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INC.
CONSULTING AND GIS ANALYSIS
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Tree Inventory and Preservation Plan Report

Subject Property:

1600 Kerns Road
Burlington, ON

Prepared For:

Fieldgate Homes
15 Bandera Drive
Brampton, ON L6Y 0H8

Prepared By:

Jackson Arboriculture Inc.
118 Pleasant Ridge Rd.
Brantford ON N3R 0B8

24 March 2021
Revised 16 February 2022
Jackson Arboriculture Inc. Project No. 207

1.0 Introduction

Jackson Arboriculture Inc. was retained by Fieldgate Homes to complete a Tree Inventory and Preservation Plan for a property located at 1600 Kerns Road, in the City of Burlington, Ontario, hereby referred to as the subject property. It is understood that a development application will be filed with the City for the redevelopment of the subject property.

The following study has been completed in accordance with the City of Burlington's Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A) and the Site Plan Application Guidelines.

2.0 Methodology

At the onset of the project the arborilogical scope of work was coordinated with the client and the consulting team. Prior to conducting a site visit, the topographic survey of the subject property and current aerial photography were overlaid utilizing geographic information software, for use on site during the completion of the tree inventory. The tree locations, the topographic survey and the site plan were overlaid and a tree preservation analysis was completed to determine the impacts to each tree included in the inventory.

2.1 Tree Inventory

A site visit was conducted on the 21st of May 2020 and on the 27th of January 2022 to complete the tree inventory. All trees 10 cm in diameter and larger situated on subject property, on neighbouring property within 3 m and within the road allowances were included in the tree inventory. A visual assessment was completed on each tree included in the inventory and the following information is provided in the tree inventory table (Table 1):

- **Tree #**: A number assigned to each tree correlating to the tree inventory and the Tree Preservation Plan (Figure 1)
- **Species**: Common and scientific (Latin) species names.
- **DBH**: The trunk diameter at breast height, measured in centimeters at 1.4 m from the ground.
- **Condition**: The health of the tree considering the structure and health rated as a percentage.
- **Impacts**: The percent impact to the mTPZ.
- **mTPZ**: Minimum Tree Preservation Zone, i.e. the distance in meters from the base of the tree trunk at which tree protection fence is to be installed.
- **Location**: The property where the tree is situated, based on the topographic survey.
- **Comments**: Any additional notes relevant to the tree's health or growing conditions.
- **Action**: The recommended removal or preservation of each tree based on the impact assessment.

The trees included in the inventory are identified with numbers 1-42 and were located using the topographic survey provided and a tablet computer with a GPS chip.

2.2 Impact Assessment

A tree preservation analysis was completed on each tree individually considering the impacts from the proposed development and many other factors including, but not limited to, tree condition, species, DBH and the existing site conditions. The impacts from the proposed development will occur where tree roots conflict with construction machinery during demolition, pre-grading, foundation excavation, grading and servicing.

During the tree preservation analysis the minimum Tree Protection Zone (mTPZ) distance, as outlined in the City's Specifications Index for Tree Protection and Preservation, was utilized to determine the potential impacts to each tree included in the inventory. Where encroachment is required within the mTPZ, tree removal may be required.

The mTPZ distance is the minimum distance at which development can safely occur without appreciably damaging a tree's root system. The mTPZ distance is based on the diameter of the tree and measured in meters from the base of the stem. Refer to Table 2 for the mTPZ distances based on trunk diameter.

Table 2. Minimum tree protection zone distances.

DBH (cm)	Min. Tree Preservation Zone Distance (m)*
	Radius
< 10	1.8
10 – 40	2.4
41 – 50	3.0
51 – 60	3.6
61 – 70	4.2
71 – 80	4.8
81 – 90	5.4
91 – 100	6.0
101 – 110	6.6

*As measured from the outside of the tree trunk.

3.0 Existing Conditions

The subject site is located at 1600 Kerns Road and is occupied by a commercial strip mall. A woodland dripline and top of bank travers the western portion of the site in a north to south direction. The site is bound by Four Seasons Road to the north, Kerns Road to the east, residential development to the south and woodland to the west.

4.0 Tree Inventory Results

The results of the tree inventory indicate that a total of 44 trees situated on the subject property, on the neighbouring property and within the road allowances were included in the inventory. The trees included in the tree inventory are those situated on the tableland portion of the site beyond the staked dripline.

