOTED
PROJECT NO. DWG. NO. VMP-2

Appendix B

- PHOTO SHEET

**18-20 HICKORY STREET WEST
WATERLOO, ONTARIO
PHOTO SHEET**



Photo 1. Trees #986, photo direction north.



Photo 2. Trees #986, photo direction south.

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WATERLOO, ONTARIO
PHOTO SHEET**



Photo 3. Tree #987, photo direction north.



Photo 4. Trees #987, photo direction northeast.

**18-20 HICKORY STREET WEST
WATERLOO, ONTARIO
PHOTO SHEET**



Photo 5. Tree #987, photo direction south.



Photo 6. Tree #988 photo direction east.

**18-20 HICKORY STREET WEST
WATERLOO, ONTARIO
PHOTO SHEET**



Photo 7. Tree #989, photo direction east.



Photo 8. Tree #989, photo direction north.

**18-20 HICKORY STREET WEST
WATERLOO, ONTARIO
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Photo 9. Tree #990, photo direction northeast.



Photo 10. Tree #990, photo direction north.

**18-20 HICKORY STREET WEST
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Photo 11. Tree #990', photo direction north.



Photo 12. Tree #991, photo direction south.

**18-20 HICKORY STREET WEST
WATERLOO, ONTARIO
PHOTO SHEET**



Photo 13. Tree 'A', photo direction north.



Photo 14. Tree #992, photo direction northwest.

**18-20 HICKORY STREET WEST
WATERLOO, ONTARIO
PHOTO SHEET**



Photo 15. Tree #993, photo direction west.



Photo 16. Tree 'B', photo direction west.

**18-20 HICKORY STREET WEST
WATERLOO, ONTARIO
PHOTO SHEET**



Photo 17. Tree 'D', photo direction west.



Photo 18. Tree #994 and #995, photo direction east.