APPENDIX F

Tree Impact Memo and Tree Management Plan

March 8, 2024

Attn: Dufferin County

Re: Dufferin County Road 109 EA Potential Impacts Memo – Option 1b Preferred Alignment

INTRODUCTION

WSP Canada Inc. (WSP) was retained by Dufferin County to complete a Schedule C Municipal Class Environmental Assessment Study (EA) in support of the realignment of Dufferin County Road 109 and 2nd Line Amaranth, in Dufferin County, Ontario. As part of a proposed development located near Dufferin County Road 109 and 2nd Line Amaranth, the following road upgrades will be made:

- 2nd Line Amaranth will be realigned to form the fourth leg of the Dufferin County Road 109 and Dufferin County Road 3 intersection. The intersection will be converted from stop-controlled to a four-way signalized intersection.
- The existing Dufferin County Road 109 will be widened to four lanes (two in each direction) with right- and left-turn lanes eastbound and westbound.
- The existing Dufferin County Road 3 will be realigned to remove the channelized northbound right turn lane and to improve the intersection geometry.
- Dufferin County Road 23 will be realigned further south of the existing Dufferin County Road 23 to ensure the intersection of Dufferin County Road 3 and Dufferin County Road 23 does not conflict with the proposed four-legged intersection. In addition, realignment of Dufferin County Road 23 provides adequate left turn storage and taper for vehicles turning left from Dufferin County Road 3 onto Dufferin County Road 23.

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• As a result of realigning Dufferin County Road 23 to the south, the existing Paula Court will be extended further south to maintain a T-intersection with Dufferin County Road 23.

The EA is being conducted to determine the potential impacts of the above road realignments.

The purpose of this memo is to provide a preliminary assessment of the potential impacts based on the preferred alignment (Option 1b) and to discuss the findings of the tree inventory and to provide recommendations and information for required permits, removals, preservation, and restoration.

For context, refer to:

- Figure 1: Study Area Limits
- Appendix A Tree Preservation Table
- Tree Management Plans TMP-1 to TMP-3

TREE INVENTORY AND ASSESSMENT

WSP undertook a tree inventory and assessment in the spring of 2023 to document existing conditions and determine the impacts on all vegetation as part of the EA. The inventory was conducted within the 'Study Area' (refer to Figure 1). The Study Area focuses on the intersection connecting Dufferin County Road 109, Dufferin County Road 23 and 2nd Line Amaranth. This intersection includes three lower-tier municipalities (Town of Orangeville, East Garafraxa, and Amaranth) within Dufferin County.

FIGURE 1 – STUDY AREA



The field observations were conducted on May 12th, 2023, within the Study Area. A total of 35 individual trees and 209 trees in 13 tree groupings were assessed for this memo.

- Tree information recorded included species, diameter-at-breast-height (DBH), dripline radius, and general health condition;
- Tree locations were identified using aerial photography and topographic survey;
- Representative photographs were taken, which are on file at WSP.

POLICY CONTEXT

Trees within the study area are located within road allowances and private property within three lower-tier municipalities of Dufferin County. Currently, no tree protection regulations are available from any of the three municipalities (Orangeville, East Garafraxa, Amaranth). Dufferin County has one by-law that protects County-owned forests and is not applicable to the Study Area. This by-law is detailed below:

• The County of Dufferin County Forest By-Law 2017-39

- This By-law applies to lands known as the 'Dufferin County Forest' and manages acceptable forestry practices within these defined forest areas.
- No person shall remove or injure trees or plants within the limits of Dufferin County Forest lands unless for uses outlined in the Dufferin County Forest Management Plan 2016-2036, the production of wood products as carried out.

