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Appendix D

Natural Heritage Evaluation of Alternatives

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Technical Memorandum – Natural Heritage

Date:	May 25, 2026 **Project No.:** 300059627.0000
Project Name:	Hamilton Binbrook Road Intersection Municipal Class Environmental Assessment
Client Name:	City of Hamilton
Submitted To:	Olivia Stanciu, M. Sc., PMP
Submitted By:	Willow Weiler, H.B.Sc., MREM, CAN-CISEC-IT
Reviewed By:	Kevin Butt, B.Sc. (Env.) Rest Cert, TRAQ, ISA Certified Arborist & Terrestrial Ecologist

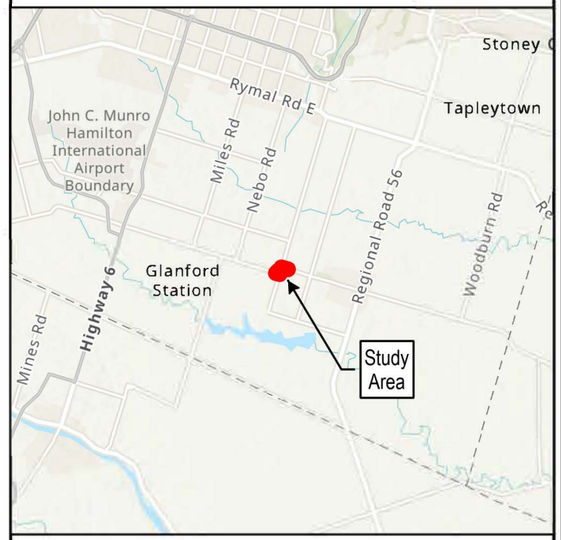
1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) was retained by City of Hamilton (the City) to undertake a Municipal Class Environmental Assessment (MCEA) to determine the feasibility of reconfiguring the intersection at Binbrook Road, Trinity Church Road, and White Church Road in the Glanbrook District. This study is proposed to determine transportation improvement options for this intersection and assess alternative options (e.g. roundabouts) and potential impacts. The preferred alternative consists of two roundabouts located within City-owned lands.

Burnside's terrestrial ecology team undertook field surveys in 2025 & 2026 to characterize the terrestrial habitats within 120 m of the existing right-of-way (ROW) (the Study Area) that may be impacted by road improvements (Figure 1). The following memo describes the terrestrial habitat present adjacent to the ROW and the surrounding areas.



Study Area



Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

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Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
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Client

CITY OF HAMILTON

Figure Title

HAMILTON BINBROOK RD INTERSECTION MCEA

STUDY AREA

Drawn	Checked	Date	Figure No.
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2.0 Background Information Review

The following sources of background information were reviewed to identify ecological features which may be impacted by the proposed works:

- Aerial photography
- MNR Land Information Ontario (LIO) database
- MNR Natural Heritage Information Centre (NHIC) database for significant species and designated natural features within 120 m of the subject lands
- Rural Hamilton Official Plan (2012)
- NPCA regulated features, mapping and information
- The Ontario Reptile and Amphibian Atlas (ORAA)
- The Ontario Breeding Bird Atlas (OBBA)
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), AgMaps mapping (2021)
- The Greenbelt Plan (2017)
- iNaturalist

3.0 Methodology

Field surveys were conducted in 2025 and 2026. During the field investigations, information was collected about the plant species encountered at the Study Area and vegetation communities were characterized using the Ecological Land Classification (ELC) system at the ecosite level for the Study Area using protocols outlined in Lee et al. (1998) [1]. Specific ecosites (based on the 2008 ELC approximations [2]) were determined based on collected data that best represent each distinct ecological unit. Additional surveys included Breeding Bird Surveys (BBS), with standard passive observations conducted at six BBS stations on two separate dates during the breeding season, under favorable weather conditions. General searches were also conducted for wildlife habitat features throughout the Study Area.

Surveys were conducted primarily from the public ROW for portions of the Study Area with no entry on to private lands.

A table summarizing field investigations is provided below.

[1] Lee, H.T, W.D. Bakowsky, J.L. Riley, J. Bowles, M. Puddister, P. Uhlig, S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Region, Science Development and Transfer Branch. Technical Manual ELC-005.

[2] Lee, H.T. 2008. Southern Ontario Ecological Land Classification: Vegetation Type List. Ontario Ministry of Natural Resources, London, Ontario.

Table 1: Summary of Survey Methodology and Conditions

Field Study	Methodology	Survey Date	Observers	Time of Day	Weather Conditions
Breeding Bird Surveys	Throughout subject site (from public lands) in accordance with the OBBA General Instructions for Atlassing	July 2 & July 9, 2025	Elly Hind Smith, Ecologist	7:30 am – 9:00 am each survey date	July 2, 2025: 17°C/0/2 Sunny, no precipitation July 9, 2025: 18°C/1/1 Sunny, no precipitation
Ecological Land Classification	Ecological Land Classification for Southern Ontario (Lee et al., 1998) of entire property	July 9, 2025	Elly Hind Smith, Ecologist	9:00 am – 11:00 am	18°C/1/1 Sunny, no precipitation
Spring Botanical Inventory	Meandering survey throughout subject site (from public lands)	May 5, 2026	Elly Hind Smith, Ecologist	8:30 am – 10:30 am	15°C/2/3 Overcast, no precipitation
Summer Botanical Inventory	Meandering survey throughout subject site (from public lands). Concurrent with Ecological Land Classification.	July 9, 2025	Elly Hind Smith, Ecologist	9:00 am – 11:00 am	18°C/1/1 Sunny, no precipitation
Fall Botanical Inventory	Meandering survey throughout subject site (from public lands).	September 3, 2025	Elly Hind Smith, Ecologist	10:00 am – 12:00 pm	15°C/0/1 Sunny, no precipitation

[1]NAAMP/Beaufort Sky Codes
0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, dust storm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

[2]Beaufort Wind Scale
0 = calm, smoke rises vertically (0-2 km/hr)
1 = light air movement, smoke drifts (3-5)
2 = slight breeze, wind felt on face, leaves rustle (6-11)
3 = gently breeze, leaves & twigs in constant motion (12-19)
4 = moderate breeze, small branches moving, raises dust & loose paper (20-30)
5 = fresh breeze, small trees begin to sway (31-39)
6 = strong breeze, large branches in motion (40-50)

4.0 Existing Conditions

4.1 Environmental Land Classification

Field investigations for ELC and botanical inventories took place on July 9, 2025, September 3, 2025, and May 5, 2026. A total of five ecosites were documented within the Study Area. Communities observed included both constructed and agricultural ecosites. Identification of communities was completed through air photo interpretation, a review of background reports and databases, and field investigations. Delineations of the vegetation communities are illustrated on Figure 2 and described in Table 2 below.

Table 2: ELC Communities

ELC Code (2008)	ELC Community	Additional Notes
Constructed		
CGL	Green Lands	This community occurs in association with the Glanbrook Cemetery, and features paved surfaces, metal fencing, manicured turf, and open grown trees (native and ornamental).
CVI_1	Transportation	This community consists of two traffic islands. They feature paved roadways, manicured turf grass, and open grown trees (native and ornamental).
CVR_1	Low Density Residential	This community consists of predominantly single-family homes, associated outbuildings, and maintained turf grass. Open grown trees consist of native species and ornamental plantings.

ELC Code (2008)	ELC Community	Additional Notes
CVC	Commercial and Institutional	This community is in association with the Glanbrook Sports Complex. Within the Study Area, it consists predominantly of manicured turf grass and open grown trees (native and ornamental).
Agriculture		
OAGM1	Annual Row Crops	This community features open agricultural fields with annual row crops.

