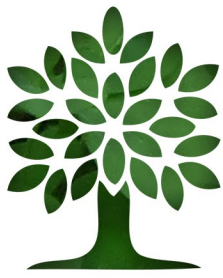


DRAFT August 2017



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CONSERVATION MASTER PLAN PHASE II

Medway Valley Heritage
Forest ESA (South)

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Acknowledgements

This Conservation Master Plan begins by acknowledging that the lands designated the Medway Valley Heritage Forest Environmentally Significant Area (ESA) is on aboriginal land that has been inhabited by Indigenous peoples from the beginning. As settlers, we're grateful for the opportunity to protect the ESA and we thank all the generations of people who have taken care of this land - for thousands of years.

Long before today, there have been aboriginal peoples who have been the stewards of this place. In particular, the traditional territory of the Anishinaabeg, Haudenosaunee, Attawandaron (Neutral), and Wendat peoples is acknowledged.

Dedicated individuals contributed many hours to the preparation of the Medway Valley Heritage Forest Environmentally Significant Area (south) Conservation Master Plan for the period of 2018-2028. These people build on the legacy of Dr. Jane Bowles, Professor at Western University, Department of Biology, who initiated the natural heritage studies of Medway Valley in the 1980's.

Local Advisory Committee

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Dan Jones	Upper Thames River Conservation Authority (UTRCA)
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Elgin Austen	MVHF ESA Adopt an ESA: Friends of Medway Creek
Sandy Levin	MVHF ESA Adopt an ESA: Sherwood Forest / Orchard Park RPA
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Introduction

In the City of London (the “City”), Environmentally Significant Areas, referred to as “ESAs”, are considered the largest, highest quality areas within the City’s Natural Heritage System. Preserving the ecological integrity and ecosystem health of these features is the first priority. ESAs exist within both agricultural and urban settings and include complexes of wetlands, forests, meadows, river corridors, valleylands and significant wildlife habitat.

From the London Plan, “Environmentally Significant Areas contain natural features and perform ecological functions that warrant their retention in a natural state.” ESAs are identified and delineated through the application of the City Council approved Guideline Documents for Environmentally Significant Areas Identification, Evaluation, and Boundary Delineation and provincial guidelines.

The Medway Valley Heritage Forest ESA meets all seven of the ESA criteria in the London Plan (Table 1). The priority for this ESA is to protect its ecological integrity and maintain all seven of these criteria.

Table 1: Criteria that Designate Medway Valley Heritage Forest as an ESA

Criteria	Description (From 1371 of the London Plan)
i	<p><i>The area contains unusual landforms and/or rare to uncommon natural communities within the country, province or London sub-watershed region.</i></p> <p>The Medway Valley is a significant geological landform feature instrumental in the formation of the City’s landscape. The Arva Moraine stretches across the northwest section of the City. The moraine was deposited by two glaciers, one moving north from Lake Erie, the other south from Lake Huron that pushed against each other 10,000 to 20,000 years ago. The Medway Creek and valley was formed when glacial melt-water cut through the Arva Moraine. The area of most significant erosion and valley formation from this breach is known locally as Dead Horse Canyon. Here, the Medway Creek flows through a relatively narrow, 0.3 to 0.5 km wide valley with steep, eroded river banks or slip faces up to 25 metres in height that reveal horizontal layers of sediments. Sands and gravels washed out of the till by moving water were deposited along the spillway. Several small tributary streams feed the river through these steep-sided ravines.</p> <p>The study area is situated on a post-glacial spillway adjacent to the Arva moraine, at the site of some of the most complex Pleistocene icesheet interactions in southern Ontario. A series of glacial tills are exposed by erosion activities of the Medway River. These exposures are the finest in the London area and the only known outcrops in southern Ontario displaying the interfingering strata left by the Erie and Huron ice lobes and the periodic local proglacial lakes (Winder, pers. corr.). The study area is located close to - Western University and natural creek and river processes are well studied.</p>
ii	<p><i>The area contains high-quality natural landform-vegetation communities that are representative of typical pre-settlement conditions of the dominant physiographic units within the London sub-watershed region, and/or that have been classified as distinctive in the Province of Ontario.</i></p> <p>The MVHF ESA lies near the limit of the Mixed Deciduous Forest Region and the Great Lakes – St. Lawrence Forest Region of Rowe (1972) in the Carolinian Zone in Canada. The vegetation here is characterized by deciduous floodplain forests, swamps, thickets, marshes, meadows and forested ravine and valley slopes. The steep-sided wooded ravines have microclimates cooler than normal,</p>

Criteria	Description (From 1371 of the London Plan)
	<p>while the open floodplain habitats in sheltered valleys and slopes of southern exposure tend to have warmer than normal microclimate. Bottomland communities including second growth forest, wet meadows, Black Walnut (<i>Juglans nigra</i>) savannahs, mown grassland and successional scrub cover most of the study area. Wooded river bluffs, ravines and slip face slopes fringe the valley. Upland communities are poorly represented.</p> <p>The Medway Valley Heritage Forest is moderately rich in habitat diversity at least in the bottomland and floodplain communities. Some community types within the study area are significant in themselves. Walnut savannahs, of which there are several examples, are a community type strictly limited to the natural range of Black Walnut (<i>Juglans nigra</i>) in southern Ontario. An open wet meadow in the centre of the site is unique in the Medway Valley Heritage Forest and therefore locally significant. Communities in which trees of great size or age occur are also important and so are well developed examples of representative community types.</p> <p>While the MVHF ESA does contain a high number of non-native species and some disturbance (e.g. light litter, utility corridor, lack of organic layer), communities associated with the southern and northern sections of the ESA do contain high quality natural vegetation communities' representative of pre-settlement conditions. Upland communities in the north (mature Sugar Maple-Beech Forest and Sugar Maple Forest) contain high concentrations of Twinleaf (<i>Jeffersonia diphylla</i>) and Harbinger-of-Spring (<i>Erigenia bulbosa</i>), two species with very high Co-efficient of Conservation values (CC). High CC values can be an indicator of high quality habitat since species with an 8 – 10 typically occur in undisturbed or pre-settlement remnants. Twinleaf has a CC value of 10 while Harbinger-of-Spring has a value of 9, indicating that these two species typically occur in almost undisturbed habitat, such as pre-settlement remnants.</p> <p>The bottomlands or floodplain habitat of the southern ESA contain high densities of Sycamore (<i>Platanus occidentalis</i>) trees a species with a high CC value (8). This indicates that the habitats in which Sycamore are found within the ESA are of a high quality. In total, 31 flora species with a CC value of 8 or higher are documented within the ESA.</p>
iii	<p><i>The area, due to its large size, generally more than 40 hectares, provides habitat for species intolerant of disturbance or for species that require extensive blocks of suitable habitat.</i></p> <p>The size of the study area is approximately 119 ha. This is more than twice as large as the size criterion suggested by Hilts and Cook (1982) for a Significant Natural Area. In addition, the upstream and downstream boundaries of the study site are quite arbitrary and the site itself represents only a portion of the entire Medway Valley system. North of Fanshawe Park Road the size of the Medway Valley is an additional >100 ha. The entire area supports species that require large blocks of suitable habitat.</p> <p>While the area of the ESA (both north and south) is still a large contiguous block, the woodland in the north has been fragmented by the recent placement of a utility corridor resulting in a reduction of interior forest habitat and the separation of woodland communities due to a gap of 20 m or greater. This has resulted in less interior forest habitat within the ESA. It is expected that this fragmentation is temporary as restoration efforts are starting to fill in the gap(s) created by the corridor. Once the forest edge is restored, the utility corridor gap(s) should be < 20 m and the woodland would again be considered continuous. The ESA continues to support forest interior breeding birds such as Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>) and a number of interior migrant species during the spring and fall periods.</p>

Criteria	Description (From 1371 of the London Plan)
iv	<p><i>The area, due to its hydrologic characteristics, contributes significantly to the healthy maintenance (quality or quantity) of a natural system beyond its boundaries.</i></p> <p>The Medway Creek is the largest tributary of the Thames River. The Medway Creek and associated floodplain contributes to water resources functions including conveyance of flows, water quality improvement, groundwater recharge and discharge or seepage zones</p>
v	<p><i>The area has a high biodiversity of biological communities and/or associated plant and animal species within the context of the London sub-watershed region.</i></p> <p>The MVHF has a high diversity of plant species. Sixteen community types in six distinct landform vegetation units are recognised in the study area. These range from cultural habitats (e.g. meadow, plantation, thicket) to natural communities such as deciduous forest, wetlands and treed bluffs. The biodiversity of the MVHF is very high with 564 flora species documented during a 2013 botanical study.</p>
vi	<p><i>The area serves an important wildlife habitat or linkage function.</i></p> <p>The preliminary lists of animal and plant species in the study area indicate good diversity of flora, birds, and fish. The number of different habitats available is high, especially considering how near the site is to an urban area. Diversity of habitat, including some wooded areas with unusually large trees, open floodplain meadows and hawthorn scrub presents a good mixture of feeding and breeding sites for a variety of species. An additional feature of the area is its function as a wildlife corridor; that is, it connects, and is connected to, other wildlife areas including those in the Thames River valley. A dense population of Red-backed Salamanders were found in the wooded areas of Fox Hollow and Dead Horse Canyon (Bowles, 1986). The subwatershed studies (MMM, 1995) includes a list of 34 fish species sampled from the management unit in the Medway Creek subwatershed downstream of the Arva dam. The valley provides important aquatic habitat as well as terrestrial wildlife habitat, beaver impoundments, waterfowl staging areas, travel corridors and linkages to other natural areas. The MVHF is also an important stop for migratory bird species. During bird surveys (Dillon, 2013), approximately 26 species were documented as migrating through the ESA during the spring and fall periods. This doesn't include those species that were already using the ESA as breeding habitat.</p>
vii	<p><i>The area provides significant habitat for rare, threatened or endangered indigenous species of plants or animals that are rare within the country, province or county.</i></p> <p>The MVHF contains many historical occurrences for provincially and federally rare species including three freshwater mussels on Schedule 1 of SARA. (Wavy-rayed Lampmussel (<i>Lampsilis fasciola</i>), Kidneyshell (<i>Ptychobranthus fasciolaris</i>)).</p> <p>A number of provincially significant indigenous flora species such as Species at Risk like the <i>Endangered</i> Butternut (<i>Juglans cinerea</i>), <i>Threatened</i> False-rue Anemone (<i>Enemion biternatum</i>) and <i>Special Concern</i> Green Dragon (<i>Arisaema dracontium</i>) have been documented within the ESA. The MVHF also contains a number of flora Species of Conservation Concern (8). Most of the occurrences are only of one or a few individuals such as Shrubby St. John's Wort (<i>Hypericum prolificum</i>), American Gromwell (<i>Lithospermum latifolium</i>), and Slender Satin Grass (<i>Muhlenbergia tenuiflora</i> var. <i>tenuiflora</i>). Species with larger populations and can be considered ubiquitous throughout the MVHF includes Striped Cream Violet (<i>Viola striata</i>).</p> <p>Three provincially rare fish, the Black Redhorse (<i>Moxostoma duquesnei</i>), the Silver Shiner (<i>Notropis</i></p>

Criteria	Description (From 1371 of the London Plan)
	<p><i>photogenis</i>) and the Greater Redhorse (<i>Moxostoma valenciennesi</i>) are found in the Medway Creek.</p> <p>Records for provincially significant reptiles includes two <i>Special Concern species</i>, Common Snapping Turtle (<i>Chelydra serpentina</i>) and Eastern Milksnake (<i>Lampropeltis triangulum</i>), and a recent (2013) confirmation of endangered Queensnake (<i>Regina septemvittata</i>) in the Medway Creek above its confluence with the Thames River, below Corley Drive near the Elsie Perrin Williams Estate.</p> <p>A number of Regionally Rare flora species (status according to <i>Distribution of and Status of the Vascular Plants of Southwestern Ontario</i>; Oldham, 1993) were also documented within the MVHF. Those not listed as Species at Risk or Species of Conservation Concern include Arrow-leaved Tearthumb (<i>Polygonum sagittatum</i>), One-flowered Cancer Root (<i>Orobancha uniflora</i>), Azure Aster (<i>Aster oolentangiensis</i>), Fanleaf Hawthorn (<i>Crataegus flabellata</i>), Rough Hedge-nettle (<i>Stachys hispida</i>), Stout Blue-eyed Grass (<i>Sisyrinchium angustifolium</i>), Sweet Ox-eye (<i>Heliopsis helianthoides</i>), Large-leaved Pondweed (<i>Potamogeton amplifolius</i>), Pasture Rose (<i>Rosa Carolina</i>), Barren Strawberry (<i>Waldsteinia fragarioides</i>), Wild Leek (<i>Allium tricoccum</i>), Water Shield (<i>Brasenia schreberi</i>), Long-leaved Pondweed (<i>Potamogeton nodosus</i>), Hair Rock Cress (<i>Arabis hirsuta</i> var. <i>pyncocarpa</i>), and Downy Willow-herb (<i>Epilobium strictum</i>).</p>

While ESAs are protected by their inclusion in the Green Space Place Type under the London Plan, additional measures to provide for their protection, management and utilization are considered necessary.