Applicability to Project

- This by-law is not applicable as no trees or lands reside within Dufferin County Forest limits.
- Credit Valley Conservation Regulated Areas
 - The Credit Valley Conservation Authority (CVC), as mandated under O.Reg. 160/06 CVC Regulation of Development, regulates and may prohibit work that may take place within a regulated area.
 - A regulated area is defined as, "an area that represents the greatest physical extent of the combined hazards, plus a prescribed allowance, as set out in the Conservation Authorities Act". This includes valley and stream corridors, wetlands and associated areas of interference with the Lake Ontario waterfront.
 - Development is prohibited within areas delineated as the Regulation Limit under the mapping titled, "Ontario Regulation 97/04: Regulation for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses". O. Reg. 57/13, s. 1 (4). The CVC's online interactive mapping tool illustrates this Regulation Limit (accessed November 2023).
 - Permission is required from the CVC for undertaking development in or on the areas listed above if it is determined by the CVC that flood control, erosion, dynamic beaches and land conservation will not be altered.

Applicability to Project

• CVC guidelines are not applicable to this project as there no areas within the Regulation Limit or meet the definition of a Regulated Area.

EXISTING CONDITIONS

The study area is located east of the Town of Orangeville and is characterized by rural land uses including farming, and low-density residential except for Paula Court which is a newly developed subdivision of medium-density housing. Vegetation consists of primarily mature trees within public ROWs and private lands, and some newly planted boulevard trees.

Where the existing intersection of 2nd Line Amaranth and Dufferin County Rd 109 is located, these lands will be transferred to private ownership and are slated for future development.

BUILT FORM

- A rural highway (Dufferin County Rd 109) and local roadways with gravel shoulders (no curbs) apart from Paula Court which has curbs and a sidewalk on the south street side;
- Paige-wire or cedar post fencing along property boundaries.

TREED VEGETATION

Trees are a mixture of planted and naturally occurring within the Study Area. Young trees planted within the boulevard of Paula Court, as well as some private trees have been maintained, while most trees have been left to mature within road ROWs or as hedgerows. Species consist of mostly native maples, with some non-native varieties. Tree sizes and age are a range from very young and newly planted, large mature trees with clear signs of decline.

Vegetation composition and size is detailed below by location:

ROAD RIGHT-OF-WAY

- A total of 135 trees were inventoried within the Town road ROWs.
- 20 trees were inventoried as individual trees (T13 to T22, T22A, T22B, T22C, T24 to T30) while the remaining 115 trees were within groupings (TG2, TG3, TG4, TG6, TG9 to TG13).
 - Trees within groupings TG9 to TG11 are on lands to be transferred to private ownership.
- Tree sizes range from 1 to 105cm DBH.
- Trees were found to be either newly planted or established, or large mature Sugar Maple (Acer saccharum) trees.

- Trees are primarily deciduous with some White Cedar (Thuja occidentalis) and a mixture of native and non-native species:
 - <u>Frequent</u>: Sugar Maple (Acer saccharum), Honey-locust (Gleditsia triacanthos), Northern Red Oak (Quercus rubra);
 - <u>Occasional</u>: Chokecherry (Prunus virginiana), Honeysuckle sp. (Lonicera sp.), Eastern White Cedar (Thuja occidentalis), Red Maple (Acer rubrum);
 - <u>Rare</u>: European Buckthorn (Rhamnus cathartica), Japanese Tree Lilac (Syringa reticulata), Norway Maple (Acer platanoides), Silver Maple (Acer saccharinum), Ginkgo (Ginkgo biloba), Little-leaf Linden (Tilia cordata), Northern Catalpa (Catalpa speciosa), Ash sp. (Fraxinus sp.), Mountain-ash sp. (Sorbus sp.), Cherry sp. (Prunus sp.).
- Refer to Appendix A for a list of species and quantities within the study area.