A total of 105 plants were identified to the species level. Of these, 47 are native and 58 are non-native. Of the 105 plants species, 60 are ranked SNA (Species Not Applicable) and 44 are ranked S5 or S4 by the MNR, indicating they are secure or apparently secure within the province. Kentucky Coffee-tree (*Gymnocladus dioicus*) is ranked S2 & N2, indicating an imperiled species because of rarity in Ontario and nationally in Canada. Kentucky Coffee-tree is listed as threatened under the federal Species at Risk Act (SARA), 2002. It is also listed as threatened under Ontario's Species Conservation Act (SCA) 2025; however, only in the following geographic areas: the County of Elgin, the County of Essex, the County of Lambton, the County of Middlesex, the County of Norfolk, the County of Oxford and the Municipality of Chatham-Kent. Two locally rare species, based on the Hamilton Natural Areas Inventory Project 3rd Edition Species checklist (2013), were observed, including the Tulip Tree (*Liriodendron tulipifera*) and potentially Spear-leaved Orache (*Atriplex cf. prostrata*). Trees at this site, like in many municipalities in southern Ontario, have been planted as street trees from nursery stock, rather than a naturally occurring population. Therefore, neither the Tulip Tree nor Kentucky Coffee-tree are naturally occurring within the Study Area. A complete Botanical Inventory Plant list can be identified in Attachment A.

A single mapped watercourse with associated NPCA-regulated lands is found southeast of the corner of White Church Road and Trinity Church Road, that runs through annual row crop land. Upstream of this feature is a culvert that conveys flow from the annual row crop lands at the northwest, through a culvert that extends under Trinity Church Road. This upstream feature may represent a Headwater Drainage Feature (HDF) but is highly disturbed and would be assigned 'No Management Concern' if present.



Breeding Bird Survey Station

Watercourse (NPCA)

Environmental Land Classification

NPCA Approximate Regulated Lands

Study Area

ELC Descriptions
CGL: Green Lands
CVC: Commercial and Institutional
CVI_1: Transportation
CVR: Residential
OAGM1: Annual Row Crops

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

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Grid North

0 50 100 150 200
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Client

CITY OF HAMILTON

Figure Title

HAMILTON BINBROOK RD INTERSECTION MCEA

ECOLOGICAL LAND CLASSIFICATION, BREEDING BIRDS STATIONS AND DESIGNATED FEATURES

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4.2 Breeding Bird Surveys

Breeding bird surveys were conducted on July 2, 2025, and July 9, 2025, at six stations: BBS-001, BBS-002, BBS-003, BBS-004, BBS-005, and BBS-006 (see Figure 2). The survey stations were located within and immediately adjacent to the Study Area along the ROW of White Church Rd E, Trinity Church Rd, and Binbrook Rd. A total of 21 bird species were recorded during the BBS. Of these, 16 species are ranked S5 or S4 by the MNR, indicating they are secure or apparently secure within the province. The Chipping Sparrow (*Spizella passerina*) and Savannah Sparrow (*Passerculus sandwichensis*) are designated as S5B, S3N, reflecting differing conservation statuses for breeding and non-breeding populations. European Starling (*Sturnus vulgaris*), House Finch (*Haemorhous mexicanus*), and House Sparrow (*Passer domesticus*) are classified as Status Not Applicable (SNA), meaning they are not considered in provincial conservation assessments. The Great Blue Heron (*Ardea herodias*) was the only species recorded as locally uncommon according to the Hamilton Natural Areas Inventory Project, 3rd Edition Species Checklist (2013), and it was only observed as a 'flyover'. All other species were classified as either common or abundant. None of the recorded bird species are listed under the Provincial SCA. However, two species observed including Barn Swallow (*Hirundo rustica*) and Eastern Wood-pewee (*Contopus virens*) are listed under the Federal SARA as threatened and special concern, respectively. Both Barn Swallow and Eastern Wood-pewee exhibited possible breeding activity, as indicated by the presence of singing males or adults displaying breeding behavior in suitable nesting habitat during the surveys. Barn Swallow were observed at BBS-005 and BBS-006, and Eastern Wood-Pewee were only observed at BBS-005. BBS-005 is within the Study Area, while BBS-006 is just south of the Study Area. A complete summary of the results of the BBS can be seen in Attachment B.

4.3 Incidental Wildlife Observations

Incidental wildlife sightings were limited to the Study Area and were documented during field investigations to provide a general characterization of the habitat functions of the Study Area. Incidental observations were those recorded during targeted surveys for other aquatic or terrestrial investigations. Examples include tracks, carcasses, live sightings, etc.

A summary of incidental wildlife observations can be found in Table 3 below.

Table 3: Summary of Incidental Wildlife Observations

Common Name	Scientific Name	Location / ELC community	Comments
Monarch	*Danaus plexippus*	CVR_1	Flying

5.0 Natural Heritage Features

5.1 Niagara Escarpment Plan (2017)

The Study Area is located outside the boundaries of the Niagara Escarpment Plan (NEP) Area. The boundary of the NEP lies approximately 8 kilometres north of the Study Area.

5.2 Greenbelt Plan (2017)

The entirety of the Study Area is located within the Greenbelt Plan Area boundary. These lands are designated as Protected Countryside.

5.3 Niagara Peninsula Conservation Authority

A single watercourse with associated regulated lands is found southeast of the corner of White Church Road and Trinity Church Road. It originates from a culvert that extends under Trinity Church Road. Both upstream and downstream lands immediately adjacent to the culvert are occupied by annual row crops and no distinct channel is obvious through the study area.

5.4 Provincially Significant Wetlands (PSWs)

No PSWs are present in the Study Area.

5.5 Significant Woodlands

The City of Hamilton's Natural Heritage System consists of significant ecological and landscape features including significant woodlands. The RHOP identifies significant woodlands as areas which are ecologically important in terms of: a) Features such as species composition, age of trees, stand history; b) Functionally important due to its contribution to the broader landscape because of its location, size, or due to the amount of forest cover in the planning area; and c) Economically important due to site quality, species composition or past management history. In the City of Hamilton, significant woodlands must meet two or more of the following criteria:

- Size
  - Forest cover < 5% → Minimum patch size: 1 ha
  - Forest cover 5–10% → 2 ha
  - Forest cover 11–15% → 4 ha
  - Forest cover 16–20% → 10 ha
  - Forest cover 21–30% → 15 ha
- Interior Forest
  - Woodlands that contain interior forest habitat
  - Interior forest habitat = 100 m rom edge
- Proximity / Connectivity
  - Woodlands within 50 m of a significant natural area (wetlands ≥ 0.5 ha, ESAs, PSWs, Life Science ANSIs)
- Proximity to Water
  - Woodlands where any part is within 30 m of a hydrological feature (streams, headwater areas, wetlands, lakes)
- Age
  - Woodlands with trees 100+ years old
  - Age determined with FRI mapping and verified during EIS
- Rare Species
  - Woodlands containing threatened, endangered, special concern, provincially rare, or locally rare plant or wildlife species

No significant woodlands are present within the Study Area based on NHIC mapping, satellite imagery and field investigations.

5.6 Significant Valleylands

No Significant Valleylands are present in the Study Area.

5.7 Areas of Natural Scientific Interest (ANSI)

No ANSIs are present in the Study Area.

5.8 Significant Habitat of Species at Risk

The only Endangered or Threatened species listed under the provincial SCA observed within the Study Area during site investigations in 2025 & 2026 was the Kentucky Coffee-tree. As noted in Section 4.1, it is ornamental and not naturally occurring. Three species listed as endangered or threatened on the Federal SARA included Barn Swallow (threatened), Kentucky Coffee-tree (threatened), and Monarch (endangered).