Following the Natural Heritage Inventory and Evaluation Report for the MVHF ESA (Dillon 2015), Phase II of the Conservation Master Plan (CMP) was initiated by City Council in February 2017 (see Section 1.1.2). Once adopted by Council, the CMP is to function as the guideline document for the purposes of providing direction on the management of the ESA. The preparation of a CMP follows the process outlined in the City's *Guidelines for Management Zones and Trails in Environmentally Significant Areas*, hereafter referred to as "the Guidelines" (2016).

The CMP process is to be undertaken in two phases, with community engagement and participation being a substantial component of each phase. Phase one (I) of the CMP provides a life science inventory and evaluation along with boundary delineation/refinement, application of management zones, review of existing trails, and identification of management issues. Phase two (II) of the CMP determines goals, objectives, recommendations for the future management of the ESA. This is done by identifying opportunities for ecological protection, enhancement, and restoration in the ESA, as well as providing an overview of trail planning and design in response to consultation and according to the Guidelines. The recommendations are then organized into priorities for implementation.

The focus of Phase II for the CMP is on the MVHF ESA lands south of Fanshawe Park Road West, known as the MVHF ESA (south) (see Figure 1). It does not include areas of the MVHF ESA (south) that are identified as part of Huron College or Western University (identified as University and College Properties on Figure 1). All subsequent references to the MVHF ESA in this CMP document therefore apply only to this southern part of the ESA, unless otherwise stated.

Trail Master Planning Studies were undertaken separately for the lands north of Fanshawe Park Road West which is referred to as the MVHF ESA (north). City Council approved the Master Trail Plan (2013) derived from those studies for the MVHF ESA (north) and the plan is now being implemented.

1.1 Cultural Heritage of the Medway Valley Heritage Forest ESA

As noted under the Parks Canada administered, [Canadian Register of Historic Places](#) (CRHP), the MVHF has evidence of human occupation dating back to the sixteenth century. A pre-contact Neutral Iroquoian village, known as the Lawson Site, is situated on a plateau overlooking the confluence of the Medway River and Snake Creek. The Lawson Site is located on the south portion of the property that is also the location for the Museum of Ontario Archaeology. Excavations have recovered over 300,000 artifacts and the remains of at least 19 longhouses, 30 middens, and a palisade along the northern half of the site. Evidence suggests that, at the height of occupation, the village was home to over 2,000 people. It is believed that this area may have served as a major regional centre for other Neutral populations during this period (Parks Canada, 2017).

European settlement in the 19th and 20th centuries resulted in the widespread clearing of forest and establishment of agriculture in the valley with very few pockets of original forest left standing. Based on interpretation of available aerial photographs from the early 1940s to mid-1950s (see *Appendix A*), small pockets of remaining forest appear to be generally situated in the area known as Snake Creek Valley and around the area where the Metamora staircase is currently located.

After 1945, the cultivated lands in the valley were generally retired from farming uses and allowed to re-naturalize. Portions of the valley remained cultural, with areas such as the Elsie Perrin Williams Estate consisting of manicured park-like settings that once included a golf course. The Elsie Perrin Williams Estate became the property of the City in 1979 and large sections have since undergone naturalization. The MVHF ESA also contains a main trunk sewer line that was installed in the late 1970s, as well as several other underground and aboveground utility lines (e.g. watermains, sewers, electrical transmission) which are identified with a Utility Overlay on Figure 1 (UTRCA, 2009).

1.1.1 Purpose of the Conservation Master Plan for the MVHF ESA (south)

Being one of the first five ESAs to be identified as an ESA within the City, the MVHF ESA has been the subject and/or a major focus for a number of previous reports and studies. This includes, but is not limited to:

- Natural Heritage Inventory and Evaluation Medway Valley Heritage Forest ESA (January 2015) prepared by Dillon Consulting Limited.
- Addendum (November 2016) to the Medway Valley Heritage Forest ESA Natural Heritage Inventory and Evaluation, prepared by Dillon Consulting Limited.
- Medway Valley Heritage Forest North ESA Trail Master Planning Study (2013) prepared by Environmental and Parks Planning and Stantec Inc.
- Medway Valley North Pathway/Trail Master Plan and Open Space Management Strategy - North South Pathway/Trail Connections (2007) prepared by Stantec Inc.
- Medway Valley Heritage Forest Site Planning Study (1996) prepared by IMC Consulting Group.

- City of London Subwatershed Studies (1995) Group One Subwatersheds: Medway, Stanton, and Mud Creeks prepared by Marshall Macklin Monaghan Limited.
- Medway Valley Heritage Forest Conservation Master Plan (1989) developed by the London Public Utilities Commission and UTRCA.

Under direction from City Council in 2011, an update of the 1995 Medway Creek Subwatershed Study was undertaken. The primary focus of this update was on the MVHF ESA. The study, known as the Medway Creek Subwatershed Study Update (MCSSU), was in relation to water resources components including an evaluation of slope stability with the City's boundaries under the Climate Change conditions using the Upper Bound scenarios that would assess the impacts of these scenarios on the City's infrastructure in order to recommend mitigation strategies that will lead to the development of Climate Change Adaptation Policies.

With the MCSUU underway, City Council requested in 2013 that the MVHF Conservation Master Plan (1989) and Site Planning Study (1996) be reviewed and updated to incorporate more current natural heritage life science inventory data. This review and update began with Phase I in 2013; the results are presented in the *Natural Heritage Inventory and Evaluation Medway Valley Heritage Forest ESA*, January 2015 by Dillon and the accompanying *Addendum (November 2016) to the Medway Valley Heritage Forest ESA Natural Heritage Inventory and Evaluation*, January 2015 by Dillon. The Phase I findings are outlined in Section 2.0. Phase I was approved by City Council and Phase II initiated on February 14, 2017.

As outlined previously, Phase II of a CMP builds upon the findings from Phase I. This Phase II of the CMP for the MVHF ESA (south) is to outline the goal and key management strategies (objectives and recommendations) developed through consultation with the Local Advisory Committee (LAC) formed for this CMP, the City and the public. As part of the identifying key management strategies, the historical reports identified earlier were reviewed, including the MCSSU from 2013 (still under development by the City and Dillon). Where possible, the findings on slope stability in the valley and the anticipated changes in stream morphology over time can be incorporated into management recommendations presented in this CMP.

The MVHF ESA (south) CMP is intended to cover a ten-year management timeframe (i.e. 2018-2028). However, as this is a dynamic natural heritage feature, there is potential for unforeseen events to occur (e.g. extreme weather events such as flooding) where updates to the CMP may be required following the process in the Guidelines. This document should be considered a "living" document, as adaptive management may be required in order to address threats and opportunities identified either during on-going monitoring as outlined in this CMP, or through one-time events.

This CMP for the MVHF ESA (south) is organized into the following sections:

- Section 1 – Introduction
- Section 2 – Phase I – Summary of Findings
- Section 3 – Environmental Management Strategy
- Section 4 – Trail Strategy
- Section 5 – Adaptive Management and Monitoring Framework
- Section 6 – Continued Community Engagement

1.1.2 CMP Planning Process for the MVHF ESA (south)

As outlined in previous sections, a CMP is composed of two Phases which follow a process as outlined under Section 2.2 of the City's *Guideline for Management Zones and Trails in ESAs* (May 2016). A summary of the steps in the CMP planning process for the MVHF ESA (south) is provided in Table 2.

Table 2: Outline of Steps Taken in the MVHF ESA (south) CMP Process

Date	Conservation Master Plan Process
Phase I	
February 21, 2013	Phase 1 CMP Draft Terms of Reference circulated to EEPAC
March 8, 2013	Conservation Master Plan (CMP) – Phase 1 launched
March – September 2013	Ecological Data Collection
July 25, 2013	Community Open House #1 for Phase I CMP <ul style="list-style-type: none"> • Explanation of CMP process • Overview of studies being completed and initial findings to date • Collection of community input
October 2013 - January 2015	Report Writing – final Phase 1 report released January 2015
January 15, 2014	First Draft Phase 1 CMP Presented and Circulated to EEPAC
January 27, 2014	Community Open House #2 for Phase I <ul style="list-style-type: none"> • Overview of Phase I CMP results <p style="text-align: center;">Opportunity for feedback on Phase I CMP</p>
December 11, 2014	Second Draft of Phase 1 report presented and circulated to EEPAC with responses to EEPAC and Nature London comments
April 16, 2015	Responses to EEPAC's Second Round of Comments and Presentation of Final Phase I CMP to EEPAC
October 2015	Council directed staff to update the Planning and Design Standards for Trails in ESAs (2012)
May 2016	Council approved the Guidelines for Management Zones and Trails in ESAs (2016)
November 2016	Addendum to Final Phase I CMP (January 2015) report based on the new <i>Guideline for Management Zones and Trails in ESAs</i> (May 2016) circulated to EEPAC and Trails Focus Group
February 14, 2017	Council approval of Phase I Report and Addendum
Phase II	
February 14, 2017	Phase II of the Conservation Master Plan initiated by City Council
March 8, 2017	Invitations sent to Local Advisory Committee (LAC) stakeholders
March 2017	Formation of the LAC / Roles for the Medway VHF ESA CMP Process circulated to LAC/EEPAC/ACCAC
April to October 2017	Development of a ToR for the LAC (see <i>Appendix B</i>) which also outlines the five LAC meetings held throughout Phase II. <ul style="list-style-type: none"> • April 27 - Meeting 1 – Introduction of CMP • May 4 - Meeting 2 – Consultation and Engagement

Date	Conservation Master Plan Process
	<ul style="list-style-type: none"> July 27 - Meeting 3 – Public Engagement Results September 7¹ - Meeting 4 – Review of Draft CMP October 5¹ - Meeting 5 – Endorsement of Final CMP <p>Minutes of the five meetings for the LAC are included in <i>Appendix B</i> (minutes from meeting 4 and meeting 5 will be included in the final CMP).</p>
May 12, 2017	Notice of CMP Community Open House Circulated
May 25, 2017	CMP Update to Sherwood Forest/Orchard Park Ratepayers Group at their Annual General Meeting
June 1, 2017	Community Open House #1 <ul style="list-style-type: none"> Overview of Phase I results Explanation of the Phase II process Opportunity for feedback
June 1 to June 30, 2017	Web survey and interactive mapping tool open for public input and feedback
August 22, 2017	First draft CMP distributed to ACCAC, EEPAC, LAC, for review and comment
August 24, 2017 ¹	Draft CMP presented to ACCAC and EEPAC for comment
October 3, 2017 ¹	Second draft CMP distributed to ACCAC, EEPAC, LAC, for review and comment
October 18, 2017 ¹	Community Open House #2 <ul style="list-style-type: none"> Overview of the Phase II outcomes
October 25, 2017 ¹	Final draft CMP distributed
November 2017 ¹	Presentation of final CMP to Planning and Environment Committee

In addition to the natural heritage inventory undertaken as part of Phase I, another key component of the CMP is community consultation and participation. The first of two Community Open Houses was held on June 1, 2017 for Phase II of the MVHF ESA (south) CMP. This well attended open house was also the kick-off for a month long (June 1 to July 1) public engagement period where community members were encouraged to provide feedback on “Ideas, Issues, Opportunities, and Observations”.

¹Indicates a future date that is subject to change as the draft CMP is reviewed.

The feedback received helped to guide the following:

- Ecological Protection, Enhancement & Restoration
- Trail Planning & Design Process
- Priorities for Implementation
- Final Conservation Master Plan
 - This feedback was obtained through the use of hard copy surveys, comment cards, an online survey and mapping tool (
 - The remaining feedback from the public and members of the LAC were generally in the form of comments which were categorized into topics and grouped according to the comment. The comments received were compiled and a Frequently Asked Questions (FAQ) summary will be included in the final version of this CMP. Responses to comments will be provided in the FAQ, including references to which section of this CMP addresses or aligns with the comment (where applicable).

1.2 Vision for the MVHF ESA (south) CMP

1.2.1 Goal

Developed in consultation with the LAC, the goal of this CMP for the MVHF ESA (south) is as follows:

To develop a comprehensive multi-year Conservation Master Plan that presents recommendations for achieving long-term ecological integrity and protection of the ESA through the implementation of an environmental management strategy.

1.2.2 Guiding Principles

The decisions made regarding the future of the MVHF ESA (south) will centre on the following policies from Section 2.1 in the Guidelines (May 2016):

- Natural features and ecological functions for which the ESA has been identified shall be protected.
- The ecological integrity and ecosystem health of the ESA shall have priority in any use or design-related decision.
- A properly designed and implemented trail system appropriate to specific management zones and reflecting sensitivity of the natural features will be implemented to achieve the primary objective of protection and the secondary objective of providing suitable recreational and educational opportunities.
- The community will be engaged in natural areas protection and the trail planning process to build awareness, foster education, and encourage participation in order to increase the capacity for

creating a conservation culture that promotes natural areas as a common good and conservation as a collective responsibility.

- Enjoyable, safe, accessible trails for recreation appropriate in an ESA and learning environment will be permitted in accordance with any/all recognized accessibility legislation (such as the Accessibility for Ontarians with Disabilities Act, 2005 (AODA), best practices and the above principles.