PRIVATE

- A total of 109 trees were inventoried on adjacent properties to the ROW.
- 15 trees were inventoried as individual trees (T1 to T12, T23, T31, T32) and the remaining 94 trees were within groupings (TG1, TG5 to TG8).
- Tree sizes range from 10 to 100cm DBH and were generally semi-mature to mature in age.
- Trees were a mixture of deciduous and conidferous of primarily native species:
 - <u>Frequent</u>: White Spruce (Picea glauca), Eastern Cottonwood (Populus deltoides), Silver Maple (Acer saccharinum), Sugar Maple (Acer saccharum);
 - <u>Occasional</u>: Manitoba Maple (Acer negundo), Norway Maple (Acer platanoids);
 - <u>Rare</u>: Trembling Aspen (Populus tremuloides), Crabapple sp. (Malus sp.), Eastern Red Cedar (Juniperus virginiana), European Beech (Fagus sylvatica), Mountain-ash sp. (Sorbus sp.).
- Refer to Appendix AError! Reference source not found. for a list of species and quantities within the study area.

CONDITION

Tree health ranges between good and poor; the majority observed to be in good to fair condition overall. Signs of decline and defects were observed in many mature trees. The following trees were found to be in poor, or dead condition:

- Poor T3, T7, T23, T27
- Dead T25, TG6 (1 tree)

Signs and symptoms of decline and defects included:

- Broken or dead leaders;
- Broken or dead limbs;
- Epicormic growth;
- Trunk wounds / cavities;
- Unbalanced crown;
- Black knot;
- Cracks in bark;
- 30 to 70% dieback or deadwood;
- Dead or dying.

TREE IMPACTS

The preferred realignment traverses across private lands to the north and south of Dufferin County Road 109. The south realignment will connect Dufferin County Road 3 with Dufferin County Road 23 and Paula Court, and 2nd Line Amaranth will be realigned to meet Dufferin County Road 109 to the north. Tables 1 and 2 below outline the impacts that may be required due to the proposed realignments.

TABLE 1 – TREE IMPACTS - REMOVAL

Location	Tree ID	Size (cm)	Quantity
Private (B Line)	T2 to T5, T11, T12	15 to 100	6
Total	6		

TABLE 2 - TREE IMPACTS - INJURY

By-law	Tree ID	Size (cm)	Quantity
Private (B Line)	T10	100	1

Total

It should be noted that trees within tree groupings TG9 to TG11 reside on lands to be transferred to private ownership and will likely be impacted by future development. This development may take place along a similar timeline to the road realignments but is not under the scope of this project. Once lands have been transferred, the County will have no influence on the status of these trees.

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RECOMMENDATIONS

This memo, provided as part of the preliminary design stage, details the potential impacts to trees. As the design progresses further detail will be provided during the Detail Design Study with respect to tree injury and removal. This information would be provided in accordance with Urban Forestry requirements, for example:

- Arborist Report, which details tree impacts, pruning, tree protection measures and mitigative measures;
- Site Plan and grading plans;
- Tree Preservation Plans, which illustrate tree removals, impacts, pruning, protection and mitigative measures
- Restoration Plans, which illustrate location of proposed tree planting;
- Permit applications.

Yours truly,

WSP Canada Inc.

Prepared by:

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Reviewed By:

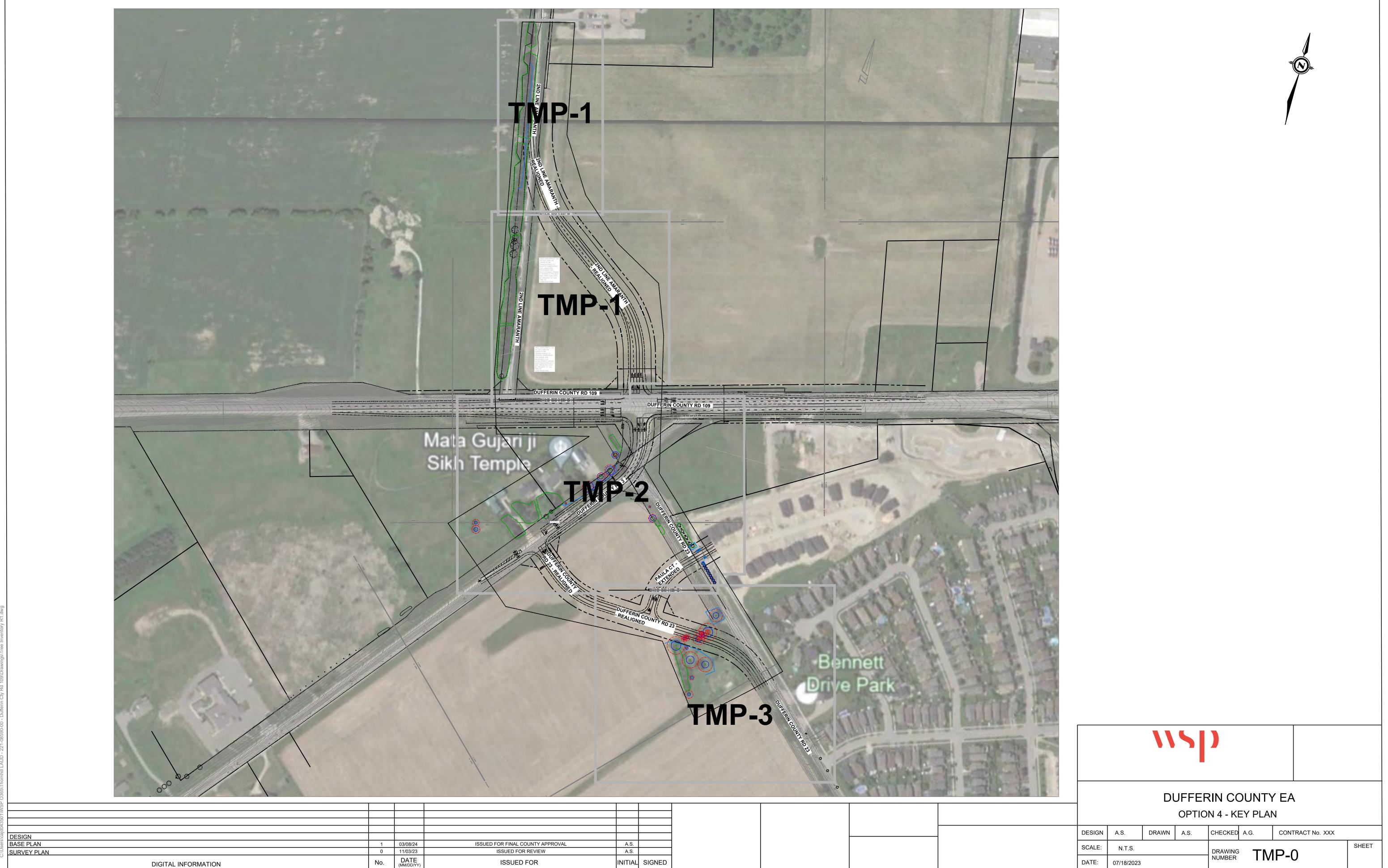
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Peter McNamara Senior Arborist & Landscape Designer | ISA Certified Arborist ON-1140A 289-982-4370 Peter.McNamara@wsp.com