Species at Risk could be present which were not observed at the time of the site visit. To identify potential Habitat of Endangered and Threatened Species, a review of aerial photography, the Ontario Reptile and Amphibian Atlas, Ontario Breeding Bird Atlas and Natural Heritage Information Centre on-line databases was conducted. Based on the conditions observed within the study area, it is anticipated that the OAGM1, CVR, CVI_1, CGL, & CVC ecosites may support terrestrial SAR species. Results can be found in Table 4 below. A more detailed summary can be found in Attachment C.

Table 4: Habitats for Species at Risk in the Study Area

Species	Designation under the Species Conservation Act	Potential Habitat
Endangered and Threatened Species		
Nine-spotted Lady Beetle (*Coccinella novemnotata*)	END	Moderate potential. Suitable habitat present throughout corridor in open areas.
Rusty-patched Bumble Bee (*Bombus affinis*)	END	Moderate potential. Suitable habitat present throughout corridor in open areas.
Little Brown Myotis (*Myotis lucifugus*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.
Northern Myotis (*Myotis septentrionalis*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.
Tri-colored Bat (*Perimyotis subclavius*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.

Species	Designation under the Species Conservation Act	Potential Habitat
Eastern Red Bat (*Lasiurus borealis*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.
Hoary Bat (*Lasiurus cinereus*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.
Silver-haired Bat (*Lasionycteris noctivagans*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.
Butternut (*Juglans cinerea*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.
Eastern Flowering Dogwood (*Cornus florida*)	END	Suitable maternal roosting habitat may be present in treed and residential areas.

5.9 Significant Wildlife Habitat (SWH)

The Natural Heritage Reference Manual (MNR, 2010), Significant Wildlife Habitat Technical Guide (MNR, 2000) and Ecoregion 7E Criteria Schedules list a number of different types of habitat that are considered significant. A screening of potential habitats in the Study Area relative to SWH criteria is provided in Attachment D. Following the SWH screening, Habitat for Special Concern and Rare Wildlife was the only habitat type that may be present. A description of this habitat within the study area is outlined below.

Habitat for Special Concern and Rare Wildlife

Under the previous Endangered Species Act (ESA), 2007, observations of two avian species of Special Concern, Barn Swallow and Eastern Wood-pewee, and one arthropod species of Special Concern, Monarch Butterfly, were observed by Burnside during field investigations. Species of Special Concern are no longer designated under the SCA but this information is provided it was collected for the previous submission of this report. Eastern Wood-pewee is also listed as Special Concern under the federal SARA. One Barn Swallow was heard calling at BBS-006 on July 2, 2025, and two were heard calling at BBS-005 on July 9, 2025. One Eastern Wood-pewee was heard calling on July 9, 2025, at BBS-005. BBS-006 is located just south of the Study Area along Trinity Church Road, while BBS-005 lies within the CVR ecosite in the Study Area along White Church Road East. Detections occurred within suitable nesting habitat during the species' breeding season, and the presence of breeding calls at both sites suggests potential breeding activity; however, no nests were observed. The habitat within the study area is subject to repeated disturbance (i.e. crop maintenance, lawn mowing and road traffic) and is not supportive of sensitive wildlife lifecycle needs including safe refuge for rearing young.

A Monarch Butterfly was observed flying within the CVR ecosite of the Study Area along White Church Road East. The preferred larval host, milkweed, was present in all roadside ditches within the Study Area.

Additional species of Special Concern may be present which were not observed during field surveys. As species of Special Concern are no longer listed under the Provincial SCA, this include species listed on the Federal SARA that are not provincially listed. However, based on the conditions observed within the Study Area, the habitat features are unlikely to support a significant number of Special Concern species. Results are presented in Table 5 below. A more detailed summary is provided in Attachment C.

Table 5: Species of Special Concern That May Occur Within the Study Area

Species	Designation under the Federal SARA	Potential Habitat
Monarch Butterfly (*Danaus plexippus*)	END	Agricultural and open fields. Milkweed, the preferred larval host, is present in the Study Area in all roadside ditches.
Barn Swallow (*Hirundo rustica*)	THR	Suitable nesting habitat may be present in residential and commercial areas. One Barn Swallow was heard singing during breeding bird surveys at BBS-006 on July 2, 2025, and two Barn Swallow were heard singing during breeding bird surveys at BBS-005 on July 9, 2025. No nests were observed.
Eastern Wood-pewee (*Contopus virens*)	SC	Suitable nesting habitat may be present along roadways and in treed habitats. One Eastern Wood-pewee was heard calling during breeding bird surveys at BBS-005 on July 9, 2025. No nests were observed.
Grasshopper Sparrow (*Ammodramus savannarum pratensis*)	SC	Agricultural and open fields.

6.0 Impacts and Mitigation Guidelines

The preferred alternative road design consists of two roundabouts located within City-owned ROW. Disturbance will be limited to mowed turf dominated lands. However, the full extent of the impacts are not known at this time since detailed design will determine the extent of grading resulting in tree loss and encroachment into vegetation communities.

Barn Swallow impacts are not anticipated since no removal of buildings is anticipated for any of the alternatives.

Eastern Wood-pewee and other birds, including species protected by the Migratory Bird Convention Act that may be impacted by the removal of trees can be protected through the

removal of trees outside of the active nesting period. Tree removal completed between September 1 and March 31 is generally considered to prevent impacts to nesting birds.

Impacts to tree roosting bat species can be avoided through tree cutting outside the active window. Tree removal completed between October 1 and March 31 is generally considered to prevent impacts to roosting bats.

Monarch can be protected through avoidance of impacts to Milkweed during construction. Incorporating milkweed into the roadside seed mix can offset loss of Monarch habitat and enhance the locally available food source.

Trees including the Tulip Tree and Kentucky Coffee-tree individuals that were identified in the Study Area may also be impacted through road realignment or grading; however, these individuals are ornamental in origin and may be harmed or removed without provincial or federal approval.

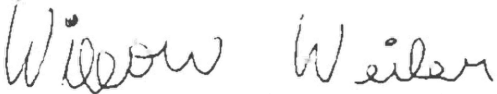
Invasive species are common throughout the ROW and management of new invasive species will result from the establishment of cool season turfgrass species and mowing, which is standard practice for ROW maintenance.

An HDF, if present, will need to be conveyed through a culvert, which will be designed at the detailed design stage to ensure downstream contribution to the mapped watercourse remains unchanged.

7.0 Conclusions

Although the Study Area lies entirely within the Greenbelt Plan Boundary, it does not contain any high-quality natural heritage features. Field surveys conducted in 2025 and 2026 identified four provincially or federally listed Species at Risk or of Special Concern within the Study Area: Barn Swallow, Eastern Wood-pewee, Monarch, and Kentucky Coffee-tree. Impacts to these species will be mitigated using measures outlined in Section 6.0 above. Overall, the existing habitat features are considered unlikely to support a significant number of rare or at-risk species.

R.J. Burnside & Associates Limited



Willow Weiler, H.B.Sc., MREM, CAN-CISEC-IT
Ecologist
WW:js

Enclosure(s) Attachment A – Botanical Inventory Plant List
Attachment B – Breeding Bird Summary
Attachment C – SAR Screening Table
Attachment D – SWH Screening Table for Ecoregion 7E

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Binbrook Road Intersection MCEA, Hamilton
Arborist Report

City of Hamilton
71 Main Street West
Hamilton, ON L8P 1P9

DRAFT

R.J. Burnside & Associates Limited
1266 South Service Road, Suite C2-1
Stoney Creek ON L8E 5R9 CANADA

February 2026
300059627.0000

Distribution List

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-	Yes	Yes	City of Hamilton

Record of Revisions

Revision	Date	Description
0	February 12, 2026	Submission to City of Hamilton

R.J. Burnside & Associates Limited

Report Prepared By:

Ariana Burgener, M.Sc.
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Report Reviewed By:

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Appendices

Appendix A Tree Assessment Data
Appendix B Tree Study Methodology
Appendix C Limitation of Tree Studies
Appendix D Description of Intersection Alternatives

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1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the City of Hamilton (City) to complete a Tree Inventory and Preservation Plan for the subject lands along Binbrook Rd in southeast Hamilton. The Arborist report has been issued in support of the Municipal Class Environmental Assessment (MCEA) which will review alternatives and determine the feasibility of reconfiguring the intersection at Binbrook Road, Trinity Church Road, and White Church Road in the Glanbrook District.