The trees included in the inventory are comprised of the following species:

- Austrian Pine (*Pinus nigra*),
- Norway Maple (*Acer platanoides*),
- Honey Locust cultivar (*Gleditsia triacanthose var. 'inermis'*),
- Fir species (*Abies sp.*),
- Little-leaf Linden (*Tilia cordata*),
- Copper Beech (*Fagus sylvatica*),
- Norway Spruce (*Picea abies*),
- Eastern Red Cedar (*Juniperus virginiana*),
- Sycamore (*Platanus occidentalis*),
- Sugar Maple (*Acer saccharum*) and
- Scots Pine (*Pinus sylvestris*).

No rare, threatened or endangered tree species were documented in the tree inventory. Refer to Table 1 for the complete tree inventory, Figure 1 for the tree locations and Appendix 1 for site photos.

5.0 Proposed Development

The proposed development is comprised of a four storey retirement home with below ground parking. None of the proposed development structures are situated within the 7.5 m stable top of slope setback, however, some disturbance will be required within the setback area to remove existing development and to accommodate some minor grading associated with the proposed development.

6.0 Discussion

The following sections outline the tree removal requirements, tree preservation opportunities and tree preservation recommendations.

6.1 Tree Removal

Removal of Trees 1-7, 17, 17a, 19-24, 27-29, 35-39 and 41 will be required to accommodate the proposed development.

Trees 17 and 17a are situated within the City road allowance and permission from the City is required prior to its removal.

A restoration plan has been prepared as part of the Environmental Impacts Assessment outlining tree and shrub plantings within the top-of-bank and woodland buffers. Trees identified for removal within the buffer for grading purposes (3 trees) will be replaced on a 3:1 basis within the buffer or ravine.

6.2 Tree Preservation

Preservation of Trees 8-16, 18, 18a, 25, 26, 30-34, 40 and 42 will be possible with appropriate tree protection measures. Tree protection measures will have to be implemented prior to the commencement of construction to ensure trees identified for preservation are not impacted by the proposed development.

Where trees are identified for preservation adjacent to the underground parking structures vertical piles may be required to prevent the soil in the tree protection zone from collapsing into the area excavated to construct the parking structure.

It appears that encroachment within the mTPZs of Trees 8, 10, 12, 14, 16, 18 and 18a will be required to accommodate the proposed development. The areas of encroachment are currently occupied by impermeable surfaces and as such there should be no impacts. If any roots are exposed during construction they must be pruned by a Certified Arborist in accordance with good arboricultural practice.

Refer to Figure 1 for the prescribed location of tree protection fence, the tree protection fence detail and further tree preservation notes.

6.3 Tree Protection Recommendations

The following recommendations are made in attempts to reduce the impacts to trees identified for preservation:

- Tree protection fence must be installed at the mTPZ distances and locations outlined in Table 1 and on Figure 1 prior to the commencement of demolition, unless noted otherwise in this report and on Figure 1.
- Once tree protection fence has been installed it must not be moved, relocated or altered in any way (unless repairing fallen fence etc.) for the duration of the construction period.
- No intrusion into an area identified on Figure 1 as a tree preservation zone (TPZ) is allowed at anytime during construction.
- No storage of machinery, construction debris, materials, waste or any other items is allowed within a TPZ.
- Any tree branches (and roots) that conflict with proposed development must be pruned by a Certified Arborist in accordance with good arboricultural practice.
- Tree protection fencing should be inspected by a Certified Arborist prior to and during construction to ensure that the fencing remains intact and in good repair throughout the stages of development.

7.0 Summary

Jackson Arboriculture Inc. was retained by Fieldgate Homes to complete a Tree Inventory and Preservation Plan for a property located at 1600 Kerns Road, in the City of Burlington, Ontario. A tree inventory was conducted and an impact assessment was completed in the context of the proposed development plan.

The findings of the study indicate that a total of 44 trees were situated on subject property, in the road allowance and on neighbouring properties with the potential to be impacted by the proposed development. Removal of 24 trees will be required to accommodate the proposed development.

Respectfully submitted,
Jackson Arboriculture Inc.

Jeremy Jackson

Jeremy Jackson, H.B.Sc.,
ISA Certified Arborist #ON-1089A
GIS Analyst

Limitations of Assessment

It is our policy to attach the following limitations of assessment to ensure that the client, municipalities and agencies are fully aware of what is technically and professionally realistic when visually assessing and retaining trees.

The assessment of the trees presented in 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 such as fungal fruiting bodies, evidence of attack by insects, discoloured foliage, the condition of any visible root structures, the degree and direction of any lean, the general condition of the trees and the surrounding site, and the proximity of property and people.