	Appendix A: Tree Preservation Table												
	Dufferin County 109			Field Work Comp	leted By			Bitter (ON-2979	,				
	Date of Field Work: Weather: Sunny, high of 25 degrees Tree Condition Assessment Criteria: Tree Condition:												
	1 - Trunk Integrity: assessment of the trunk for any defects or weaknesses. Good (G): tree displays less than 15% deficiency/defect within the given tree assessment criteria (TI,CS,CV) 25 - Canopy Structure: assessment of scaffold branches, unions and canopy Fair (F): tree displays 15-40% deficiency/defect within the given tree assessment criteria (TI,CS,CV)												
CV - Canopy vie	jour: assessment of the health of th		ood, disea	ase, pests & live							assessment criteria (TI,CS,CV)		
Legend:	Trees to be Retained Trees to be Removed - Construction Minimum TPZ Reduction / Miligation Measures												
Tree #	Trees to be Preserved Botanical Name	Common Name	Qty.	DBH (cm)	Iy Remov TI	ed CS	CV	Dripline	Ownership	Trees to be Pr Tree	Recommendation	Comments - Health	Comments - Removal/Preservation
								Radius (m)		Protection Zone (m)			
T1	Acer saccharinum	Silver Maple	1	70	F	G	G	9	Private	4.2	Preserve		
T2	Acer saccharinum	Silver Maple	1	55	F	F	F	7	Private	3.6	Remove		
Т3	Acer saccharinum	Silver Maple	1	100	Р	Ρ	Р	11	Private	5	Remove	main stem is broken stump, living through epicormic	
Τ4	Acer saccharinum	Silver Maple	1	MS (5) 10 -20	G	G	G	6	Private	3	Remove		
T5	Acer saccharinum	Silver Maple	1	MS (2) 10 -20	G	G	G	5	Private	1.8	Remove		
T6	Populus tremuloides	Trembling Aspen	1	10	G	G	G	1	Private	1.8	Preserve		
Т7	Acer saccharinum	Silver Maple	1	80	Р	F	F	10	Private	4.8	Preserve	broken stem	
Т8	Acer saccharinum	Silver Maple	1	MS (2) 20 -25	G	G	G	5	Private	1.8	Retain		
Т9	Acer saccharinum	Silver Maple	1	15	G	G	G	3	Private	1.8	Retain		
T10	Acer saccharinum	Silver Maple	1	100	F	F	F	11	Private	6	Injure	30% dieback / deadwood	
T11	Acer saccharinum	Silver Maple	1	MS 10-15	G	G	G	4	Private	1.8	Remove		
T12	Acer saccharinum	Silver Maple	1	MS 10-15	G	G	G	4	Private	1.8	Remove		
TG1	Picea glauca	White Spruce	±3	15-45	G	G	F	2-4	Private	3	Preserve	1 fair	
TG1	Picea glauca	White Spruce	±22	15-45	G	G	F	2-4	Private	3	Retain	1 fallen tree	
T13	Acer saccharinum	Silver Maple	1	MS (7) 15 -30	G	G	G	8	Town	3.6	Preserve		
T14	Acer rubrum	Red Maple	1	6	F	G	F	1	Town	1.2	Retain	Trunk wounds, some dieback	
T15	Ginkgo biloba	Ginkgo	1	3	G	G	G	0.5	Town	1.2	Retain		
T16	Catalpa speciosa	Northern Catalpa	1	5	G	F	G	1	Town	1.2	Retain	main leader pruned	
T17	Acer rubrum	Red Maple	1	7	F	G	G	1	Town	1.2	Retain	trunk wounds	
T18	Syringa reticulata	Japanese Tree Lilac	1	4	G	G	F	0.5	Town	1.2	Retain		
T19	Syringa reticulata	Japanese Tree Lilac	1	3	G	G	G	0.5	Town	1.2	Retain		
T20	Acer rubrum	Red Maple	1	5	G	G	F	1	Town	1.2	Retain		
T21	Acer platanoides	Norway Maple	1	3	G	G	F	0.5	Town	1.2	Retain		
T22	Tilia cordata	Little-leaf Linden	1	3	G	G	G	0.5	Town	1.2	Preserve		
T22A	Acer rubrum	Red Maple	1	5	G	G	G	1	Town	1.2	Preserve		
T22B	Acer rubrum	Red Maple	1	5	G	G	G	1	Town	1.2	Preserve		
T22C	Thuja occidentalis	Eastern White Cedar	1	1	G	G	G	0.5	Town	1.2	Preserve	newly planted 1m tall	
TG2	Thuja occidentalis	Eastern White Cedar	1	1-2	G	G	F	0.5	Town	1.2	Preserve		
TG2	Acer rubrum	Red Maple	1	6-8	G	G	F	1	Town	1.2	Preserve		