In accordance with the City of Hamilton's Tree Protection Guidelines - City Wide (October 2010), review of trees within and immediately adjacent to the proposed construction zone is required to be completed by a Certified Arborist. The existing locations as well as their qualitative and quantitative measurements were determined and assessed in context with the proposed construction. Protection and mitigation guidelines required to reduce construction impacts are provided for trees that will be preserved. Anticipated impacts from the proposed design options are also documented.

The intent of the report and the associated figures and appendices is to illustrate the six proposed alternatives, provide a summary of the analysis of the impacts to trees for each option being reviewed by the MCEA, and prescribe general measures to promote their retention. Detailed tree protection prescriptions will be provided once the preferred option has been chosen.

2.0 Methodology

The tree inventory and assessment were completed by Ariana Burgener, ISA Certified Arborist (ON-2770A) on September 22, 2025. The locations of the trees were GPS tagged in ArcGIS and assessed using the data collection application, ESRI Field Maps.

The following data was collected for each tree:

- Tree #
- Species (Common and Scientific Name)
- Dripline
- Diameter at Breast Height – DBH (cm)
- Tree Condition (Good, Fair, Poor or Dead)

DRAFT

The City's Tree Protection Guidelines states that TPPs are only to consider trees with a DBH of 10 cm or more. Due to the number of City planted trees under 10 cm DBH, all trees within the road right-of-way were collected, no matter DBH size; however, trees under 10 cm have been assessed separately in this report.

Tree condition was assigned according to the City's Tree Protection Guidelines:

- Good: dead branches less than 10%; signs of good compartmentalization on any wounds, no structural defects
- Fair: 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects
- Poor: more than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects
- Dead: tree shows no signs of life

Preservation recommendations (i.e., preserve or remove) are provided based on the existing condition and proposed development impacts. A tree is recommended for preservation if it has been assigned a fair or good condition rating and can be incorporated into the development. A tree is recommended for removal if it has been assigned a poor condition rating and / or will be significantly impacted by, or conflicts with, the proposed development.

Tree assessment data is provided in Appendix A. Methodology and limitations of this tree assessment are provided in Appendices B and C, respectively.

3.0 Proposed Construction

The study area encompasses four intersections:

- Airport Road and Trinity Church Road
- Binbrook Road and Trinity Church Road
- Binbrook Road / White Church Road and Trinity Church Road
- White Church Road and Trinity Church Road.

Six alternatives to improve this cluster of intersections have been proposed and are being examined through the MCEA. A brief description of each alternative can be found in Appendix D. The alternatives include the use of roundabouts, stoplights and stop signs in varying configurations. For efficiency of review, physically similar alternatives have been grouped together into three figures. Tree Protection Plan (TPP) 1 illustrates options 1 and 2, while TPP 2 shows options 3, 5 and 6 and TPP 3 shows option 4. The impacts have also been assessed as a combination of options, as displayed on their respective TPPs.

An approximate area of impact has been calculated for each combination, using a buffer of 10 m from the proposed grading limits to determine which trees are most likely to be

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impacted. The numbers discussed in this report are estimates based on preliminary designs that do not include detailed grading. When the best alternative has been chosen to proceed, an updated arborist report and TPP with details concerning tree protection fencing will be required.

4.0 Findings

The assessment was comprised of privately-owned trees, city planted trees within the public right-of-way and naturalized trees. A total of 132 trees were individually assessed, of which 8 were dead. Of the 124 live trees, 39 (31%) were under 10 cm in DBH, but were collected because they had been planted by the City or naturalized along the road right-of-ways (ROW).

The small DBH trees (i.e., less than 10 cm) primarily consisted of Tulip Tree, Red Maple and Bur Oak. Trees 10 cm and above were comprised of 20 species, with Norway Maple (*Acer platanoides*) and White Willow (*Salix alba*) accounting for 40% of the trees. Due to the established rural properties, a number of large diameter trees were collected on private property adjacent the road. These large DBH trees were predominately White Willow and Maple (*Acer*) species.

5.0 Comparison of Alternatives

Table 1 on the next page compares how many trees will be preserved or removed, broken down by DBH (cm).

Reviewing Table 1, the combined Options 3, 5 and 6 will impact the most trees, including the removal of the largest tree inventory (T123). It is estimated that these options will require the removal of approximately 48% of the trees over 10 cm DBH that were inventoried.

Options 1 & 2 will impact fewer trees, with only 25 (29%) of trees >10 cm DBH expected to be impacted. A higher proportion of trees being impacted by Option 1 & 2 are smaller DBH trees. This option group will impact the least number of trees >60 cm DBH, helping to preserve mature canopy trees on the landscape; however, this option group will impact the highest number of <10 cm DBH trees, most of which were planted by the City.

Option 4 is projected to impact the least number of trees >10 cm DBH, requiring the removal of only 18 (21%) trees; however, similar to Options 3, 5 and 6, a higher number of trees being impacted will be larger DBH trees.

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When considering trees >60 cm DBH:

- Options 3, 5 and 6 will likely require the removal of 9
- Option 4 will likely require the removal of 8
- Option 1 and 2 will likely require the removal of 3

Table 1: Alternatives Impacts Comparison

		Options 1 & 2	Options 3, 5 & 6	Option 4
Trees to be Preserved (DBH)	<10 cm	12	34	20
	>10 cm	60	44	67
Trees to be Removed (DBH)	<10 cm	27	5	19
	10 – 19 cm	6	6	4
	20 – 29 cm	7	10	2
	30 – 39 cm	3	7	1
	40 – 49 cm	2	7	2
	50 – 59 cm	4	2	1
	60 – 69 cm		3	2
	70 – 79 cm			1
	80 – 89 cm	3	4	4
	90 – 99 cm			
	100 – 109 cm		1	1
	110 – 119 cm			
	120 – 129 cm			
	130 – 139 cm			
	140 – 149 cm		1	
	>10 cm Total	**25**	**41**	**18**

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Both T123 and T69 are Silver Maples (*Acer saccharinum*). T123 is the largest tree inventoried and is expected to be removed for Option 4. T69 is one of the 4 trees over 100 cm DBH and is expected to be removed by Options 3, 4, 5 and 6.