Notwithstanding the recommendations and conclusions made in this report, it must be realized that trees are living organisms and their health and vigour constantly change. They are not immune to changes in site conditions, or seasonal variations in the weather conditions, including severe storms with high-speed winds.

While reasonable efforts have been made to ensure that the trees recommended for retention are healthy no guarantees are offered, or implied, that these trees, or any parts of them, will remain standing. It is both professionally and practically impossible to predict with absolute certainty the behaviour of any single tree of group of trees or their component parts in al circumstances. Inevitably a standing tree will always pose some 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, trees should be re-assessed periodically. The assessment presented in this report is valid as the time of the inspection.

Table 1. Tree Inventory

Location: 1600 Kerns Rd, Burlington Date: 21 May 2020/ 27 Jan. 2022 Surveyors: JJJ

Tree #	Common Name	Scientific Name	DBH	Structure (%)	Health (%)	Impacts (%)	Location	mTPZ	Comments	Action
1	Austrian Pine	*Pinus nigra*	34	37	12	100	Subject property	2.4	60% crown dieback	Remove
2	Austrian Pine	*Pinus nigra*	37	60	37	100	Subject property	2.4	30% crown dieback, trunk is 1.8 m from edge of asphalt	Remove
3	Norway Maple	*Acer platanoides*	31	95	80	100	Subject property	2.4	10% crown dieback	Remove
4	Norway Maple	*Acer platanoides*	46	12	37	100	Subject property	3.0	Union at 1.6 m, girdling root, stem wound, sheer crack in lowest limb, 30% crown dieback	Remove
5	Norway Maple	*Acer platanoides*	43	80	95	100	Subject property	3.0	Girdling root, trunk is 1.3 m from the edge of asphalt	Remove
6	Honey Locust cultivar	*Gleditsia triacanthos var. 'inermis'*	24	95	95	100	Subject property	2.4	Base of the trunk is 1.2 m from the edge of asphalt to the southeast	Remove
7	Fir species	*Abies sp.*	25	80	80	100	Subject property	2.4	Leader has died	Remove
8	Honey Locust cultivar	*Gleditsia triacanthos var. 'inermis'*	25	95	95	0	Subject property	2.4	Base of the tree is 1.8 m from the edge of the asphalt parking lot	Preserve
9	Honey Locust cultivar	*Gleditsia triacanthos var. 'inermis'*	20	95	95	0	Subject property	2.4		Preserve
10	Honey Locust cultivar	*Gleditsia triacanthos var. 'inermis'*	24	95	95	0	Subject property	2.4	Base of the tree is 1.2 m from the edge of the asphalt parking lot	Preserve
11	Honey Locust cultivar	*Gleditsia triacanthos var. 'inermis'*	22	95	95	0	Subject property	2.4	Crook	Preserve
12	Honey Locust cultivar	*Gleditsia triacanthos var. 'inermis'*	23	95	95	0	Subject property	2.4	Union at 1.8 m, base of the tree is 1.1 m from the edge of the asphalt parking lot	Preserve
13	Fir species	*Abies sp.*	23	95	95	0	Subject property	2.4		Preserve
14	Austrian Pine	*Pinus nigra*	41	95	95	0	Subject property	3.0		Preserve
15	Austrian Pine	*Pinus nigra*	53	95	95	0	Subject property	2.4		Preserve
16	Austrian Pine	*Pinus nigra*	45	95	80	0	Subject property	3.0	Light lean east	Preserve
17	Norway Maple	*Acer platanoides*	27	12	80	80	Public ROW	2.4	Heavy stem wound at flare, sweep, 5% crown dieback	Remove
17a	Sycamore	*Platanus occidentalis*	4	95	95	80	Public ROW	1.8		Remove
18	Honey Locust cultivar	*Gleditsia triacanthos var. 'inermis'*	34	95	95	0	Public ROW	2.4	Union at 2.2 m	Preserve
18a	Sugar Maple	*Acer saccharum*	4	95	95	0	Public ROW	1.8		Preserve
19	Little-leaf Linden	*Tilia cordata*	17, 16	60	95	100	Subject property	2.4	Union at 0.4 m with included bark, swollen/scarred flare, coppice growth	Remove
20	Little-leaf Linden	*Tilia cordata*	17, 23, 14	60	95	100	Subject property	2.4	Union at 1.2 m, swollen flare, coppice growth	Remove