							4	Appendix	A: Tree F	Preserva	ation Table		
Project:	Dufferin County 109			Field Work Comp	oleted By		Nicole E	Bitter (ON-2979	A)				
Date of Field Tree Condition	Work: Assessment Criteria:			Weather:	Tre	e Conditi		high of 25 degr	ees				
	rity: assessment of the trunk for a ucture: assessment of scaffold bra								ncy/defect within the ct within the given t		essment criteria (TI,CS,CV) criteria (TLCS,CV)		
	jour: assessment of the health of t		/ood, disea	ase, pests & live							assessment criteria (TI,CS,CV)		
<u>Legena.</u>	Integration Trees to be Retained Trees to be Removed - Construction Minimum TPZ Reduction / Mitigation Measures Trees to be Preserved Trees to be Potentially Removed Trees to be Pruned												
Tree #	Botanical Name	Common Name	Qty.	DBH (cm)	TI	CS	CV	Dripline Radius (m)	Ownership	Tree Protection Zone (m)	Recommendation	Comments - Health	Comments - Removal/Preservation
TG2	Thuja occidentalis	Eastern White Cedar	7	1-2	G	G	F	0.5	Town	1.2	Retain		
TG2	Acer rubrum	Red Maple	4	6-8	G	G	F	1	Town	1.2	Retain		
TG3	Prunus virginiana	Chokecherry	17	3-7	G	F	F	0.5	Town	1.2	Retain	Black knot, vine	
TG4	Lonicera sp.	Honeysuckle sp.	10	MS 1-8	G	G	G	0.5	Town	1.2	Retain	shrub	
TG4	Rhamnus cathartica	European Buckthorn	1	MS 2-4	G	G	G	0.5	Town	1.2	Retain		
T23	Acer saccharum	Sugar Maple	1	62	Р	F	Р	5	Private (boundary)	4.2	Retain	40% deadwood, main leader dead, large cavity; red spray paint	
T24	Rhamnus cathartica	European Buckthorn	1	MS 4-6	G	G	G	1	Town	1.2	Retain	vine	
TG5	Picea glauca	White Spruce	23	10-25	G	G	G	1-3	Private	1.8	Retain		
T25	Fraxinus sp.	Ash sp.	1	65	D	D	D	0	Town (boundary)	0	Retain	only living through epicormic growth	
T26	Acer saccharum	Sugar Maple	1	82	G	G	F	7	Town	5.4	Preserve	dead stem	
T27	Acer saccharum	Sugar Maple	1	74	Р	Р	Ρ	5	Town	4.8	Preserve	dying - 70% dead	
T28	Acer saccharum	Sugar Maple	1	105	G	G	F/P	7	Town	6.3	Preserve	main stem dead, other stem vigour is fair	
T29	Prunus sp.	Cherry species	1	6	G	G	F	1	Town	1.2	Preserve	vine	
T30	Sorbus sp.	Mountain-ash sp.	1	6	G	G	G	1	Town	1.2	Preserve		
TG6	Acer saccharum	Sugar Maple	7	40-65	F	G	G	5-8	Private	4.2	Retain		
TG6	Acer saccharum	Sugar Maple	1	65	D	D	D	0	Town	0	Retain		
TG7	Acer platanoides	Norway Maple	2	30	G	G	G	5	Private	2.4	Retain		
TG7	Acer saccharinum	Silver Maple	1	60	G	G	G	7	Private	3.6	Retain		
TG7	Malus sp.	Crabapple sp.	1	60	F	F	F	6	Private	3.6	Retain	main stem broken	
TG7	Juniperus virginiana	Eastern Red Cedar	1	22	G	G	G	4	Private	1.8	Retain		
TG7	Fagus sylvatica	European Beech	1	40	G	G	G	5	Private	2.4	Retain		
TG7	Acer saccharum	Sugar Maple	1	50	G	G	G	7	Private	3	Retain		
TG7	Picea glauca	White Spruce	2	30-40	G	G	G	3-4	Private	2.4	Retain		
TG7	Sorbus sp.	Mountain-ash sp.	1	6-10	G	G	G	1	Private	1.8	Retain		
TG7	Acer saccharum	Sugar Maple	1	15	G	G	G	2	Private	1.8	Retain		
TG8	Picea glauca	White Spruce	16	10-20	G	G	G	1-2	Private	1.8	Retain		
TG8	Populus deltoides	Eastern Cottonwood	12	10-48	G	G	G	1-6	Private	3	Retain		
T31	Acer negundo	Manitoba Maple	1	MS (3) 8-20	F	F	G	4	Private	1.8	Retain		
T32	Acer negundo	Manitoba Maple	1	MS 15-25	F	F	G	5	Private	2.4	Retain		