1.2.3 Objectives

The objectives for this CMP are summarized below:

1. To review the environmental management strategy recommendations in the Phase I study entitled: *Natural Heritage Inventory and Evaluation Medway Valley Heritage Forest ESA*, January 2015 by Dillon Consulting Limited. This includes:
 - a) **Restoration:** Prepare a restoration/enhancement strategy and priorities for implementing restoration activities. This is to include an emphasis on invasive species management as a biggest threat to the ESA.
 - b) **Naturalization:** Prepare a strategy and priorities for implementing naturalization projects within or adjacent to the ESA to protect ecological integrity.
 - c) **Wildlife Habitat:** Identify a sustainable monitoring and adaptive management program for the benefit of key wildlife habitat areas within the ESA, including Species at Risk habitat.
 - d) **Education and Stewardship:** Create a strategy that encourages stewardship and awareness of the ESA through education and continued community engagement.
2. Delineate a sustainable trail system in consultation with the public and the LAC. The trail system is to provide for appropriate public use that complies with and follows the process in the City's *Guideline for Management Zones and Trails in ESAs* (May 2016).
3. Establish a sustainable adaptive management and monitoring program based on "reference conditions" (state of health) from Phase 1 to which system form and function can be compared over time and where regular reporting on monitoring results can be used to identify significant a departure from baseline conditions. The program should include conditions that would trigger follow-up management actions.
4. Develop a continued community engagement plan to increase awareness and education of the ESA and to foster a sense of stewardship among ESA users.

1.2.4 Implementation Plan

For the four objectives listed in Section 1.2.3, timelines for implementation of specific actions or management recommendations over a 10 year period (2018-2028) has been provided, where applicable. The implementation plan for recommended management actions identifies the priority for action, the agency leading the action, sources for funding the management action as well as direction in regard to measures of success for each management action and an approximate cost.

The UTRCA will be consulted in the development of detailed management plans and prior to implementation as some activities may require approvals pursuant to the *Conservation Authorities Act*.

In addition, it should be recognized that additional site-specific studies and design work may be required to implement some of the activities that are beyond the scope of the CMP. Examples of this would be, archaeological studies, geotechnical studies, preliminary and detailed engineering designs, etc.

A Local Implementation Committee (LIC) will be formed to assist with the implementation the CMP. Members may include local Adopt an ESA members, ACCAC members, community members and members of the LAC.

1.2.4.1 Priority Setting

The priorities for management actions have been set according to perceived urgency, logical progression, and current knowledge on the availability of resources. Based on these criteria, the recommendations are grouped into the five priority time periods, as presented in Table 3:

Table 3: Criteria Used to Assign Priorities for Restoration Overlay Areas

Priority for Implementation	Time Period for Implementation
Top	Start within one year, including items already underway
High	Start within two years
Moderate	Start within three years
Low	Start within four years up to ten years
Long Range	Projects without specified time frames – may occur beyond ten years

Specific strategies for activities related to restoration and naturalization may have additional criteria for determining the priority for implementation. These criteria will be outlined in the relevant sections, as applicable.

1.2.4.2 Lead Agency

Along with priorities for implementation, the agency identified to lead the implementation of a management action is also noted. These include the following:

- *City of London.* This refers to the Environmental and Parks Planning staff (the lead agency funding and managing the Phase II CMP process).
- *ESA Management Committee.* The ESA Management Committee includes City of London Environmental and Parks Planning staff, and UTRCA.
- *ESA Management Team.* The City funded ESA Management Team is based out of the UTRCA and is responsible for day-to-day operations including ecological restoration, monitoring, education and enforcement in publicly owned ESAs.

1.2.4.3 Funding Sources

Potential sources of funding for implementation for specific actions or management recommendations may include the following:

- *City ESA Operating Budget* – The City funds the ESA Management Team annually under a contract.
- *City ESA Capital Budget* – The City funds capital projects in ESAs, over-and-above the annual City ESA Operating Budget.
- *Other sources of funding* – Examples include fundraising through grants and other means by local Adopt-An-ESA groups and Community Associations.

1.2.4.4 Estimated Cost

While the exact cost for each management action is dependent on a number of factors, including additional studies and/or permits/approvals that may be required, a broad estimate for cost has been applied to the specific actions or management recommendations. The estimated costs for each action or recommendation are assumed to encompass the 10 year management period and are based on the following criteria listed in Table 4 below:

Table 4: Estimated Costs for Environmental Management Strategy Actions

Approximate Dollar Value	Estimated Cost
>\$100,000	High
\$20,000 to \$100,000	Medium
<\$20,000	Low

Phase I – Summary of Findings

Dillon was retained by the City in 2013 to complete the *Natural Heritage Inventory and Evaluation* for the MVHF ESA. The Study Area focused primarily on public lands within the MVHF ESA (south). Some supplementary work was completed for the section of the MVHF ESA between Fanshawe Park Road West and Sunningdale Road West (MVHF ESA north) to update previous studies.

To achieve the objectives in support of the *Natural Heritage Inventory and Evaluation* for the MVHF ESA, an Ecological Resources Inventory was undertaken as a critical first step. Beginning with a thorough background review for past information related to the MVHF ESA, this historical information was updated with a large number of surveys between April and September of 2013. These surveys followed both the City's *Data Collection Standard for Ecological Inventory* and other provincially and federally accepted protocols. The results of the inventory were presented by survey type under Section 2.0 of the Phase I report - *Natural Heritage Inventory and Evaluation Medway Valley Heritage Forest ESA* (Dillon 2015). The results of the Ecological Resources Inventory are summarized in this report under Section 2.1.

Using the updated inventory data, the boundary of the MVHF ESA was refined. Details of the refined boundary, including supporting rationale, are presented under Section 3.0 of the Phase I report. The results of the boundary refinements are summarized under Section 2.2 of this report.

Data collected during Phase I was then used to develop an initial Environmental Management Strategy which included delineation of Management Zones and identification of areas for restoration and naturalization. This initial Environmental Management Strategy was outlined under Section 5.0 of the Phase I report and was updated to identify the top and high priority restoration work implemented to date and the remaining priorities under Section 3.2 of this report.

To review the full Phase I report, including the methodologies used and results recorded for field studies, please refer to the [Natural Heritage Inventory and Evaluation Report](#) (Dillon 2015) posted on the City's website, together with the [Addendum](#) (Dillon 2016). As part of the Addendum, a review of trail compatibility with significant features was undertaken and the results are summarized in Section 2.3 of this report.

2.1 Ecological Resources Inventory

As part of the *Natural Heritage Inventory and Evaluation* (Dillon 2015) of the MVHF ESA, extensive flora and fauna surveys were conducted using accepted field inventory protocols. Table 5 below provides a summary of the results of the surveys and what significant ecological features were documented.

Table 5: Summary of Phase I Results

Survey Completed in Phase I	Summary of Results
Ecological Land Classification (Validation)	<ul style="list-style-type: none"> A total of 16 vegetation communities were documented
Wildlife Habitat Survey	<ul style="list-style-type: none"> Ten different types of habitat were identified of which, eight were identified as being significant: <ul style="list-style-type: none"> Colonially-Nesting Bird Breeding Habitat (Bank and Cliff) Seeps and Springs Amphibian Breeding Habitat Species of Conservation Concern: Striped Cream Violet Species of Conservation Concern: American Gromwell Species of Conservation Concern: Slender Satin Grass Species of Conservation Concern: Green Dragon Species of Conservation Concern: Shrubby St. John's Wort
Amphibian Breeding Survey Salamander Search	<ul style="list-style-type: none"> Four frog/toad species were observed; all of which are common to London Red-backed Salamander confirmed
Breeding Birds	<ul style="list-style-type: none"> During the breeding season, 55 species were observed and an additional 25 during the migration periods. Ten species (9 migrants, 1 breeding) had not been previously identified in the MVHF ESA
Flora	<ul style="list-style-type: none"> A total of 564 flora species were identified during the inventory with 151 (27%) of those not previously recorded in the MVHF ESA
Butterflies	<ul style="list-style-type: none"> 48 species of butterfly. 52% (25) were not previously documented
Dragonflies & Damselflies	<ul style="list-style-type: none"> 41 species of dragonflies/damselflies. 32% (13) were not previously documented
Mammals	<ul style="list-style-type: none"> 20 species were observed during the inventory and by the general public
Species at Risk	<ul style="list-style-type: none"> Threatened, Endangered under the Ontario <i>Endangered Species Act</i>, 2007 that were observed/documentated in the MVHF ESA include: <ul style="list-style-type: none"> False-rue Anemone (THR) Queensnake (END) Kentucky Coffee-tree (END) Cucumber Magnolia (END) Butternut (END) Spiny Softshell (THR) Three SAR bats were observed along the edge of the MVHF ESA and included: <ul style="list-style-type: none"> Little Brown Myotis (END) Northern Long-eared Myotis (END) Tri-coloured Bat (END) (listed as END since Phase I)

Note: END indicates a species is protected as an *Endangered* species under the Ontario *Endangered Species Act, 2007*. THR indicates a species is protected as a *Threatened* species. Note: due to the sensitive nature of these species, specific locations may not be presented on mapping.

2.2 Refinement of the Boundaries

The MVHF ESA boundary, as presented on Map 5 – Natural Heritage of the London Plan encompasses 175.4 hectares of public and private lands. Based on the results of the natural heritage surveys undertaken, the ESA boundary was refined based on interpretation of the City's *Guidelines for Assessing Ecological Boundaries of Vegetation Patches* (2007) and comments from EEPAC to be more representative of the ecological boundary. The refined boundary encompasses 181.2 hectares (see Figure 1), generally excludes residential building sites, cultural landscapes and storm-water management facilities from the ESA that were previously included. It further includes those areas of naturalized vegetation that had been previously excluded. This refined ESA boundary has been carried forward into Phase II.

2.3 Trail Compatibility Review

As part of the November 2016 addendum to the *Natural Heritage Inventory and Evaluation* (January 2015), the Management Zones were updated with the current Guidelines and significant ecological features in the MVHF ESA (south) were reviewed for compatibility with existing managed trails based on Table 1 of the City's *Guideline for Management Zones and Trails in ESAs* (May 2016). Through this review it was determined that the significant ecological features in the MVHF ESA (south) are compatible with existing managed trails.

Further review of the compatibility of existing managed trails with significant features is therefore not required during Phase II.

Environmental Management Strategy

As evident in the aerial photographs dating back to the early 1940's, very few areas of the MVHF ESA (south) have remained relatively untouched from disturbance and the majority of the ESA's current natural state is the result of former cultural lands undergoing secondary succession back to forest, meadow and wetland communities. With the transfer of large swathes of rural property to the City occurring in the late 1940s and early 1950s, the lands within the current MVHF ESA (south) were generally left vacant. Cultural open land uses such as cropland, hayland, pasture and manicured lawn would transform into meadow habitats as pioneer grasses, annual and perennial herbaceous species established. Over the decades, intermediate shrub and tree species from adjacent remnant woodland patches would have established in the meadows to form thickets and eventually the mid-age upland and lowland forests observed today.

Ecological succession is a natural process and can result in mature, diverse vegetation communities that serve to provide a function in the greater landscape. While succession of the MVHF ESA (south) was generally a natural and unmanaged process, it also occurred during a period when the surrounding tablelands underwent rapid urban development. This has resulted in the MVHF ESA (south) being surrounded by a heavily populated urban landscape which puts increasing demand on the ESA for access to nature and recreation use as well as contributing to other stressors. As the urban landscape developed around the MVHF ESA (south), the valleylands became a destination for recreation and eventually an informal network of trails was established, centred around the Medway Trail created in the 1960s which ran from Fanshawe Park Road West to Western University. Prior to the late 1980s, the MVHF and the trail system did not benefit from the level of management we see today and, as a result, impacts to the MVHF ESA (south) were identified in the 1989 CMP.

Since 2002 the City funded contract with the UTRCA has enhanced the protection of the ESA and includes:

1. Monitoring and enhancing the natural resource (including invasive species control and restoration)
2. Enforcing applicable provincial statutes, regulations, and municipal bylaws
3. Implementing risk management and encroachment reduction programs
4. Maintaining trail network
5. Coordinating educational programs, special events and community projects

The City is an identified leader among Ontario municipalities and other levels of government in demonstrating a proactive approach to the management and control of invasive species in protected natural areas including the MVHF ESA since 2007. The majority of restoration work identified in Phase I is already underway or completed. The three high priority restoration areas identified to protect Species at Risk were implemented in 2013-2017 and the City, Dillon and UTRCA were all recognized for their

innovative work, SAR habitat protection and contributions to the Federal Recovery Strategy for the False Rue-anemone (*Enemion biternatum*) in Canada, 2016 (Draft).

Despite these efforts, some impacts to the MVHF ESA (south) continue to be observed in 2017. These impacts are to be addressed through the development of an updated Environmental Management Strategy to protect the MVHF ESA (south) by providing strategies to implement action to continue to correct those impacts through restoration and naturalization as invasive species pose the biggest threat to the ecosystem health of the ESA. The Environmental Management Strategy provides recommendations for managing visitor related impacts following the Guidelines for sustainable trails, signs and other measures to protect the natural features and functions that characterize the MVHF ESA (south).