Tree #	Common Name	Scientific Name	DBH	Structure (%)	Health (%)	Impacts (%)	Location	mTPZ	Comments	Action
22	Austrian Pine	*Pinus nigra*	46	37	12	80	Subject property	3.0	Top of crown dead, 50% crown dieback	Remove
23	Austrian Pine	*Pinus nigra*	37	95	95	80	Subject property	2.4		Remove
24	Norway Maple	*Acer platanoides*	33	60	60	70	Subject property	2.4	Pruning wounds, seams, 15% crown dieback	Remove
25	Norway Spruce	*Picea abies*	~25	95	95	0	1548-1588 Kerns Rd.	2.4		Preserve
26	Eastern Red Cedar (Juniper)	*Juniperus virginiana*	~15	95	95	0	1548-1588 Kerns Rd.	2.4		Preserve
27	Norway Maple	*Acer platanoides*	12	60	60	70	Subject property	2.4	10% crown dieback	Remove
28	Scots Pine	*Pinus sylvestris*	32	80	95	70	Subject property	2.4	Light lean north	Remove
29	Norway Maple	*Acer platanoides*	31	37	37	70	Subject property	2.4	Heavy stem wound at flare, 50% crown dieback	Remove
30	Austrian Pine	*Pinus nigra*	~20	95	95	0	1548-1588 Kerns Rd.	2.4		Preserve
31	Little-leaf Linden	*Tilia cordata*	~20-30	80	95	0	1548-1588 Kerns Rd.	2.4	Many stems, union at 1 m	Preserve
32	Little-leaf Linden	*Tilia cordata*	~17, 20	80	95	0	1548-1588 Kerns Rd.	2.4	Union at 0.75 m	Preserve
33	Norway Spruce	*Picea abies*	~25	95	95	0	1548-1588 Kerns Rd.	2.4		Preserve
34	Norway Spruce	*Picea abies*	~18	95	95	0	1548-1588 Kerns Rd.	2.4		Preserve
35	Norway Maple	*Acer platanoides*	27	12	12	70	Subject property	2.4	60% crown dieback	Remove
36	Austrian Pine	*Pinus nigra*	28, 25	60	95	70	Subject property	2.4	Union at 0.5 m with included bark	Remove
37	Little-leaf Linden	*Tilia cordata*	11	80	95	80	Subject property	2.4	Natural pruning wounds, understorey	Remove
38	Scots Pine	*Pinus sylvestris*	25	95	95	80	Subject property	2.4		Remove
39	Little-leaf Linden	*Tilia cordata*	21	60	95	80	Subject property	2.4	Natural pruning wounds, union at 1.5 m	Remove
40	Norway Spruce	*Picea abies*	~30	95	95	0	1548-1588 Kerns Rd.	2.4		Preserve
41	Scots Pine	*Pinus sylvestris*	26	95	95	80	Subject property	2.4	Light crook	Remove
42	Norway Maple	*Acer platanoides*	~35	60	60	0	1548-1588 Kerns Rd.	2.4	Union at 2 m, 25% crown dieback	Preserve

Table Legend		
DBH	Diameter at Breast Height	(cm)
TI	Trunk Integrity	(G, F, P)
CS	Crown Structure	(G, F, P)
CV	Crown Vigor	(G, F, P)
CDB	Crown Die Back	(%)
mTPZ	Minimum Tree Preservation Zone	(m)
~=estimate, G=Good, F=Fair, P=Poor		

Appendix A: Site Photos



Photo 1: Trees 14-16.



Photo 2: Tree 17.



Photo 3: Tree 18.

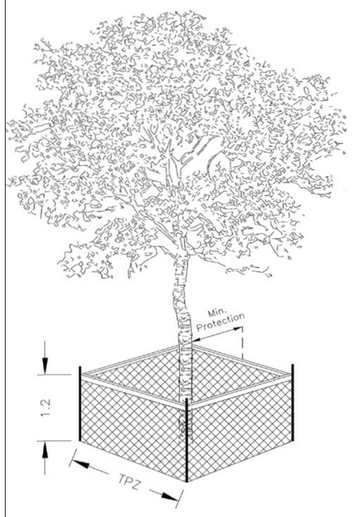


Photo 4: Trees 19-21.



Photo 5: Trees 29 to 39.

Detail TP-1 – Tree Protection Detail.