	Appendix A: Tree Preservation Table												
Project: Dufferin County 109 Field Work Completed By: Nicole Bitter (ON-2979													
Date of Field	d Work:			Weather:			Sunny,	high of 25 degr	ees				
	n Assessment Criteria:					ee Conditi							
	grity: assessment of the trunk for an	,							,	0	essment criteria (TI,CS,CV)		
	tructure: assessment of scaffold bra								ct within the given t				
	igour: assessment of the health of th	he tree, based on the % of deadw	lood, disea	ise, pests & live	Poor (P):	tree displ	ays great	er than 40% defic	iency/defect within	the given tree a	assessment criteria (TI,CS,CV)		
Legend:	Trees to be Retained Trees to be Preserved			Trees to be Remov Tree to be Potentia						Minimum TPZ Trees to be Pr	Reduction / Mitigation Measure	2	
Tree #	Botanical Name	Common Name	Qty.	DBH (cm)	TI	CS	CV	Dripline Radius (m)	Ownership	Tree Protection Zone (m)	Recommendation	Comments - Health	Comments - Removal/Preservation
TG9	Acer saccharum	Sugar Maple	16	38-72	F	F	F	5-9	Town	4.8	Retain	trunk cavities, broken / dead branches	Lands to be transferred to private ownership to be developed.
TG10	Acer saccharum	Sugar Maple	19	15-100	F	F	F	3-10	Town	6	Retain	trunk cavities, broken / dead branches	Lands to be transferred to private ownership to be developed.
TG11	Acer saccharum	Sugar Maple	7	50-90	F	F	F	7-9	Town	5.4	Retain	trunk cavities, broken / dead branches	Lands to be transferred to private ownership to be developed.
TG11	Acer saccharum	Sugar Maple	6	50-90	F	F	F	7-9	Town	5.4	Preserve	trunk cavities, broken / dead branches	Lands to be transferred to private ownership to be developed.
TG12	Acer saccharum	Sugar Maple	18	15-50	F	F	F	3-7	Town	3	Preserve	trunk cavities, broken / dead branches	
TG12	Acer saccharum	Sugar Maple	2	15-50	F	F	F	3-7	Town	3	Retain	trunk cavities, broken / dead branches	
TG13	Acer saccharum	Sugar Maple	5	80-90	F	F	F	7-9	Town	5.4	Retain	trunk cavities, broken / dead branches	



DIGITAL INFORMATION

FOR FINAL COUNTY APPROVAL	A.S.	
ISSUED FOR REVIEW	A.S.	
ISSUED FOR	INITIAL	SIGNED



SURVEY PLAN

DIGITAL INFORMATION

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11/03/23

DATE (MM/DD/YY)

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ISSUED ISSU

TREE GROUPINGS TG9 TO TG11 ARE ON LANDS TO BE TRANSFERRED TO PRIVATE OWNERSHIP. THE LANDS ARE PROPOSED FOR DEVELOPMENT UNDER A SEPARATE PROJECT AND TREES MAY NOT BE PRESENT AT THE TIME OF CONSTRUCTION.