Figure 1: T123



Figure 2: T69



Figure 3: Trees <10 cm DBH planted by the City and collected in the inventory



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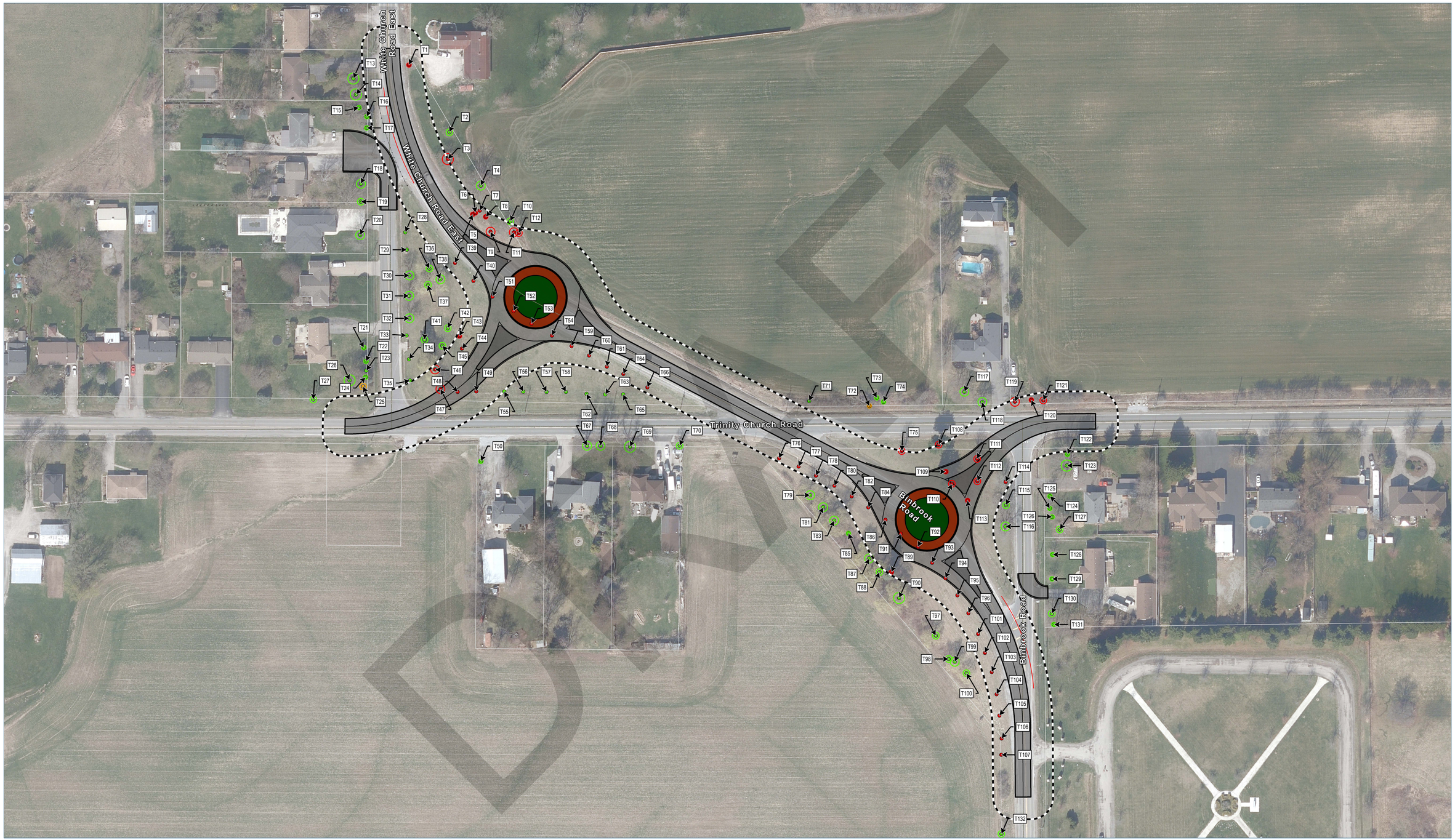
6.0 Preservation Recommendations

The TPPs discussed in this report do not include recommendations for tree protection fencing. This is because final grading for each of the options is not known at this stage. Once an alternative is chosen as the preferred option and grading is finalized, a new TPP should be issued showing the updated impacts from grading and outlining where protection fencing should be installed.

The following Best Management Practices are provided to promote the protection of trees and reduce impacts to wildlife:

- All permits must be received before tree removal and impacts (including site preparation) can occur.
- Tree protection fence must be reviewed daily when working adjacent to the fence and any identified deficiencies corrected immediately.
- No storage of materials, equipment, debris, soil or liquids is allowed within the TPF, as these activities can damage the tree roots and soil by compacting it and preventing nutrient and water absorption.
- To reduce the risk of contravening the Migratory Bird Convention Act, timing constraints shall be applied to avoid vegetation clearing (including grubbing) during breeding bird period. The breeding bird period is broadly from April 1 to August 31 for most species, regardless of calendar year.
- Active nests (nests with eggs or young birds) of protected migratory birds, including Species at Risk (SAR) protected under the Endangered Species Act (ESA), cannot be destroyed at any time of year. The destruction of inactive nests for some species may also be prohibited (e.g. Osprey, Great Blue Heron).
- If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location should temporarily stop and a qualified ecologist should be contacted for direction.
- Trees should be felled so they fall into the construction footprint to avoid damage to retained trees, including both trunk and roots.
- All retained trees should be reviewed following construction and prior to contractor demobilization to determine if additional mitigative measures such as pruning are required to reduce risk to residents or property.

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Existing Tree, Recommended for Preservation. Circle Represents Crown Reserve of Tree.

Existing Tree, Recommended for Removal. Circle Represents Crown Reserve of Tree.

Existing Tree, Recommended for Removal Based on Condition of Tree. Circle Represents Crown Reserve of Tree.

Area of Impact (10m Setback from Design)