Information related to the delineation of a sustainable trail system following the Guidelines forms part of the overall Environmental Management Strategy. The trail strategy is included as Section 4.0 of this report.

By implementing the strategies outlined in the following sections that make up the Environmental Management Strategy, the ecological integrity of the MVHF ESA (south) is expected to continue to improve over the next 10 years. This will be reviewed and tracked over the ten year period of this CMP as per the monitoring recommendations provided in Section 5.0.

3.1 Managing Areas with a Utility Overlay

Due to ongoing access requirements associated with the 5.5 km of underground and aboveground utility infrastructure (hydro corridor, sewers & forcemain) located within the MVHF ESA (south), a Utility Overlay consisting of a 4 m wide corridor was established following the Guidelines over the various utility right-of-ways. Where restoration to the original ecological condition is possible, a Utility Overlay is not used; instead, the management zone is applied based on the targeted vegetation community (i.e. ELC) and overlaid with a Restoration Overlay.

The primary goal for a Utility Overlay is to protect the overall integrity of the ESA, and minimize impact of the utility site, corridor, infrastructure or facility while maintaining the ability for the City to access the utility for operational maintenance, as required by other approvals. The secondary goal depends on the circumstances of the specific ESA. Where maintenance access is required, trails should be located along the same route to minimize impacts to the surrounding ESA while achieving a social benefit by designing the trails to accommodate persons with disabilities wherever possible.

3.2 Restoration

As outlined in the City's Guidelines, Restoration Overlays (RO) "*are applied to identify areas where active management intervention is required to restore ecological integrity. Restoration may take the form of habitat creation, enhancement or restoration, control of nuisance wildlife, control of invasive species, prescribed burns and/or the creation or enhancement of habitat structures (nest boxes or platforms, amphibian breeding habitat, snake hibernacula, etc.). This objective is supported by the City's Official Plan.*" London's Humane Urban Wildlife Conflict Policy provides direction for wildlife and identifies that: "*The City is committed to upholding high standards of animal welfare, including the humane treatment*

of wildlife. The City will strive to not interfere with wildlife and their natural processes where possible; and will strive to implement proactive and preventative measures in order to promote coexistence, and to prevent potential conflicts where possible."

The fifteen RO presented during Phase I are areas identified within the MVHF ESA (south) that require active ecological restoration and/or special management. The majority of these RO areas require management of invasive species and three had the potential to threaten populations of Species at Risk and/or provincially rare species and have now been addressed. The City has taken a pro-active approach to dealing with invasive species and the protection of Species at Risk and provincially rare species and implemented on-going control efforts of invasive vegetation within the majority of the RO since identification of the priority issues in 2013. All the top and high priority RO identified to date have been addressed and/or are now under a monitoring program. Each RO area from Phase I has been reviewed and a restoration/enhancement strategy was developed as part of Phase II to include management actions and priorities for implementation.

Determination of the priority for implementation of the management actions for each RO was based on the criteria presented in Table 6.

Table 6: Criteria Used to Assign Priorities for Restoration Overlay Areas

Priority for Implementation	Criteria
Top	<p>If restoration of this area isn't undertaken there is potential for a Species at Risk and/or Species of Conservation Concern¹ to be immediately impacted and may result in the reduction in the species' population or extirpation from the MVHF ESA. This also includes active and on-going restoration efforts that are underway to protect Species at Risk and/or rare species.</p> <p>Note: All Top and High Priority Restoration Overlays identified in the Phase 1 CMP have been addressed and are now under a monitoring program. Based on this, these areas have been assigned a rating of Moderate*.</p>
High	<p>If restoration of this area isn't undertaken there is potential for a Species at Risk and/or Species of Conservation Concern¹ to be impacted and may result in the reduction in the species' population or extirpation from the MVHF ESA over time.</p> <p>Note: All Top and High Priority Restoration Overlays identified in the Phase 1 CMP have been addressed and are now under a monitoring program. Based on this, these areas have been assigned a rating of Moderate*.</p>
Moderate	<p>These may be areas at the beginning stages of degradation where restoration efforts would help to reverse those effects and return the area to a higher quality. These areas also include formerly top or high priority restoration areas which have already received initial or on-going control and/or monitoring is taking place and are identified as Moderate*.</p>
Low	<p>Area is already highly impacted and no Species at Risk or Significant Wildlife Habitat is under threat. Restoration can reasonably occur when other moderate and high priority areas are under control. Generally these areas contain dense patches of invasive vegetation but also may include open areas that could be filled-in with trees and shrubs to help form more a contiguous forest canopy.</p>

¹ Species of Conservation Concern is as defined by the MNRF in the Significant Wildlife Habitat Technical Guide (2000) and includes species provincially ranked as S1, S2 or S3, those species identified as *Special Concern* under the Ontario *Endangered Species Act, 2007*, or those species listed as *Threatened or Endangered* under the federal *Species at Risk Act*.

Strategies for the fifteen Restoration Overlays are summarized below in Table 7 and shown on Figure 2. Specific wildlife habitats and habitats for Species at Risk/Species of Conservation Concern are presented in finer detail with relation to the Restoration Overlays on Figures 2a, 2b and 2c.

Table 7: Restoration Strategy for the MVHF ESA (south)

Restoration Overlay Identifier	Approximate Area (ha)	Rationale and Goal(s) for Restoration	Management Actions for Restoration	Priority for Implementation	Measure(s) of Success	Lead Agency	Potential Funding	Estimated Cost
RO1	1.62	<p>Large patches of European Common Reed (<i>Phragmites australis</i> spp. <i>australis</i>) and Common Buckthorn (<i>Rhamnus cathartica</i>), two highly invasive species that tend to out-compete native flora and develop monoculture communities.</p> <p>The intent for restoration in this area is to control and/or eradicate the invasive vegetation and restore the area to deciduous forest.</p>	<ul style="list-style-type: none"> Continue implementation of current invasive species management plan following Provincial BMPs. On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). (ONGOING) Planting of native deciduous tree and shrub species similar to the adjacent deciduous forest and treed bluff vegetation communities. Further planting of trees would also help to mask the closed informal trail following the process in the Guidelines. 	Moderate	European Common Reed and Common Buckthorn are either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.	ESA Mg Team	Capital and Operating Budget	Low
RO2	2.49	<p>Large patches of European Common Reed and Common Buckthorn, two highly invasive species that tend to out-compete native flora and develop monoculture communities.</p> <p>The intent for restoration in this area is to control and/or eradicate the invasive vegetation and restore the area to deciduous forest.</p>	<ul style="list-style-type: none"> Continue implementation of current invasive species management plan following Provincial BMP. Control of European Common Reed and Buckthorn has been a priority in ESAs and control of the species has been occurring since 2013. On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). (ONGOING) Planting of native deciduous tree and shrub species similar to the adjacent deciduous forest and treed bluff vegetation communities 	Moderate	<p>European Common Reed and Common Buckthorn are either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.</p> <p>Amphibian Breeding Habitat maintains criteria required for significance.</p>	ESA Mg Team	Capital and Operating Budget	Low
RO3	3.52	<p>Large patches of Common Buckthorn, a highly invasive species that tends to out-compete native flora and develops monoculture communities.</p> <p>The intent for restoration in this area is to control and/or eradicate the invasive vegetation and restore the area to deciduous forest.</p>	<ul style="list-style-type: none"> Implementation of invasive species management plan following Provincial BMP. On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). Planting of native deciduous tree and shrub species similar to the adjacent deciduous forest and treed bluff vegetation communities. Where restoration areas overlap utility overlay, plantings should be limited to grass/forb. 	Low	Common Buckthorn is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.	ESA Mg Team	Capital and Operating Budget	Medium

Restoration Overlay Identifier	Approximate Area (ha)	Rationale and Goal(s) for Restoration	Management Actions for Restoration	Priority for Implementation	Measure(s) of Success	Lead Agency	Potential Funding	Estimated Cost
RO4	0.99	<p>The sewer right-of-way is wider in some areas than the 4 m size requirement.</p> <p>This presents an opportunity to fill in these spots with deciduous trees and shrubs to help succeed the surrounding area into lowland deciduous forest. The corridor has received some ecological restoration in the form of tree planting along the edges and this would be additional efforts to fill-in the gaps.</p>	<ul style="list-style-type: none"> Planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest. On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). 	Low	The Utility Overlay consists of a 4 m wide open area with lowland forest right up to the edges, similar to Utility Overlay areas with older infrastructure.	ESA Mg Team	Operating Budget	Low
RO5	0.62	<p>The ground layer in this area was dominated by Goutweed (<i>Aegopodium podagraria</i>), a highly invasive species that tends to out-compete native flora and develops monoculture communities. The Goutweed was located around sub-populations of False Rue-anemone, a Species at Risk, and habitat for American Gromwell, a rare species, and threatened to overtake the species habitat (see Figure 2b for location of those habitats).</p> <p>This restoration was flagged as High Priority in Phase I as control of this invasive species was critical in maintaining the adjacent population of False Rue-anemone. The City initiated an invasive species management plan in May 2014 for this area and implemented control efforts for the Goutweed. Control and monitoring is on-going and the goal has been met in managing the Goutweed and protecting the False Rue-anemone.</p>	<ul style="list-style-type: none"> Development of an invasive species management plan (COMPLETE – Dillon, 2014) Registration with the Ministry of Natural Resources and Forestry under Section 23.17 (Species Protection or Recovery Activities) of <i>Ontario Regulation 242/08</i> of the <i>Endangered Species Act</i>, 2007 prior to control efforts (COMPLETE – Dillon, 2014). Once invasive species are under control, the area can then undergo active ecological restoration (ONGOING) Shade tolerant wildflower seed mixes and wildflower plugs were planted/seeded in mid- to late fall of 2015. (COMPLETE) On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). (ONGOING) 	Moderate* (Formerly Top; see Table 6)	<p>Goutweed is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.</p> <p>False Rue-anemone is observed to be maintaining the sub-populations and/or expanding.</p> <p>*2016/2017 monitoring of control efforts indicate the Goutweed is under control and some sub-populations of False Rue-anemone are expanding. The results of monitoring have been documented in an annual monitoring record as required through the registration with the MNRF (Dillon - 2014, 2015, 2016 and 2017[In Process])</p>	ESA Mg Team	Capital and Operating Budget	Low*
RO6	5.06	<p>The ground layer for this area (Snake Creek Valley) is dominated by Woodland Sedge (<i>Carex sylvatica</i>), a highly invasive species that tends to out-compete native flora and develops monoculture communities. A dense ground layer can also reduce the success of natural tree regeneration by out-competing seedlings. This could further degrade the area as once larger mature trees die-back, there may be an absence of native trees and shrubs to replace those species giving opportunity for additional invasive species to establish (i.e.</p>	<ul style="list-style-type: none"> Development of an invasive species management plan. Once invasive species are under control, the area can then undergo active ecological restoration. Review of soil conditions may be required following eradication of invasive species and prior to ground layer restoration efforts. Planting of native deciduous tree and shrub species similar to the adjacent Snake Creek Valley. On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). 	Low	<p>Woodland Sedge is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.</p> <p>Continued persistence of Red-backed Salamander population.</p>	ESA Mg Team	Capital and Operating Budget	Medium

Restoration Overlay Identifier	Approximate Area (ha)	Rationale and Goal(s) for Restoration	Management Actions for Restoration	Priority for Implementation	Measure(s) of Success	Lead Agency	Potential Funding	Estimated Cost
		Common Buckthorn). The Snake Creek Valley is one of the few remaining older pockets of forest relatively untouched by clear-cutting in the past 70 years (based on aerial interpretation). The intent this restoration would be to restore the ground layer to a state where seedlings of the larger deciduous trees can establish without competition from non-native ground flora.						
RO7	0.72	The ground layer of this area is dominated by a large patch of non-native ephemeral Snowdrop (<i>Galanthus nivalis</i>) that has overtaken a large area. While this species isn't generally considered an invasive species the patch observed was quite dense and may be resulting in competition for native spring ephemeral species. The intent for restoration efforts is to remove or control the Snowdrop to a state where it is not the dominant ground species.	<ul style="list-style-type: none"> • Development of an invasive species management plan. • Planting of native deciduous tree and shrub species observed in the Snake Creek Valley may help to reduce non-native ground layer species. • On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). 	Low	Snowdrop is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the non-native flora in-check .	ESA Mg Team	Capital and Operating Budget	Low
RO8	3.47	Overlay has large patches of Common Buckthorn, a highly invasive species that tends to out-compete native flora and develops monoculture communities. The intent for restoration in this area is to control and/or eradicate the invasive vegetation and restore the area to deciduous forest.	<ul style="list-style-type: none"> • Implementation of invasive species management plan following Provincial BMP. • Planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest. • On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). 	Low	Common Buckthorn is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.	ESA Mg Team	Capital and Operating Budget	Medium