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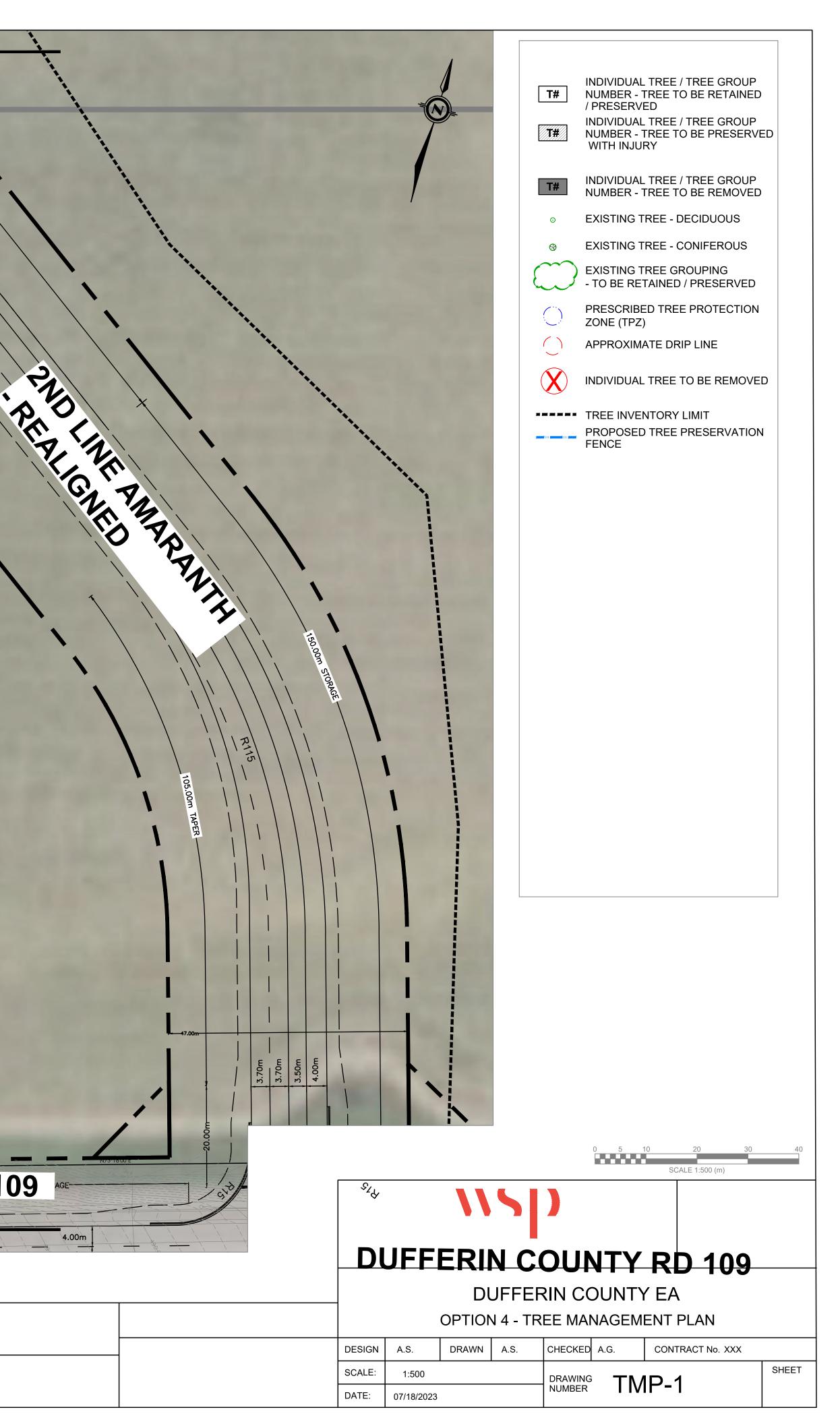
TREE GROUPINGS TG9 TO TG11 ARE ON LANDS TO BE TRANSFERRED TO PRIVATE OWNERSHIP. THE LANDS ARE PROPOSED FOR DEVELOPMENT UNDER A SEPARATE PROJECT AND TREES MAY NOT BE PRESENT AT THE TIME OF CONSTRUCTION.

DUFFERIN COUNTY RD 109

MATCHLINE - REFER TO SHEET TMP-1 MATCHLINE - REFER TO SHEET TMP-2

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ISSUED FOR REVIEW	A.S.	
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130.83m TAPE







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