0 50 100
Metres
1:750

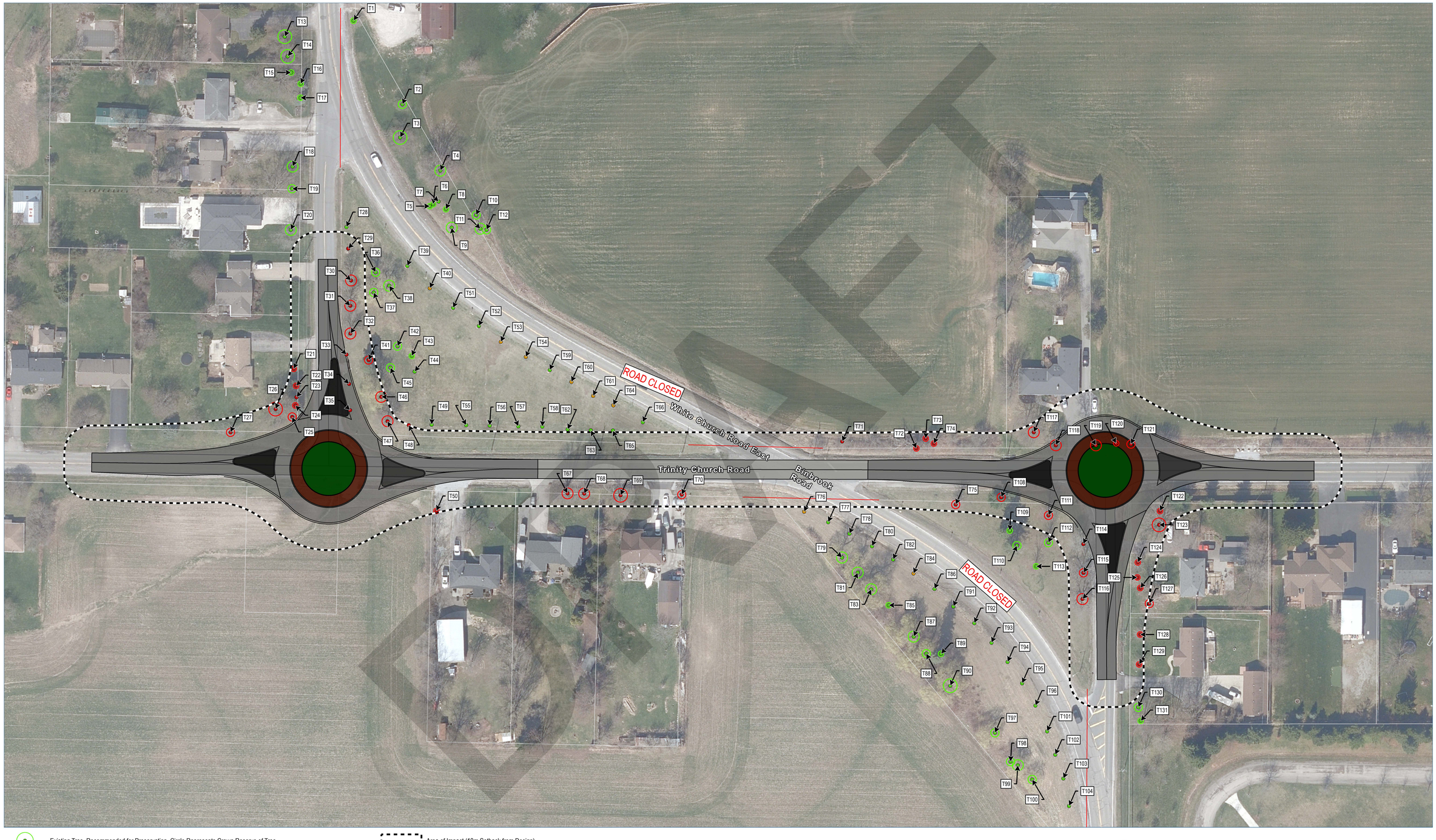
73.2°E
Grid North

Datum: North American 1983 CSRS
Coord. System: NAD 1983 CSRS UTM Zone 17N
Projection: Transverse Mercator
Central Meridian: 81°0'0.00"W
False Easting: 500,000m
False Northing: 0m
Scale Factor: 0.99960

Drawn By: HN
Checked By: AB
Client: City of Hamilton
Project: Hamilton Binbrook Rd Intersection MCEA
Project Number: 300059627
Date: 2026/02/06

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Figure: T1



Existing Tree, Recommended for Preservation. Circle Represents Crown Reserve of Tree.

Existing Tree, Recommended for Removal. Circle Represents Crown Reserve of Tree.

Existing Tree, Recommended for Removal Based on Condition of Tree. Circle Represents Crown Reserve of Tree.

Area of Impact (10m Setback from Design)

0 50 100
Metres
1:600

73.89°
Grid North

Datum: North American 1983 CSRS
Coord. System: NAD 1983 CSRS UTM Zone 17N
Projection: Transverse Mercator
Central Meridian: 81°0'0.00"W
False Easting: 500.00m
False Northing: 0m
Scale Factor: 0.99960

Drawn By: HN
Checked By: AB
Client: City of Hamilton
Project: Hamilton Binbrook Rd Intersection MCEA
Project Number: 3000598627
Date: 2026/02/06

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Figure: T2

Hamilton Binbrook Rd Intersection MCEA
Tree Preservation Plan - Option 4



Existing Tree, Recommended for Preservation. Circle Represents Crown Reserve of Tree.

Existing Tree, Recommended for Removal. Circle Represents Crown Reserve of Tree.

Existing Tree, Recommended for Removal, Based on Condition of Tree. Circle Represents Crown Reserve of Tree.

Area of Impact (10m Setback from Design)

0 50 100
Metres
1:600

54.08°
Grid North

Datum: North American 1983 CSRS
Coord. System: NAD 1983 CSRS UTM Zone 17N
Projection: Transverse Mercator
Central Meridian: 81°0'0.00"W
False Easting: 500,000m
False Northing: 0m
Scale Factor: 0.99960

Drawn By: HN
Checked By: AB
Client: City of Hamilton
Project: Hamilton Binbrook Rd Intersection MCEA
Project Number: 300059627
Date: 2026/02/06

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Figure: T3

File Path: Z:\059627\000\08-GIS\059627 Hamilton Binbrook\059627 Hamilton Binbrook.aprx Print Date: 2026/02/06 Time: 05:19 PM

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Appendix A

Tree Assessment Data

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Tree ID	Species	Scientific Name	DBH (cm)	Drip Line Radius (m)	MTPZ	Condition	Comments	Recommendation Condition	Recommendation Design Options 1 & 2	Recommendation Final Options 1 & 2	Recommendation Design Options 3, 5, & 6	Recommendation Final Options 3, 5, & 6	Recommendation Design Option 4	Recommendation Final Option 4
T1	Norway Maple	*Acer platanoides*	28	2	3.88	Fair	Leader dieback, heart rot (moderate)	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T2	Norway Maple	*Acer platanoides*	27	3	3.87	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T3	Freeman Maple	*Acer x freemanii*	26, 32, 40, 19, 41	5	10.33	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T4	Freeman Maple	*Acer x freemanii*	23, 38, 52, 15, 21, 18, 48, 31, 42, 30	4	14.04	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T5	Black Walnut	*Juglans nigra*	11	2	3.71	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T6	Black Walnut	*Juglans nigra*	14	2	3.74	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T7	Black Walnut	*Juglans nigra*	6	1	2.46	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T8	Black Walnut	*Juglans nigra*	12	2	3.72	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T9	Black Walnut	*Juglans nigra*	16	4	3.76	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T10	Black Walnut	*Juglans nigra*	10	3	3.7	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T11	Norway Maple	*Acer platanoides*	53	4	7.73	Fair	Crown dieback (minor)	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T12	Black Walnut	*Juglans nigra*	27	3	3.87	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T13	Silver Maple	*Acer saccharinum*	56, 29, 41, 25	5	10.39	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T14	Silver Maple	*Acer saccharinum*	126	5	16.38	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T15	Colorado Blue Spruce	*Picea pungens 'Glauca'*	19	2	3.79	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T16	Colorado Blue Spruce	*Picea pungens 'Glauca'*	23	2	3.83	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T17	Colorado Blue Spruce	*Picea pungens 'Glauca'*	28	2	3.88	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T18	Norway Maple	*Acer platanoides*	38	4	5.18	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T19	Norway Maple	*Acer platanoides*	24	3	3.84	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T20	Thornless Honey-Locust	*Gleditsia triacanthos*	59	4	7.79	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T21	Colorado Blue Spruce	*Picea pungens 'Glauca'*	16	2	3.76	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T22	White Spruce	*Picea glauca*	23	2	3.83	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T23	Balsam Fir	*Abies balsamea*	16	1	3.76	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T24	Colorado Blue Spruce	*Picea pungens 'Glauca'*	23	2	3.83	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T25	Scots Pine	*Pinus sylvestris*	14, 16	3	3.81	Poor	Codominant leader	Remove	Preserve	Remove*	Remove	Remove	Preserve	Remove*
T26	Freeman Maple	*Acer x freemanii*	82	5	11.62	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T27	Black Walnut	*Juglans nigra*	44	3	6.44	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T28	Hardy Rubber Tree	*Eucommia ulmoides*	5	0	2.45	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T29	Hawthorn Species	*Crataegus sp.*	6	1	2.46	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T30	Norway Maple	*Acer platanoides*	37	4	5.17	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T31	Norway Maple	*Acer platanoides*	43	4	6.43	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T32	Norway Maple	*Acer platanoides*	45	4	6.45	Good	Healed lightning scar	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T33	Tulip Tree	*Liriodendron tulipifera*	5	1	2.45	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T34	European White Birch	*Betula pendula*	7	1	2.47	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T35	Tulip Tree	*Liriodendron tulipifera*	3	0	2.43	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T36	White Willow	*Salix alba*	82	3	11.62	Fair	Leader dieback	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T37	White Willow	*Salix alba*	78	3	10.38	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T38	White Willow	*Salix alba*	80	4	10.4	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T39	European White Birch	*Betula pendula*	3	1	2.43	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T40	-	-	-	-	-	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Preserve	Remove*
T41	Scots Pine	*Pinus sylvestris*	39	3	5.19	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T42	Kentucky Coffee-Tree	*Gymnocladus dioicus*	13	3	3.73	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T43	Kentucky Coffee-Tree	*Gymnocladus dioicus*	14	2	3.74	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T44	Kentucky Coffee-Tree	*Gymnocladus dioicus*	8	1	2.48	Fair	trunk lean (moderate), basal trunk damage (minor)	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T45	Kentucky Coffee-Tree	*Gymnocladus dioicus*	13	3	3.73	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T46	White Willow	*Salix alba*	87	4	11.67	Good	-	Preserve	Remove	Remove	Remove	Remove	Preserve	Preserve
T47	Norway Maple	*Acer platanoides*	36	4	5.16	Good	-	Preserve	Remove	Remove	Remove	Remove	Preserve	Preserve