Restoration Overlay Identifier	Approximate Area (ha)	Rationale and Goal(s) for Restoration	Management Actions for Restoration	Priority for Implementation	Measure(s) of Success	Lead Agency	Potential Funding	Estimated Cost
RO9	0.77	<p>Overlay consists of a linear stand of native Eastern White Cedar (<i>Thuja occidentalis</i>) which has formed a monoculture. It is likely either a former plantation or hedgerow and due to the high density of cedar, hasn't reverted to a naturalized community.</p> <p>The intent of restoration for this area would be to reduce the monoculture of cedar and restore to a more mixed, hardwood forest for better integration with the surrounding vegetation communities.</p>	<ul style="list-style-type: none"> Thinning of the stand through select removal of cedars focusing on smaller, weaker specimens. Removals can also occur around areas where there may be existing gaps in the tree canopy that would facilitate establishment of hardwood seedlings. Creation of clearing and canopy gaps through removal of select pockets of cedars to mimic natural disturbances that would create gaps in the canopy. Gaps should be approximately 6-10 metres in diameter. Depending on whether there are hardwood seedlings already present, restoration efforts may also include supplementing natural regeneration with planting and/or seeding of hardwood tree species. 	Low	Biodiversity of the area is increased with 5 or more appropriate native tree species.	ESA Mg Team	Capital and Operating Budget	Low
RO10	1.40	<p>Overlay has large patches of Common Buckthorn, a highly invasive species that tends to out-compete native flora and develops monoculture communities. A population of Striped Cream Violet, a Provincially rare species, is located in the west end of this Restoration Overlay. The buckthorn isn't expected to greatly impact the population of violet but removal of this invasive species may improve the habitat (see Figure 2c for the location of the habitat).</p> <p>The intent for restoration in this area is to control and/or eradicate the invasive vegetation and restore the area to deciduous forest.</p> <p>Note: this restoration overlay is partially located on private property; permission would be required from the landowner prior to any activities on their property.</p>	<ul style="list-style-type: none"> Continue implementation of current invasive species management plan following Provincial BMP on City property. Planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest. (ONGOING) On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). (ONGOING) 	Moderate* (Formerly High; see Table 6)	Common Buckthorn is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.	ESA Mg Team	Capital / Operating Budget	Low
RO11	2.07	<p>This Overlay area contains a cultural meadow that is currently succeeding back into a forest community. Previous restoration efforts (i.e. plantings) have helped to accelerate the succession process.</p> <p>The intent of restoration efforts for this area would be to fill in the gaps of 20 m or greater between forest communities north, south and east of the cultural meadow would increase the amount of interior woodland within the MVHF ESA (south).</p>	<ul style="list-style-type: none"> Continued planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest. On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). (ONGOING) This Overlay includes several portions of Utility Overlay that should be taken into consideration when determining locations for restoration planting. 	Low	<p>The cultural meadow is filled in and succeeds into forest to form a contiguous woodland community.</p> <p>The population of Slender Satin Grass is observed to be maintaining and/or expanding.</p>	ESA Mg Team	Capital / Operating Budget	Low

Restoration Overlay Identifier	Approximate Area (ha)	Rationale and Goal(s) for Restoration	Management Actions for Restoration	Priority for Implementation	Measure(s) of Success	Lead Agency	Potential Funding	Estimated Cost
RO12	4.18	<p>This Overlay area which is located on a cultural meadow that is currently succeeding back into a forest community. Previous restoration efforts (i.e. plantings) have helped to accelerate the succession process.</p> <p>The intent of restoration efforts for this area would be to fill in the gaps of 20 m or greater between forest communities north, south and east of the cultural meadow to increase the amount of interior woodland within the MVHF ESA (south).</p>	<ul style="list-style-type: none"> Planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest. Care to not impact the planted Cucumber Magnolia identified is required. On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). This Overlay includes several portions of Utility Overlay that should be taken into consideration when determining locations for restoration planting. The 4 m wide right-of-way would not impact woodland continuity. 	Low	<p>The cultural meadow is filled in and succeeds into forest to form a contiguous woodland community.</p> <p>Persistence of the planted Cucumber Magnolia species.</p>	ESA Mg Team	Capital / Operating Budget	Low
RO13	0.85	<p>Overlay has large patches of Norway Maple (<i>Acer platanoides</i>) and English Ivy (<i>Hedera helix</i>), two non-native invasive species that tend to out-compete native flora and can develop monoculture communities.</p> <p>The intent for restoration in this area is to control and/or eradicate the invasive vegetation and restore the area to deciduous forest.</p>	<ul style="list-style-type: none"> Continue implementation of current invasive species management plan. <ul style="list-style-type: none"> As this includes control of tree species, there may need to be a multi-year stepped approach to the removal of Norway Maple as to not impact the forest canopy. This could include initial thinning of younger saplings and a few larger maples supplemented with planting of native species. Removal of remaining maples would occur over several years while native species establish and fill-in the gaps created from the initial removals. (ONGOING) Continued planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest. (ONGOING). On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). (ONGOING) 	Low	<p>Norway Maple and English Ivy are either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.</p>	ESA Mg Team	Capital / Operating Budget	Low*

Restoration Overlay Identifier	Approximate Area (ha)	Rationale and Goal(s) for Restoration	Management Actions for Restoration	Priority for Implementation	Measure(s) of Success	Lead Agency	Potential Funding	Estimated Cost
RO14	1.99	<p>The ground layer in this area was dominated by Goutweed (<i>Aegopodium podagraria</i>), a highly invasive species that tends to out-compete native flora and develops monoculture communities. The Goutweed was located around a population of Striped Cream Violet and Green Dragon, two rare species, and threatened to overtake the species (see Figure 2c for the location of the habitats).</p> <p>This restoration was flagged as High Priority in Phase I as control of this invasive species was critical in maintaining the adjacent population of Striped Cream Violet. The City initiated an invasive species management plan in May 2014 for this area and implemented control efforts for the Goutweed. Control is on-going but generally the goal has been met in reducing the Goutweed and protecting the Striped Cream Violet and Green Dragon.</p>	<ul style="list-style-type: none"> Development of an invasive species management plan (COMPLETE) Once invasive species are under control, the area can then undergo active ecological restoration (ONGOING) This could involve planting of native flora and restoring the ground layer of the lowland deciduous forest (ONGOING) On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). 	Moderate* (Formerly Top; see Table 6)	<p>Goutweed is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.</p> <p>The populations of Striped Cream Violet and Green Dragon are observed to be maintaining and/or expanding.</p>	ESA Mg Team	Capital / Operating Budget	Low*
RO15	0.20	<p>The ground layer in this area was dominated by Japanese Knotweed (<i>Fallopia japonica</i>), a highly invasive species that tends to out-compete native flora and develops monoculture communities. The Knotweed was located to the north of a population of Green Dragon, a rare species, and threatened to overtake the species (see Figure 2c for the location of the habitat).</p> <p>This restoration was flagged as High Priority in Phase I as control of this invasive species was critical in maintaining the adjacent population of Green Dragon. The City initiated an invasive species management plan in May 2014 for this area and implemented control efforts for the Knotweed which included RO15 and the parent colony of Knotweed observed at the top of the valley. Control is on-going and the goal has been met in reducing the Knotweed and protecting the Green Dragon.</p>	<ul style="list-style-type: none"> Development of an invasive species management plan (COMPLETE – Dillon, 2014) Once invasive species are under control, the area can then undergo active ecological restoration (ONGOING) This could involve planting of native flora and restoring the ground layer of the lowland deciduous forest found in the underlying management zone (ONGOING) On-going monitoring/control of the restoration area for invasive vegetation using an Early Detection and Rapid Response system (see Section 5.2.2.2). 	Moderate* (Formerly Top; see Table 6)	<p>Knotweed is either eradicated from this area or reduced to a state where on-going monitoring and control can keep the invasive flora in-check.</p> <p>The populations of Green Dragon are observed to be maintaining and/or expanding.</p>	ESA Mg Team	Capital / Operating Budget	Low*

3.3 Naturalization

As part of Phase I, areas within or adjacent to the MVHF ESA (south) were reviewed to determine optimal locations for naturalization projects.

Of the four areas identified for naturalization projects during Phase I, three are also identified as Restoration Overlay areas. To avoid duplication of recommendations for the three areas, the Restoration Overlay identifier is provided moving forward in this report in place of the Naturalization identifier presented in Phase I.

One area (NA4) identified during Phase I continues to be recommended for naturalization, in addition to another area not previously identified during Phase I (NA5). These two areas are shown on Figure 2.

Determination of the priority for implementation of the management actions for the two Naturalization Areas was based on the criteria in Table 8. The areas of Naturalization are summarized in Table 9.

Table 8: Criteria Used to Assign Implementation Priorities for Naturalization Areas

Priority for Implementation	Criteria
Top	The area is cultural and located within or adjacent to the ESA. The area is resulting in impacts to the ESA and without naturalization, impacts are expected to continue and potentially degrade the ESA.
High	The area is generally cultural and is subject to actions that are impacting succession of the area. This may include areas subject to mowing or other encroachment effects. Naturalization of these areas would greatly benefit the ESA. The naturalization project can be combined with other recommendations in this CMP.
Moderate	The area is beginning to naturalize but still exhibits indications of a cultural influence. Managed succession is required for the area to provide benefit to the greater ESA.
Low	Area is generally already beginning to naturally regenerate. Monitoring should occur first for a minimum of three years to determine if management is necessary to achieve measures of success identified.

Table 9: Naturalization Areas within MVHF ESA (south)

Naturalization Area Identifier	Approximate Area (ha)	Goal(s) for Naturalization	Management Actions for Naturalization	Priority for Implementation	Measure(s) of Success	Lead Agency	Potential Funding	Estimated Cost
NA 1			See RO9 in Table 7/ Figure 2					
NA 2			See RO11 in Table 7 / Figure 2					
NA 3			See RO12 in Table 7					
NA 4	0.43	This area includes areas of mown lawn located on City lands within the ESA boundary that border an open bluff and are an encroachment into the ESA by private land owners.	<ul style="list-style-type: none">By-law staff have initiated an enforcement process to reverse the encroachmentsRelocation of a portion of the Gainsborough Ravine to Snake Creek Valley trail (previously closed) to this tableland area to avoid the edge of the top of slope and seepage area combined with naturalization of lawn.Implement managed succession activities: Planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest.	High	Managed succession of lawn areas succeeding into cultural meadows and eventually forest to become part of the contiguous woodland.	ESA Mg Team	Capital / Operating Budget	Low
NA 5	1.32	Not identified during Phase I but through review of the naturalization areas, this area was added for Phase II. Attawandaron Park, located within the ESA boundary, is comprised of mown lawn that borders the valley. Naturalization of the eastern edge of this mown area would help to enhance the ESA and Medway Creek.	<ul style="list-style-type: none">A staged approach to naturalization could involve naturalizing the eastern edge by establishing areas of no-mowing adjacent to the valley slope.Education and stewardship to inform the neighbourhood about the naturalization efforts and reason for it.Opportunity to establish a managed trail connecting a managed trail to the north and the managed trail running through Snake Creek Valley to the south creating a defined limit for naturalization on the east side of trail.Planting of native deciduous tree and shrub species similar to the adjacent lowland deciduous forest.	High	Eastern edge of Park succeeds into cultural meadows and eventually forest becoming part of the contiguous woodland.	ESA Mg Team	Capital / Operating Budget	Low

4.0

Trail Management

As outlined under Section 2.3, as part of the November 2016 addendum to the *Natural Heritage Inventory and Evaluation* (January 2015), the significant ecological features in the MVHF ESA (south) were reviewed for compatibility with existing managed trails using Chart 2 from the City's *Guideline for Management Zones and Trails in ESAs* (May 2016). Through this review it was determined that the significant ecological features in the MVHF ESA (south) are compatible with the existing managed trails; no existing managed trails would be recommended for closure or relocation.

To delineate a sustainable trail system, this CMP aims to review current issues within the MVHF ESA (south) based on the findings from Phase I, consultation with the LAC, and feedback from members of the general public. Following the guiding principles established for this CMP, the trail system that is proposed for the MVHF ESA (south) has to maintain the priority of conserving the ESA's ecological integrity. Trail planning and design must address physical sustainability (trails that will retain their form over years of use and natural forces acting on them); ecological sustainability (managing the impacts of trail location and use to ensure no loss of ecological features and functions) and stewardship (fostering of individual and collective responsibility for protection of natural areas). The trail system proposed is to comply with and follow the processes outlined in the City's *Guidelines for Management Zones and Trails in ESAs* (May 2016).

An important component of the CMP is how public access and use of the MVHF ESA (south) will be managed through thoughtful trail design. As identified in the Guidelines, trail planning and design should address:

- Physical sustainability of the trails and/or structures so they retain their form and function over time and can withstand the natural forces acting on them;
- Ecological sustainability to avoid impacts to ecological features and functions; and,
- Stewardship of the greater community to foster a sense of individual and collective responsibility for the protection of the ESA.

4.1

Management Zones

The trail system must follow the policies and process outlined within Management Zones as outlined in Section 4 of the *Guidelines for Management Zones & Trails in Environmentally Significant Areas* (2016).