Trunk Diameter (DBH) [2]	Minimum Tree Protection Zone (MTPZ) Distances Required [3]	Critical Root Zone (CRZ) Distances Required [3&4]
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

NOTES:

[1] The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.
[2] Diameter at breast height (DBH) is the measurement of tree trunk taken at 1.4 metres above ground.
[3] Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.
[4] Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

TREE PROTECTION BARRIER

1. The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2" x 4" frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
2. Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may be not be removed prior to the completion of construction without written authorization from the City Arborist.
3. All supports and bracing used to safely secure the barrier should be located outside the MTPZ. All supports and bracing should minimize damage to roots.
4. Where some fill or excavated material must be temporarily located near a MTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the MTPZ.
5. No materials or fill may be stored within the MTPZ.
6. Equipment or vehicles shall not be operated, parked, repaired, or refueled within the MTPZ.
7. No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the City Arborist.
8. A laminated Minimum Tree Protection Zone sign (See Detail TP-3 – Minimum Tree Protection Zone Sign) must be attached to the side of the Tree Protection where it will be visible by persons entering the site. Minimum size must be 10"x14".

Burlington

TREE PROTECTION ZONE (TPZ)

No equipment or vehicles shall be operated, parked, repaired or refueled within the Tree Protection Zone.

No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the Tree Protection Zone.

No materials or fill may be stored within the Tree Protection Zone.

This tree protection barrier must not be removed prior to the completion of construction without written authorization from the City of Burlington, Urban Forestry Department.

For information, contact:
City of Burlington, Development and Infrastructure Division,
905-335-7642.

Detail TP-3 – Minimum Tree Protection Zone Sign

TREE PROTECTION PLAN NOTES

Prior to site disturbance the owner must confirm that no migratory birds are making use of the site for nesting. The owner must ensure that the works are in conformance with the Migratory Bird Convention Act and that no migratory bird nests will be impacted by the proposed work. It is the applicants' responsibility to discuss potential tree injury of trees on shared property lines with their neighbours. Should such trees be injured to the point of instability or death the applicant may be held responsible for removal and such issues would be dealt with in civil court or through negotiation.

TREE PROTECTION ZONE: No construction activity including grade changes, surface treatments or excavations of any kind is permitted within the area identified on the Tree Protection Plan or Site Plan as a Tree Protection Zone (TPZ). No root cutting is permitted. No storage of materials or fill is permitted within the TPZ. No movement or storage of vehicles or equipment is permitted within the TPZ. Grade changes are not permitted within established TPZ. The area(s) identified as a TPZ must remain undisturbed at all times.

TREE PROTECTION BARRIERS:

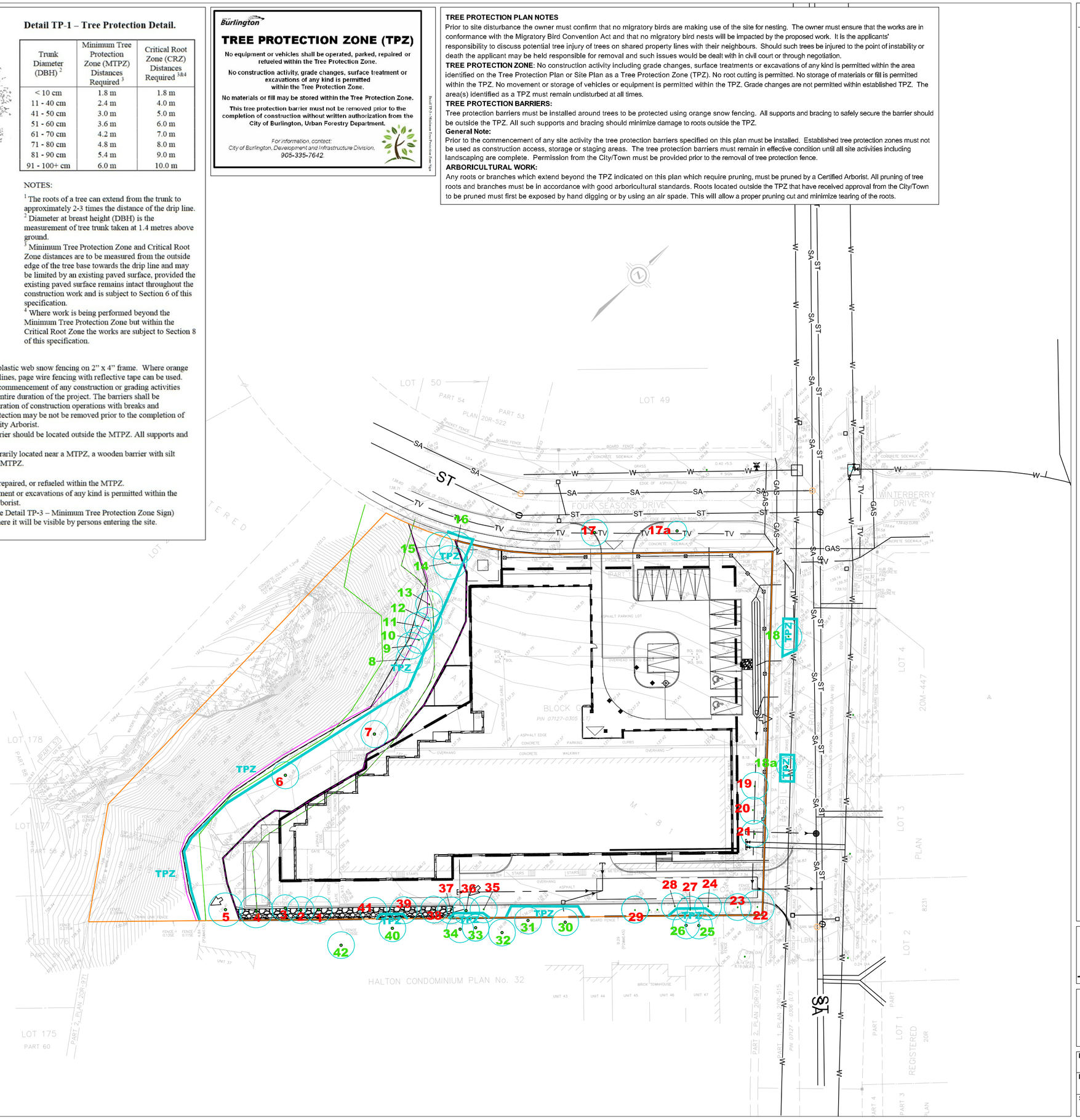
Tree protection barriers must be installed around trees to be protected using orange snow fencing. All supports and bracing to safely secure the barrier should be outside the TPZ. All such supports and bracing should minimize damage to roots outside the TPZ.

General Note:

Prior to the commencement of any site activity the tree protection barriers specified on this plan must be installed. Established tree protection zones must not be used as construction access, storage or staging areas. The tree protection barriers must remain in effective condition until all site activities including landscaping are complete. Permission from the City/Town must be provided prior to the removal of tree protection fence.

ARBORICULTURAL WORK:

Any roots or branches which extend beyond the TPZ indicated on this plan which require pruning, must be pruned by a Certified Arborist. All pruning of tree roots and branches must be in accordance with good arboricultural standards. Roots located outside the TPZ that have received approval from the City/Town to be pruned must first be exposed by hand digging or by using an air spade. This will allow a proper pruning cut and minimize tearing of the roots.



Legend

- Surveyed Tree Location
- GPS Tree Location
- Minimum Tree Preservation Zone (for planning purposes only)
- Tree Preservation Fencing Location
- Property Boundary
- Staked Dripline
- Top of Bank
- 7.5 m Top of Bank Setback
- 10 m Dripline Setback
- 15 — Tree Identified for Preservation
- 28 — Tree Identified for Removal
- TPZ — Tree Preservation Zone Symbol

Tree Inventory

Refer to Table 1 of report revised 16 February 2022 for the complete tree inventory. All trees 10 cm in diameter and larger situated on subject property, in the road allowances and on neighbouring property within 6 m were included in the tree inventory.

Tree Removal

Removal of Trees 1-7, 17, 17a, 19-24, 27-29, 35-39 and 41 will be required to accommodate the proposed development.

Tree Preservation

Preservation of Trees 8-16, 18, 18a, 25, 26, 30-34, 40 and 42 will be possible with appropriate tree protection measures. Tree protection measures will have to be implemented prior to the commencement of construction to ensure trees identified for preservation are not impacted by the proposed development.

It appears that encroachment within the mTPZs of Trees 8, 10, 12, 14, 16, 18 and 18a will be required to accommodate the proposed development. The areas of encroachment are occupied by impermeable surfaces and as such there should be no impacts. If any roots are exposed during construction they must be pruned by a Certified Arborist in accordance with good arboricultural practice.

JACKSON ARBORICULTURE INC.
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Tree Inventory and Preservation Plan

1600 Kerns Road
Burlington, ON

Project #	P207	Figure #	1
Date	March 2021 Revised February 2022		
Scale	1 : 500		