Tree ID	Species	Scientific Name	DBH (cm)	Drip Line Radius (m)	MTPZ	Condition	Comments	Recommendation Condition	Recommendation Design Options 1 & 2	Recommendation Final Options 1 & 2	Recommendation Design Options 3, 5, & 6	Recommendation Final Options 3, 5, & 6	Recommendation Design Option 4	Recommendation Final Option 4
T48	Bur Oak	*Quercus macrocarpa*	4	0	2.44	Good	-	Preserve	Remove	Remove	Remove	Remove	Preserve	Preserve
T49	Red Maple	*Acer rubrum*	5	0	2.45	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T50	Norway Maple	*Acer platanoides*	22	2	3.82	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T51	Hawthorn Species	*Crataegus sp.*	6	1	2.46	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T52	Tulip Tree	*Liriodendron tulipifera*	4	0	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T53	European White Birch	*Betula pendula*	4, 2, 2, 2	-	2.45	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Remove	Remove
T54	Hardy Rubber Tree	*Eucommia ulmoides*	3	-	2.43	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Remove	Remove
T55	Kentucky Coffee-Tree	*Gymnocladus dioicus*	2	0	2.42	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T56	Bur Oak	*Quercus macrocarpa*	4	0	2.44	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T57	Red Maple	*Acer rubrum*	5	0	2.45	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T58	Kentucky Coffee-Tree	*Gymnocladus dioicus*	2	0	2.42	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T59	Hawthorn Species	*Crataegus sp.*	4	1	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T60	Tulip Tree	*Liriodendron tulipifera*	3	-	2.43	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Remove	Remove
T61	European White Birch	*Betula pendula*	4	-	2.44	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Remove	Remove
T62	Bur Oak	*Quercus macrocarpa*	5	0	2.45	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Remove	Remove
T63	Red Maple	*Acer rubrum*	4	0	2.44	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Remove	Remove
T64	Hardy Rubber Tree	*Eucommia ulmoides*	3	-	2.43	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Remove	Remove
T65	Kentucky Coffee-Tree	*Gymnocladus dioicus*	2	0	2.42	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Remove	Remove
T66	Hawthorn Species	*Crataegus sp.*	5	1	2.45	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T67	Freeman Maple	*Acer x freemanii*	68	4	9.08	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Remove	Remove
T68	Freeman Maple	*Acer x freemanii*	69	4	9.09	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Remove	Remove
T69	Silver Maple	*Acer saccharinum*	52, 62, 69	5	13.78	Fair	Crown dieback (moderate)	Preserve	Preserve	Preserve	Remove	Remove	Remove	Remove
T70	Sugar Maple	*Acer saccharum*	43	3	6.43	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Remove	Remove
T71	White Ash	*Fraxinus americana*	11	1	3.71	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Remove	Remove
T72	Manitoba Maple	*Acer negundo*	80	2	10.4	Poor	Main trunk dieback (severe)	Remove	Preserve	Remove*	Remove	Remove	Remove	Remove
T73	Norway Maple	*Acer platanoides*	12	2	3.72	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T74	Norway Maple	*Acer platanoides*	19	2	3.79	Fair	Leader dieback	Preserve	Preserve	Preserve	Remove	Remove	Remove	Remove
T75	Freeman Maple	*Acer x freemanii*	32	3	5.12	Good	-	Preserve	Remove	Remove	Remove	Remove	Remove	Remove
T76	Sweet Gum	*Liquidambar styraciflua*	3	-	2.43	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Remove	Remove
T77	Red Maple	*Acer rubrum*	4	1	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T78	Bur Oak	*Quercus macrocarpa*	4	1	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T79	White Willow	*Salix alba*	85	4	11.65	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Remove	Remove
T80	Tulip Tree	*Liriodendron tulipifera*	3	1	2.43	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T81	White Willow	*Salix alba*	78	4	10.38	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Remove	Remove
T82	Sweet Gum	*Liquidambar styraciflua*	6	0	2.46	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T83	White Willow	*Salix alba*	86	4	11.66	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Remove	Remove
T84	Red Maple	*Acer rubrum*	4	0	2.44	Dead	-	Remove	Remove	Remove	Preserve	Remove*	Remove	Remove
T85	Sweet Cherry	*Prunus avium*	12	2	3.72	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Remove	Remove
T86	Bur Oak	*Quercus macrocarpa*	5	0	2.45	Fair	Crown dieback (moderate)	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T87	White Willow	*Salix alba*	80	4	10.4	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T88	White Willow	*Salix alba*	78	3	10.38	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T89	Colorado Blue Spruce	*Picea pungens 'Glauca'*	52	2	7.72	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T90	White Willow	*Salix alba*	85	5	11.65	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T91	Tulip Tree	*Liriodendron tulipifera*	2	1	2.42	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T92	Sweet Gum	*Liquidambar styraciflua*	4	1	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T93	Red Maple	*Acer rubrum*	4	0	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T94	Bur Oak	*Quercus macrocarpa*	6	0	2.46	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T95	Tulip Tree	*Liriodendron tulipifera*	3	1	2.43	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T96	Sweet Gum	*Liquidambar styraciflua*	4	0	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T97	White Willow	*Salix alba*	45	3	6.45	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T98	Norway Maple	*Acer platanoides*	22	3	3.82	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve

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Tree ID	Species	Scientific Name	DBH (cm)	Drip Line Radius (m)	MTPZ	Condition	Comments	Recommendation Condition	Recommendation Design Options 1 & 2	Recommendation Final Options 1 & 2	Recommendation Design Options 3, 5, & 6	Recommendation Final Options 3, 5, & 6	Recommendation Design Option 4	Recommendation Final Option 4
T99	White Willow	*Salix alba*	76	4	10.36	Fair	Heart rot (moderate)	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T100	White Willow	*Salix alba*	18, 12, 14, 12, 13	3	5.11	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T101	Red Maple	*Acer rubrum*	4	0	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T102	Bur Oak	*Quercus macrocarpa*	6	1	2.46	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Remove	Remove
T103	Tulip Tree	*Liriodendron tulipifera*	3	1	2.43	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T104	Sweet Gum	*Liquidambar styraciflua*	5	1	2.45	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T105	Red Maple	*Acer rubrum*	3	0	2.43	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T106	Bur Oak	*Quercus macrocarpa*	4	1	2.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T107	Tulip Tree	*Liriodendron tulipifera*	3	1	2.43	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T108	Eastern White Pine	*Pinus strobus*	44	3	6.44	Good	-	Preserve	Remove	Remove	Remove	Remove	Remove	Remove
T109	Norway Spruce	*Picea abies*	44	2	6.44	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T110	Norway Spruce	*Picea abies*	51	3	7.71	Fair	Crown dieback (moderate)	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T111	Freeman Maple	*Acer x freemanii*	33	3	5.13	Good	-	Preserve	Remove	Remove	Remove	Remove	Preserve	Preserve
T112	Freeman Maple	*Acer x freemanii*	27	3	3.87	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T113	Freeman Maple	*Acer x freemanii*	26	2	3.86	Good	-	Preserve	Remove	Remove	Preserve	Preserve	Preserve	Preserve
T114	Norway Maple	*Acer platanoides*	28	1	3.88	Poor	crown dieback (severe), heart rot (minor)	Remove	Remove	Remove	Remove	Remove	Preserve	Remove*
T115	Norway Maple	*Acer platanoides*	55	3	7.75	Fair	Root girdling (minor)	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T116	Norway Maple	*Acer platanoides*	62	4	9.02	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T117	Norway Maple	*Acer platanoides*	43	4	6.43	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T118	Hawthorn Species	*Crataegus sp.*	81	4	11.61	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Remove	Remove
T119	Hawthorn Species	*Crataegus sp.*	57	4	7.77	Good	-	Preserve	Remove	Remove	Remove	Remove	Remove	Remove
T120	Norway Maple	*Acer platanoides*	14	2	3.74	Fair	Codominant leader	Preserve	Remove	Remove	Remove	Remove	Remove	Remove
T121	Black Walnut	*Juglans nigra*	21	3	3.81	Good	-	Preserve	Remove	Remove	Remove	Remove	Preserve	Preserve
T122	Manitoba Maple	*Acer negundo*	19, 20	2	3.88	Fair	Codominant leader	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T123	Silver Maple	*Acer saccharinum*	85, 75, 85	5	18.46	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T124	European White Birch	*Betula pendula*	30	2	5.1	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T125	European White Birch	*Betula pendula*	28	2	3.88	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T126	European White Birch	*Betula pendula*	30	2	5.1	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T127	European White Birch	*Betula pendula*	45	3	6.45	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T128	Norway Maple	*Acer platanoides*	27	2	3.87	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T129	Norway Maple	*Acer platanoides*	27	2	3.87	Good	-	Preserve	Preserve	Preserve	Remove	Remove	Preserve	Preserve
T130	Norway Maple	*Acer platanoides*	58	3	7.78	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T131	Silver Maple	*Acer saccharinum*	47, 30	2	7.76	Fair	Codominant leader, trunk lean (minor)	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve
T132	Shagbark Hickory	*Carya ovata*	25	3	3.85	Good	-	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve	Preserve