As part of Phase I of the CMP, Management Zones were delineated for the MVHF ESA (south) according to the process outlined in the *Guidelines for Management Zones & Trails in Environmentally Significant Areas* (2016) and included areas of both Nature Reserve and Natural Environment (see Figure 3). Section 4.1.1 and Section 4.1.2 below are taken from Table 2 in the Guidelines for context.

4.1.1 Nature Reserve

Where it is determined that ecological integrity can be preserved, and specific natural features and their ecological functions can be protected, public access using Level 1 trails (e.g. natural earth surface, wood chips, boardwalk, corduroy logs, stepping stones) are permitted in the Nature Reserve zone to support appropriate low-intensity, nature-based recreation. Structures (e.g. boardwalks, bridges, stairways) may be permitted to reduce impacts to significant ecological features and increase the sustainability of the trail system in the ESA.



Level 1 trail in a Natural Environment Zone over a Utility Overlay south of Glenridge Crescent

4.1.2 Natural Environment

Level 1 and Level 2 trails may be located in Natural Environment Zones where it can be demonstrated that the trail will not result in negative impact to the adjacent ecological features and functions of the ESA.

In exceptional situations, a Level 3 trail may be permitted within a Natural Environment Zone to upgrade an existing connection between neighbourhoods subject to the 'Process' outlined in Section 2.2 of the Guidelines. These trails provide visitor access and are to be designed and implemented to protect environmental features and to accommodate areas of increased visitor use. Currently, there is one Level 3 trail in the northwest corner of the MVHF ESA (south) that connects Attawandaron Road to Fanshawe Park Road West and the trail system within the MVHF ESA (north).



Level 3 trail in a Natural Environment Zone south of Fanshawe Park Road West

4.2 Issues and Considerations

Feedback provided from members of the LAC and community included over 400 comments, of which nearly a quarter were related to the trail system. Many of the comments from the public and LAC regarding the trail system were similar to the issues brought forward during the 1989 CMP and 1996 Site Planning Study. Other considerations are derived from the Phase I findings and the results of the MCSSU (2013) that is still in process. An overview of the items identified by the public for consideration is provided below.

4.2.1 Access

Of the sixteen official access points (identified on Figure 3) that provide entry to the MVHF ESA (south), a few were identified as not be easily accessible or visible from adjacent roadways. Through the consultation efforts, it has been identified there may be a need for additional amenities at access points. Suggestions include, but are not limited to waste receptacles, benches, and improved signage to help with way-finding and provide education on the MVHF ESA (south). Recommendations for improvements to access points are provided in Section 4.5.

4.2.1.1 Parking and Transit

Most of the access points are situated on neighbourhood roads that permit on-street parking. There is also parking available at the Windermere Road (west) access and at the Elsie Perrin Williams Estate. Public Transit is another option for those visiting the ESA as there are several London Transit Commission bus routes and bus stops surrounding the ESA.

4.2.2 Existing Unmanaged Trails

Throughout the MVHF ESA (south), informal trails are currently in use. Some of these existing unmanaged trails maybe situated in undesired locations from a management perspective, such as areas with steeper inclines or through private lands. Recommendations for addressing closure of existing unmanaged trails are provided in Section 7.2.6 of the Guidelines and in Section 4.4.1 of this report.

4.2.2.1 Closed Managed Trails

Three former managed trails have been closed in the MVHF ESA (south) in recent years. One of these trails was temporarily closed and options for rerouting portions of the trail away from an eroding slope and onto an area of encroachment with mowed lawn, proposed for naturalization are under review.

Despite initial efforts to close-off these managed trails, anecdotal evidence provided during public feedback indicates the closed trails are still being used and may require additional efforts to mask their presence and reinforce the closure following the Guidelines (see Section 4.4.1.).

4.2.3 Connectivity of Managed Trail System

Similar to the previous 1989 CMP and 1996 Site Planning Study, consultation and public feedback presented a clear debate on whether connectivity/continuity of trails throughout the MVHF ESA (south) (i.e. better linkages, bridges, easements through private property, etc.) is needed. Feedback indicates a desire for connectivity of the managed trails on the east and west sides of Medway Creek, though there is also clear opposition.

Due to a lack of connectivity of managed trails, in order to traverse some areas of the MVHF ESA (south) users depend on the network of informal trails and/or require passing through private lands. For accessing one side of the valley from the other, official linkage options are limited to the bridges associated with arterial roads such as Fanshawe Park Road West and Western Road. This results in users of the MVHF ESA (south) being restricted to smaller areas of the ESA or informal linkages being created through the creek during periods of low water or ice, which can present hazards to the user and potentially impact the creek. In other instances, users may drive from one side to other, while not

presenting a significant impact to the ESA, may add to carbon emission levels and degradation of air quality.

In response, three options to improve connectivity, enhance accessibility and protect features are presented in this CMP in Section 4.3. All options presented are in compliance with the Guidelines. These include:

1. Enhancing the trail system “As-is”,
2. Establishing partial connectivity; and,
3. Establishing enhanced connectivity of the MVHF ESA (south).

The purpose of this CMP is to provide a concept plan for the MVHF ESA (south). While options included must meet the test of complying with the Guidelines, they may also be subject to further review and discussion as to how the concept plan is to be implemented. This generally occurs in consultation with a Local Implementation Committee and other identified stakeholders as necessary following Council approval of this Phase II CMP.

4.2.4 Trail Condition

As trails are used over time, the condition of trails may deteriorate (e.g. deepening of tread, exposure of tree roots) or the footprint of the trail widens. It was noted by the public that some trails have widened over time in response to areas that may be subject to ponding water and/or prone to being muddy. This often results in users bypassing these sections, causing the trail to widen and/or informal trails to develop. Recommendations for improvements to address trail condition are provided in Section 4.4.

To address the issues of trail condition and improve accessibility, considerations to improve the accessibility of trails (i.e. conversion of level 1 to level 2 trails) will be made where these improvements will protect features and are in compliance with the Guidelines. Recommendations for improving trail surface type, if applicable, and accessibility are provided in Section Error! Reference source not found..

4.2.5 Non-permitted Uses

Public feedback indicates there are on-going issues regarding non-permitted uses with the MVHF ESA (south), generally associated with a by-law infractions such as building fires, dumping of yard waste, dog's off-leash etc. Recommendations to address some of these issues are provided in Section 4.5 with regards to additional signage, as well as Section 6.0 with regards to on-going education of the adjacent landowners and community with regards to the rules within City ESA's. Users of ESAs can also refer to the brochure prepared by EEPAC titled: *Living with Natural Areas, A Guide to Living Next to ESAs* which was mailed to all homes adjacent to London's publically owned ESAs, including the MVHF ESA, in 2016.

4.2.6 Population Growth

While much of the area surrounding the MVHF ESA (south) has been developed with low-density residential, continued growth is still occurring with construction of developments to the northwest (Fox Hollow) and north (Sunningdale). Older neighbourhoods adjacent to the MVHF ESA (south) have also seen in-fill development occur in recent years with additional low and medium density residential constructed off Attawandron Road, Windermere Road and the Woodholme Park subdivision constructed off of White Acres Drive.

Continued development and population growth around the MVHF ESA (south) reinforces the need to implement the process outlined in the Guidelines and provide a managed trail system that can sustain the potential for increased use of the ESA as the surrounding population seeks simple and inexpensive ways to meet their daily needs for physical fitness, social interaction and realization of health benefits associated with spending time in nature.

4.2.7 Bank Migration

Migration of the banks of Medway Creek and Snake Creek is to be taken into consideration during the review of the trail system as some areas of trails are located immediately adjacent to Medway Creek and Snake Creek.

The MCSSU provided an historical analysis of the rate of bank migration for the Medway Creek and Snake Creek within the MVHF ESA (south) for some representative bends using historical (1955) aerial photographs and available erosion monitoring data. The bends assessed represent some of the most actively eroding sites. Meanders for Medway Creek were noted as having migrated a distance of 22 to 34 m since 1955, or at an average annual rate of 0.4 m/year to 0.6 m/year. The creek banks associated with Snake Creek were noted as having an erosion rate of near 0 to approximately 0.06 m/year.

It is important to note that bank migration is a natural phenomenon that is influenced by a variety of conditions such as adjacent vegetation, upstream influences and precipitation events.

4.3 Connectivity

As one of the areas identified during consultation, there is a need to address the issue of connectivity of managed trails in the trail system within the MVHF ESA (south). This lack of connectivity has been identified as an on-going issue since the original 1989 CMP where it was recommended that creek linkages be installed to reduce impacts to the biotic communities. The issue of connectivity has been approached in this CMP by presenting three options for the MVHF ESA (south) managed trail system, taking into consideration that improved way-finding signage may also help in providing connectivity.

4.3.1 Enhanced "As-Is" System Concept Plan

The existing managed trail system is to generally remain the same ("As-Is") with recommendations provided to address specific issues relating to trail condition and accessibility (see Figure 3).

Improvements, consistent with the Guidelines, that are being recommended include:

- Improvements to trail surfaces along stretches known to flood or become muddy including those identified for an “Improved Trail Surface” on Figures 3, 4, 5 and 5b. If trails are not appropriately surfaced, users will walk around wet areas, creating wider trails. Table 2 and Section 7.1.1 of the Guidelines provide direction for sustainable trail surface options to prevent this from happening. As overviewed in the Addendum (Dillon 2016), significant ecological features in the MVHF ESA (south) were determined to be compatible with existing managed trails; no existing managed trails would be recommended for closure or relocation. Therefore, as per Chart 2 of the Guidelines, improvements to trail surfaces would follow the option to “*Keep the existing trail and include design features to preserve ecological integrity*”. This includes:
 - Redesigning the section of trail that currently crosses Snake Creek. By installing stepping stones where the trail currently is routed across the creek, this will preserve the ecological integrity of Snake Creek by directing users to a pre-defined route. Use of stepping stones as a trail surface is permitted in both Nature Reserve and Natural Environment zones as per Table 2 of the Guidelines.
 - Conversion of existing trails to improve accessibility of certain segments of trail where the Guidelines permit. As per the process for determining trail locations overviewed in the Guidelines (see Section 2.2), trails should be carefully sited to allow opportunities for enhanced user experience, education and accessibility, where appropriate. To improve accessibility of trails in the ESA, some trails located in Natural Environment zones are proposed to be redesigned and maintained as Level 2 trails. Given these are existing managed trails, they were found to be compatible with the surrounding significant ecological features (as per the Addendum, Dillon 2016), this would comply with the option of “*Trail to remain, requires a redesign*” presented in Chart 2 of the Guidelines. This includes:
 - Better alignment of trails with the Utility Overlay to avoid future impacts related to maintenance of the utilities. Where trail redesign is recommended for either improvements to trail surface or accessibility, consideration should be given to aligning trails with the existing Utility Overlay as per the Guidelines. This would serve to preserve the long-term ecological integrity of the ESA by minimizing future impacts and could aid in providing accessibility in the ESA.
 - Conversion of existing, managed Level 1 trails to Level 2 trails south of Fanshawe Park Road West to the west bank of Medway Creek and from the Glenridge Crescent Access (Access #10) to the east bank of Medway Creek. Two small sections of existing Level 1 trail (approximately 20 m and 28 m on Figure 5a) are located within Nature Reserve zones where normally Level 2 trails may not be permitted. However, given the presence of a Utility Overlay, and as per Section 7.1.2 of the Guidelines, an exception can be made as conversion of the existing Level 1 trail to Level 2, along with installation of AODA compliant signage (see Section 4.5), would help to direct users to other areas of the ESA, away from sensitive ecological areas and direct users to stay on the more defined Level 2 trails between Access #5 and #10. Consistent with Section 7.2.4 of the Guidelines, a wood rail entrance corral would be installed at the transition point to indicate the change in trail type. Interpretive signage posted at the corral would inform trail users about the significant features in the ESA and how to protect them.
 - Re-opening of a temporarily closed managed trail that connects Gainsborough Ravine (Access #24) and Snake Creek Valley (Access #1 and #20). This would require rerouting a portion of the existing trail away from the edge of the slope to the more stable, proposed naturalization area further back from top of the slope (see Section 1.2.4). This process follows Chart 2 of the

Guidelines by realigning the trail to avoid a seepage area (i.e. a significant ecological feature). As shown on Figure 3, the rerouted/relocated trail (white-dash line) would be east of the top of the slope into an area that is currently an area of mowed lawn (as shown on Figure 2). It is recommended the rerouted trail is implemented at the same time as naturalization activities as the trail could define the limit of naturalization east of the trail and prevent future encroachments. This option is further discussed in Section 4.4.

4.3.2 Establishing Partial Connectivity Concept Plan

For a partial improvement of the trail system connectivity, the existing managed trails would incorporate the improvements/enhancements presented in Section 4.3.1, in addition to further recommendations for additional trail segments. As required by Chart 3 of the Guidelines, the trails proposed comply with the Guidelines (see Chart 3 of the Guidelines) and would help to improve connectivity in the ESA for the side of the creek where the trail is located (see Figure 4). Linkages across Medway Creek are not proposed as part of this option. In addition to what is outlined in Section 4.3.1, the following is proposed:

- Level 2 trail in the Natural Environment Zone running parallel to Attawandaron Road and generally in-between Access Point #4 and to the northeast of Access Point #1. Following Chart 3 in the Guidelines, significant ecological features have been mapped in the areas of the proposed Level 2 trail (see Figure 4). Based on this review, there are no significant ecological features in the area of the proposed trail. In addition, this area is recommended for restoration and naturalization activities (see Figure 2, RO2 in Table 7 and NA5 in Table 9) Placement of a Level 2 trail would serve as the defining limit for the proposed naturalization east of the trail and would have the added benefit of improving accessibility in the ESA. This option is further discussed in Section 4.4.