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Appendix B

Tree Study Methodology

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Tree Studies: Methodology

The list provided below represents all data that may be collected in the analysis of trees. Methodology descriptions should be reviewed with the column headings provided in the data. The columns represent the scope and extent of the tree assessment carried out.

Tree #: This number may be assigned by the tree assessor or predetermined by the surveyor or client. The number corresponds with the tree tag affixed to the tree, if tree tagging is part of the study's scope.

Species Name: Botanical name of the species.

Common Name: Commonly used English name.

DBH (cm): Diameter at Breast Height measured using DBH tape or tree caliper.

Crown Reserve (m): Average measurement of the diameter or width of the dripline (extent of branches from the trunk). Generally the trunk is trunk is the midpoint of this measurement. It is represented on the drawing(s) as a circle. This measurement may not be used in the subject jurisdiction.

TPZ (m): Tree protection zone required based on the required setback from the trunk, as designated by the agency (e.g. municipality). The TPZ is calculated by doubling the setback and including the trunk diameter to create a diameter of circle of protection around the tree.

HT (m): Estimated height from the base to the top of the tree.

Condition (G, F, P, D): A qualitative score of the combination of biological health and structural condition assigned as Good, Fair, Poor or Dead.

Preserve or Remove Reason: Reasons for recommended preservation or removal assigned in the tree study. Reasons for recommended removal may result from:

- Existing condition (critical deficiency such as severe crown dieback)
- Anticipated impacts of the proposed development (i.e., tree location is in conflict with construction element)
- Both existing condition and anticipated impacts

A checkmark is provided in the appropriate column.

Description of Reason: Rationale for the assignment of preservation or removal rationale based on analysis of collected data and proposed development.

Transplant Potential (G,F,P): Assignment of qualitative measure of reestablishment success of a tree when removed from its existing location and moved to another or removed and stored for replanting following construction. An assignment of Good, Fair or Poor is assigned based on a species' ability to reestablish, condition of the tree, new growing conditions, etc.

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Appendix C

Limitation of Tree Studies

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Tree Studies: Limitations

This report, drawings and data (i.e., qualitative and quantitative measurements) are intended to inform the recipient and reviewer(s) of the report of the tree(s) condition at the time of the assessment. The assessment may be limited by the following constraints:

1. Access – tree is located offsite, or the onsite location is not reasonably accessed.
2. Weather – accumulated snow around the base or in branch attachments may obscure defects.
3. Season – biotic indications (e.g., foliage chlorosis or fungal fruiting bodies) are only obvious for a portion of the year.
4. Visual obstructions – Elements such as other trees' canopies can prevent the view of the entire tree.

The study is completed from the ground using a DBH tape or tree caliper. Non-invasive tools such as binoculars and a sounding hammer may be used to provide additional information about defects and characteristics. Excavation of the rootzone and other intensive analyses have not been completed unless stated.

It must be understood that trees may not manifest signs or symptoms (e.g., dieback) of some impacts (e.g., root compaction) immediately and so recent changes to the tree or its growing conditions prior to the assessment may not be apparent to the assessor. Also, changes to the tree condition resulting from damage, weather, infestations, defects, soil, decay, light, moisture, exposure, etc. may occur after the assessment.

No tree is without some level of risk, where a tree may fail and strike a target. Mitigation options, if provided, will not eliminate risk but are prescribed treatments to reduce risk based on the measured and assessed factors at the time of assessment, subject to site and assessment constraints.

Identification of the ownership of assessed trees (i.e., on-site or off-site) made in the report is based on the legal survey. The assessor of trees uses the point location of the tree provided on the survey and the limits of property to assign ownership in the report and associated materials.

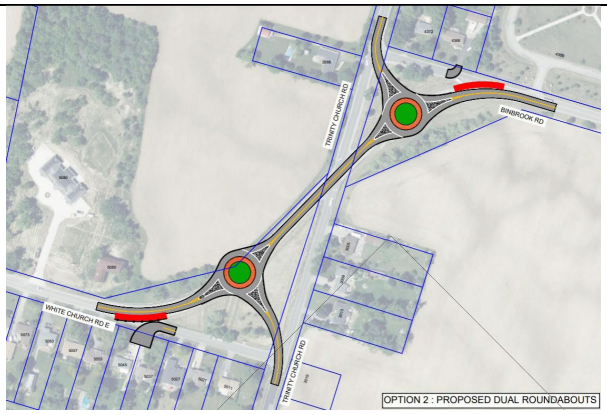
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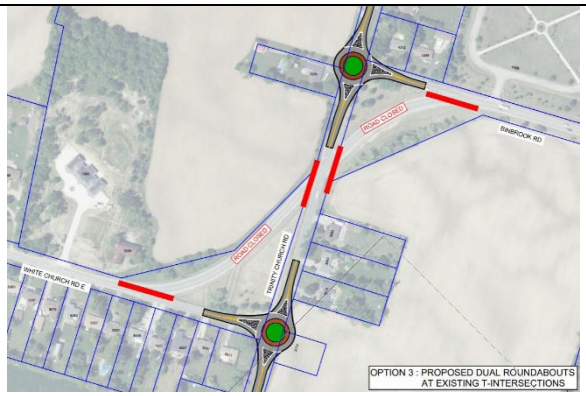
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Appendix D

Description of Intersection Alternatives

Alternative 1 This alternative involves the development of two roundabouts connected by a road.	
Alternative 2 This alternative involves the development of two signalized intersections connected by a road.	
Alternative 3 This alternative maintains the existing Trinity Church Road and involves the development of two signalized intersections.	
Alternative 4 This alternative involves the development of a peanut-shaped roundabout.	

Alternative 5 This alternative maintains the existing Trinity Church Road and involves the development of two roundabouts.	
Alternative 6 This alternative maintains the existing Trinity Church Road and involves the development of two stop-controlled intersections.	