4.3.3 Enhanced Connectivity of System Concept Plan


While the proposed trail system presented on Figure 4 improves the connectivity of trails in the ESA, it primarily connects trails on the individual sides of the valley and doesn't connect the two sides of the valley. To address the potential for connecting west and east managed trails separated by Medway Creek, an analysis of potential trail linkages over Medway Creek was undertaken based on suggested locations provided through public feedback. Five linkage options across Medway Creek were suggested by the public and were the focus of this review to see which, if any, would be in compliance with the Guidelines. The five locations where linkages have been proposed by the public are shown on Figure 5 with additional detail such as Wildlife Habitat, Species at Risk/Species of Conservation Concern habitats presented on Figures 5a, 5b, 5c, and 5d.



A linkage across Medway Creek, would be considered a "new segment of trail" as per the Guidelines. Please note, in the context of the CMP, linkage refers to a "connection area" over water. The mechanism to provide the connection is not yet defined and may be accomplished by either installation of a type of trail surface such as stepping stones, or a structure such as a pedestrian bridge. Details of the type of linkage are subject to discussion with the UTRCA and further engineering review and visual impact assessments. Therefore, the review of the five proposed linkages included an overview of Chart 3 from the Guidelines and considered the following questions during consideration:



- Is the location subject to current impacts due to absence of a linkage?
 - Would a linkage minimize/eliminate those impacts?
 - Can the linkage be built in a manner that will protect the ecological features and functions of the ESA and be designed to blend in with the environment? Will it act as a compelling landscape anchor to draw people away from shortcutting through significant or sensitive areas?
- Is there a significant ecological feature in the area of the linkage?
 - Species of Conservation Concern and Species at Risk species should not be disturbed
- Does the linkage connect existing managed trails or would new trail sections also be required?
- Is the linkage located along a utility route (utility overlay) to minimize impacts while achieving a social benefit by designing the trails to accommodate persons with disabilities wherever possible?

The results of the review are provided in Table 10.



Table 10: Analysis of Linkage Options Across Medway Creek Suggested by the Public

Linkage Location Identifier on Figure 5	Reference Photos	Is the location subject to current impacts due to absence of a linkage?	Would a linkage minimize/eliminate those impacts?	Is there a significant ecological feature(s) present?	Would the linkage connect existing managed trails or would new trail sections also be required?	Is the location located along a utility route (utility overlay) to minimize impacts & enhance accessibility?	Supported by/ Compliance with Guidelines
A		<p>Yes.</p> <p>Continued use of an informal trail running along the east side of the creek from Fanshawe Park Road West and connecting to the managed trail on the south side of Medway Creek.</p> <p>Currently, managed trails are present up to the wetted edge of Medway Creek, indicating users may be crossing the creek at this location during periods of low-water or when the creek is frozen over.</p>	<p>Yes.</p> <p>A linkage would reduce impacts to the creek banks by formally connecting two segments of managed trails for users to access in a controlled manner.</p> <p>Once established, the unmanaged trail on the east side of Medway Creek that connects Fanshawe Park Road West to the managed trail could be formally closed following the Guidelines and users directed to an alternative route. If not established, users may be less likely to refrain from continuing to use the unmanaged trail.</p>	<p>No.</p> <p>There are no significant ecological features mapped where the potential linkage segment would be located.</p> <p>By coupling the closure of the unmanaged trail from Fanshawe Park Road West with the linkage, a trail through a seepage area would be avoided.</p>	<p>Yes.</p> <p>A linkage would directly connect a linear managed trail on the west side of the creek to an existing managed linear and loop system trail on the east side of the creek</p>	<p>Yes.</p> <p>A linkage would overlap the already established Utility Overlay which is comprised primarily of cultural meadow habitat and wouldn't result in fragmenting forest habitats. The Utility Overlay is to be maintained at 4 metres wide whereas fragmentation of habitats is generally considered to occur where there are gaps of 20 metres wide or greater (ORMCP Technical Paper 7).</p>	<p>Yes – this linkage would be in compliance with Chart 3 of the Guidelines</p> <p>This option is further discussed in Section 4.4.</p>
							

Linkage Location Identifier on Figure 5	Reference Photos	Is the location subject to current impacts due to absence of a linkage?	Would a linkage minimize/eliminate those impacts?	Is there a significant ecological feature(s) present?	Would the linkage connect existing managed trails or would new trail sections also be required?	Is the location located along a utility route (utility overlay) to minimize impacts & enhance accessibility?	Supported by/ Compliance with Guidelines
B		Yes. The north side of Medway Creek has evidence of access across the Creek via unmanaged trails extending from a managed trail loop.	Yes. Well-defined trails prevent trampling, provide an opportunity to promote public awareness of False-Rue Anemone, while also providing a physical barrier that prevents the spread of Goutweed.	Yes. Sensitive floodplain Species at Risk and Species of Conservation Concern habitat is mapped on both sides of the creek. These species include False Rue-anemone, American Gromwell and Striped Cream Violet.	No. To access a linkage in this location, the unmanaged trails extending from a managed trail loop on the north side would need to be formalized and an unmanaged trail loop formalized on the south side of the creek.	Yes. A linkage would overlap the already established Utility Overlay which is comprised primarily of forest habitat and wouldn't result in fragmenting forest habitats. The Utility Overlay is to be maintained at 4 metres wide whereas fragmentation of habitats is generally considered to occur where there are gaps of 20 metres wide or greater (ORMCP Technical Paper 7).	No. This linkage would not be in compliance with Chart 3 of the Guidelines due to the presence of significant ecological features that would require relocation.
		Further, trails (both unmanaged and managed) are present up to the wetted edge of Medway Creek, indicating users may be crossing the creek at this location during periods of low-water or when the creek is frozen over.					

Linkage Location Identifier on Figure 5	Reference Photos	Is the location subject to current impacts due to absence of a linkage?	Would a linkage minimize/eliminate those impacts?	Is there a significant ecological feature(s) present?	Would the linkage connect existing managed trails or would new trail sections also be required?	Is the location located along a utility route (utility overlay) to minimize impacts & enhance accessibility?	Supported by/ Compliance with Guidelines
C		No. There are few indications that this area is subject to user access across the creek. There is some evidence that users accessing the managed trail along the eastern bank of the creek may move to the water's edge.	N/A	Yes. Sensitive floodplain Species at Risk and Species of Conservation Concern habitat is mapped on both sides of the creek. These species include False Rue-anemone and American Gromwell.	No. A linkage would connect a managed trail to the east and require new trails on the west side and/or formalizing unmanaged trails.	Yes. A linkage would overlap the already established Utility Overlay which is comprised primarily of forest habitat and wouldn't result in fragmenting forest habitats. The Utility Overlay is to be maintained at 4 metres wide whereas fragmentation of habitats is generally considered to occur where there are gaps of 20 metres wide or greater (ORMCP Technical Paper 7).	No. This linkage would not be in compliance with Chart 3 of the Guidelines due to presence of significant ecological features that would require relocation.
							

Linkage Location Identifier on Figure 5	Reference Photos	Is the location subject to current impacts due to absence of a linkage?	Would a linkage minimize/eliminate those impacts?	Is there a significant ecological feature(s) present?	Would the linkage connect existing managed trails or would new trail sections also be required?	Is the location located along a utility route (utility overlay) to minimize impacts & enhance accessibility?	Supported by/ Compliance with Guidelines
D		Yes. There is evidence that users are congregating at the creek banks and possibly crossing during periods of low-water or iced over conditions.	Yes. Installation of a linkage would help direct people to the managed trail loops instead of using nearby unmanaged trails. A linkage would reduce impacts to the creek banks by formally connecting two segments of managed trails for users to access in a controlled manner	No. There are no significant features mapped where the linkage would be located.	Yes. A linkage would connect two existing, managed trail loops.	Yes. A linkage would overlap the already established Utility Overlay which is comprised primarily of cultural meadow habitat and wouldn't result in fragmenting forest habitats. The Utility Overlay is to be maintained at 4 metres wide whereas fragmentation of habitats is generally considered to occur where there are gaps of 20 metres wide or greater (ORMCP Technical Paper 7).	Yes. This linkage would be in compliance with Chart 3 of the Guidelines This option is further discussed in Section 4.4.
							

Linkage Location Identifier on Figure 5	Reference Photos	Is the location subject to current impacts due to absence of a linkage?	Would a linkage minimize/eliminate those impacts?	Is there a significant ecological feature(s) present?	Would the linkage connect existing managed trails or would new trail sections also be required?	Is the location located along a utility route (utility overlay) to minimize impacts & enhance accessibility?	Supported by/ Compliance with Guidelines
E		No. Evidence of crossing Medway Creek in this location was not observed. Due to the formation of an unmanaged trail along the eastern bank of the creek, it is assumed that the depth of the water may deter informal crossings.	N/A	Yes. Sensitive floodplain Species of Conservation Concern habitat is mapped on the east side of the creek. This includes American Gromwell.	Yes. A linkage would connect two managed trail loops.	Yes. A linkage would overlap the already established Utility Overlay which is comprised primarily of cultural meadow/forest habitat and wouldn't result in fragmenting forest habitats. The Utility Overlay is to be maintained at 4 metres wide whereas fragmentation of habitats is generally considered to occur where there are gaps of 20 metres wide or greater (ORMCP Technical Paper 7).	No. This linkage would not be in compliance with Chart 3 of the Guidelines due to presence of significant ecological features that would require relocation.
							

4.4 Analysis of Proposed Trail Recommendations

Following completion of consultation on the draft CMP, the trail management strategy will include a concept plan for a sustainable trail system that is consistent with the Guidelines. A more detailed analysis of the three sustainable trail concepts (see Sections 4.3.1, 4.3.2 and 4.3.3) is presented in the sections above, and an analysis of how the three options (Figures 3, 4 and 5) comply with the Guidelines is provided in Section 4.3 and Tables 10 and 11.

The monitoring plan developed as part of this CMP (see Section 5) includes consideration for how trail use may change following implementation. It is recognized that signage will be required to inform users of changes in trail types, way-finding and accessibility of trails to manage use of the trail system. This is also further outlined in Section 4.5.

Table 11: Analysis of Draft Sustainable Trail Concept Plans

Figure 5 Reference and Approximate Location	Current Trail Status / Management Zone(s)	Proposed Action	Applicable Guideline Reference	From Table 1 of Guidelines: Significant Ecological Features that Require Review for Compatibility with Trails	Compatibility Review	Potential for Accessible Trail? ¹	Recommendations	Priority for Implementation ²	Cost
Trail Linkage A and the managed trail between Fanshawe Park Road West and Glenridge Crescent Access (#10) See Figures 5a	Managed / Natural Environment & Nature Reserve	Proposed Linkage and redesign of trail at Access #10 to Level 2	Section 5.2, Chart 3 Section 7.2.1	None identified overlapping proposed linkage	Compatible with Guidelines as per Chart 3	Y	<ul style="list-style-type: none"> Installation of a trail linkage between segments of managed trails (see Table 10). The type of linkage is subject to further review and engineering considerations, but priority will be placed on providing an accessible linkage to connect the Level 2 trails on each side of the creek (see Section 4.3.1). The implementation of the linkage is to occur in tandem with the closure of the informal trail currently located on the east side of Medway Creek off of Fanshawe Park Road West. 	Moderate	Low to High (Dependent on design)
Parallel to Attawandaron Road, trail connects Access Points 2,3 4 with Access 1 See Figure 5a	Proposed/ Natural Environment	Proposed Level 2 trail	Section 5.2, Chart 3	None identified overlapping proposed trail	Compatible with Guidelines as per Chart 3	N	<ul style="list-style-type: none"> Installation of a Level 2 trail to connect a Level 3 trail in the MVHF ESA (north) to trails in the south via the existing public access around the Museum of Ontario Archaeology connecting to Access #1. This will also help with accessible trail options on the west side of the valley. The new trail should be implemented during naturalization activities in the area (see NA5 in Table 9) as the trail could define the limit of naturalization east of the trail. The exact routing of the new trail is subject to consultation with the Local Implementation Committee. 	Moderate	Medium
Section of managed trail that passes over Snake Creek See Figure 5b	Managed/ Nature Reserve	Proposed linkage/trail surface redesign consisting of stepping stones	Section 5.2, Chart 2	None identified overlapping proposed linkage	Compatible with Guidelines as per Chart 2	N	<ul style="list-style-type: none"> Stepping stones crossing within Snake Creek to enhance protection of creek. As this Level 1 trail also loops through one of the oldest woodland patches in the ESA, this is a good opportunity for an interpretive trail or signage to highlight Carolinian forest ecology or invasive species (i.e. Woodland Sedge). Monitoring of the bank migration to track rate of erosion (see Table 13). As the bank draws closer to the trail through natural processes, there may be need to reassess whether the trail has to be closed or if that section can be rerouted. 	Moderate	Low
Trail located between Snake Creek Valley and Gainsborough Ravine See Figure 5c	Closed/ Proposed to Reopen/ Nature Reserve	Proposed Relocation of a portion of a temporarily closed Level 1 trail	Section 5.2, Chart 2	Seeps and Springs habitat overlaps the existing closed trail	Rerouted/relocated trail is to be located at the top of the slope instead of through the seepage area. The rerouted portion of the trail avoids significant ecological features and is therefore compliant with the Guidelines.	N	<ul style="list-style-type: none"> The existing Level 1 managed trail was temporarily closed pending a review of its routing in the ESA. It is recommended a portion of the Level 1 trail be rerouted/relocated to avoid a seepage area. The rerouted Level 1 trail should be located at the top of slope and implemented during naturalization activities in the area as the trail could define the limit of naturalization east of the trail and prevent future encroachments (see NA4 in Table 9). The exact routing of the relocated trail is subject to consultation with the Local Implementation Committee. It is noted that the trail design will incorporate features to aid users in safely traversing the steep terrain at the southern end. 	Moderate	Medium

Figure 5 Reference and Approximate Location	Current Trail Status / Management Zone(s)	Proposed Action	Applicable Guideline Reference	From Table 1 of Guidelines: Significant Ecological Features that Require Review for Compatibility with Trails	Compatibility Review	Potential for Accessible Trail? ¹	Recommendations	Priority for Implementation ²	Cost
Trail Linkage D that connects the Windermere Lands with Gainsborough Meadows See Figure 5d	Proposed/ Nature Reserve	Proposed Linkage	Section 5.2, Chart 3	None identified overlapping proposed linkage	Compatible with Guidelines as per Chart 3	N	Installation of a trail linkage between segments of managed Level 1 trails (see Table 10). The type of linkage is subject to further review and engineering considerations and review of implementation of Linkage A (see Table 10). Options include seasonal crossing options such as stepping stones. Option may not be accessible as it connects to Level 1 trails.	Long Range	Low to High (Linkage design dependent)

1 – Accessible is referring to whether the area of the ESA can accommodate a firm and stable surface where the environmental, historical or cultural value would not be adversely affected as outlined in the Integrated Accessibility Standards Regulation of the Accessibility for Ontarians with Disabilities Act 2 – Priorities for Implementation are as follows: High = without implementation of recommendations, issues are expected to degrade the ESA; Moderate = issues identified relating to the trail condition or restoration/naturalization efforts and recommendations are to be implemented to improve condition; Low = no issues identified and recommendations are limited to additional signage to improve way-finding 3 – note that Level 3 trails are permitted in Natural Environment zones to upgrade an existing connection between neighbourhoods)

4.4.1 Closed Trails

Where trails, or a section of trail is to be closed or relocated, the following steps are to be undertaken, following section 7.2.6 in the Guidelines:

1. Construct new trail, reserving any plant material, topsoil, leaf litter, etc. that may be useful for restoration of closed trail.
2. Post "trail closed" sign at entrance to closed section of trail, in a location where it is easily seen by users.
3. Install temporary barrier fence, to protect work area on closed trail.
4. Break up or scarify soil on the closed section of trail to facilitate restoration planting, encourage natural regeneration, and make closed trail uninviting to users.
5. Restore closed trail with plant material, including plants moved from new trail as well as those from reliable native-plant nurseries. Choose plant species that are appropriate for the area in the ESA. In selecting plants, try to include some faster-growing species. Select tallest and fastest-growing shrubs for planting on the closed trail near the junction(s) with the new trail. This will help to hide the location of the former trail, and discourage ongoing use. In addition to plants and/or cuttings, sow native seeds as appropriate.
6. Rake leaves onto former trail.
7. When new plants are well established, remove temporary barrier fence.
8. As required, construct a barrier to reinforce the message that this trail is closed.
9. Install signage that redirects trail users.

4.5 Access and Way-finding

In addition to the recommendations provided to improve the sustainability of the trail system further awareness of options for trail connectivity and compliance with ESA rules can be achieved with enhanced signage strategically placed at access points and at transitions between Level 1 and Level 2 trails, as an example.

Currently, signage within the MVHF ESA (south) is generally limited to those outlined in the Section 7.3 of the Guidelines. These include:

- Informational/Regulatory/Warning – standard ESA green post signs generally at access points with name of the ESA, outlining the rules for the ESA with simple pictographs, QR codes for brochures and Observation Reports and detailed by-law sign on the back;
- Interpretive – occasional signage with educational information (i.e. wildlife trees); and,
- Designation/directional – blazes of yellow coloured paint to indicate trail type and direction.

This will be enhanced through installation of AODA compliant signage at all access points with a map and information that identifies:

- i. The length of trail
- ii. The type of surface of which the trail is constructed
- iii. The average and minimum trail width
- iv. The average and maximum running and cross slope
- v. The location of amenities, where provided

The current signage located along the trails is limited as it primarily functions only to notify users they are still on managed trails. To improve way-finding for users and help users move through the ESA using managed trails in compliance with the ESA rules, additional way-finding signage is recommended. Additional signage to aid in way-finding could include information such as:

- Directional arrows to access point names, and/or,
- Directional arrows to other trail segments with length of segment, approximate time it takes to walk and/or difficulty.

In addition to following signage, way-finding and navigating using smart phones and websites such as All Trails and Google Maps is an in-expensive and un-intrusive way to navigate the MVHF ESA (south) and stay on the managed trails in the ESAs. The City and UTRCA could assist in providing the most recent managed trail layers and ESA rules to popular navigational websites and then monitor the feedback.

5.0

Adaptive Management and Monitoring Framework

As mentioned under Section 1.1.1, this CMP can be considered a “living document” as adaptive management is to be utilized for the duration of management period (2018-2028). This approach to management allows for the modification of the components that make up the Environmental Management Strategy for the MVHF ESA (south), as outlined under Section 3.0, in response to on-going monitoring and analysis of the data collected for the implemented management recommendations. If a recommended management action is implemented and, through monitoring, the observations indicate the current action is not having the desired results, the management is adjusted and monitoring continues. The image to the right was adapted from MacDonald *et al.* (1999) and shows adaptive management as a systematic, practical approach to improving resource management.



5.1 Approach to Adaptive Management

Implementation of an adaptive management approach can only be effective if there are baseline conditions to refer to during monitoring. The data collected during Phase I for this CMP provides the benchmark against which the management objectives for the MVHF ESA (south) can be measured against. Further baseline data is collected by the UTRCA through regular maintenance operations as well as by the City through compilation of public observations.

For adaptive management to be effective, a sustainable monitoring program and evaluation of the results is required to be implemented in order to maintain objective of preserving the ecological integrity of the MVHF ESA (south) while achieving community and social objectives.

5.2 Monitoring Framework

Managing changes over time in natural ecosystems can involve evaluating the use of trails through a decision framework. The framework for monitoring developed for the MVHF ESA (south) is to be used to guide decisions about the success of management actions.

The strategies for restoration and trails system improvements, as outlined in previous sections, are to be monitored to track management success or determine whether adjustments to the management actions are required. The objective of monitoring is to provide a quantifiable assessment of the monitoring variable to compare with the baseline conditions.

A well-designed monitoring program provides the necessary feedback for gauging the effectiveness of management interventions in keeping conditions within acceptable limits and within the targeted outcome. A documented failure of an intervention can be used to justify the use of a more obtrusive

[intrusive] or expensive intervention (Marion 2008), trail closure, or more innovative management. This CMP establishes the details and protocols for the monitoring framework and implementation approach to be undertaken as part of required management activities within the MVHF ESA (south).

Monitoring within the MVHF ESA (south) is to be based on objective and quantifiable measurements of abiotic, biotic and cultural elements as described below.

5.2.1 Abiotic

Monitoring of abiotic elements is to include documenting the non-living parts of the MVHF ESA (south) and surrounding landscape. The variables for monitoring include bank migration and trail condition.

5.2.1.1 Bank Migration

The MCSSU noted that erosion monitoring programs recommended in the 1995 subwatershed study had not been implemented. As part of the MCSSU, monitoring stations were re-established, new stations added and baseline conditions geo-referenced. Annual erosion monitoring was recommended to be implemented using the erosion stations established as part of the study. A prioritized slope stability monitoring program was also recommended with one site requiring priority monitoring and four requiring baseline monitoring. In the absence of results from the previously recommended erosion monitoring program, the MCSSU assessed the rate of bank migration using historical aerial imagery from 1955. The results indicated an average annual rate of 0.4 m/year to 0.6 m/year for Medway Creek and 0.06 m/year for Snake Creek. As there are managed trails situated within a few metres of Medway Creek and Snake Creek, it is recommended that the annual erosion monitoring program be included as part of the monitoring for the MVHF ESA (south). Ten bank migration monitoring stations were established within the MVHF ESA (south) as part of the MCSSU and are recommended for monitoring.

5.2.1.2 Trail Condition

The managed trails in the MVHF ESA (south) are well established and some are upwards of 30+ years old. The UTRCA is monitoring trails in the MVHF ESA (south), and the City also receives observations reports submitted by users.

Continued monitoring of indicators for trail condition that may be documented include:

- Condition of trail surface (e.g. cracking of wood)
- Trail width
- Creation of side trails and/or off-trail areas (i.e. for viewing or passing)
- Areas of water saturation/ponding along the trail

5.2.1.3 Trail Usage

During consultation for this Phase II CMP, concerns were raised regarding increase use in the ESA following implementation of the proposed concept trail strategy, specifically with respect to linkages across Medway Creek (see Section 4.2). Specifically, Linkage D (see Figure 5d) has been identified as a concern. As such, it is recommended that monitoring of trail use before and after implementation of Linkage A is recommended prior to further discussions regarding the implementation of Linkage D. From monitoring that has occurred in the MVHF ESA (north) where the trail strategy has been (or is in the process of being) implemented, it has been noted that the trails have been used as intended and

formation of unmanaged trails extending from the managed trails has not occurred. Monitoring through the installation of trail counter(s) in the area of Linkage A is therefore recommended to investigate if usage volume changes following implementation of the linkage. However, it should be noted that Linkage A is intended to provide an accessible linkage across Medway Creek and the linkage options presented in this CMP may not be accessible; therefore, direct comparisons may not be possible (i.e. it is expected more users would use an accessible linkage).

5.2.2 Biotic

Monitoring of biotic elements within the MVHF ESA (south) is to include documentation of the vegetation and wildlife (including wildlife habitats) within the surrounding landscape but also documenting trends in species populations and continuing with the Early Detection and Rapid Response (EDRR) monitoring and management program that has successfully addressed all the Top and High priority areas needing restoration for example.

5.2.2.1 Sensitive Species

The MVHF ESA (south) is known in the City of London for its high biodiversity of flora and fauna. This biodiversity includes several provincially listed Species at Risk and Species of Conservation Concern (SCC) as noted in Table 5 under Section 2.0.

Monitoring of sensitive species is to include documenting the condition and vigour of individual species. This may include documenting new sensitive species that may have not been previously observed or recorded

5.2.2.2 Invasive Species (Early Detection and Rapid Response)

Assessing vegetation changes, including changes in vegetation cover and composition is a growing concern, particularly as they relate to the introduction and spread of invasive plants (Marion, *et al.* 2006). Monitoring of invasive flora and other pests/pathogens within the MVHF ESA (south), in particular adjacent to known populations of sensitive species and areas undergoing restoration or naturalization, will continue as noted in Table 7 and expand as remaining Restoration Overlays are addressed. Efforts will be made to determine if occurrences of invasive species observed are new to the MVHF ESA (south) based a list developed from the Phase I results and invasive species/pests/pathogens known to occur elsewhere in London, the province or outside of the province but have potential to establish (see Table 12). To help with monitoring of the MVHF ESA (south), Adopt-an-ESA groups and members of the community can continue to help trigger management responses to priority invasive species.

Early Detection and Rapid Response (EDRR) is a proactive approach to managing invasive species that can help to prevent establishment. Early detection of newly arrived invasive species, followed by a well-coordinated rapid response, will increase the likelihood of eradication or containment of new invasions.

As outlined in Table 7 and Figure 3, all the Top and High priority Restoration Overlays have been addressed or are in progress as part of restoration efforts in the MVHF ESA (south) and as such on-going monitoring will continue to determine if controlled species re-establish.

The EDRR for the MVHF ESA (south) will continue to include a network of volunteers drawn from community groups, Adopt an ESA groups, Thames Valley Trail Association, Nature London, gardening clubs, and students. In addition to community volunteers the ESA Management Team will continue to manage and monitor using the EDRR approach.

The EDRR is comprised of the following protocol:

1. Early Detection – sighting made from network of volunteers
2. Identification – submission of sighting
3. Alert Screening – review of sighting for confirmation of species
4. Risk Assessment – risk to ESA assessed
5. Rapid Response (if required) – ESA Management Team carries out control of species
6. Monitoring & Reassessment – continued control efforts included in the monitoring

Table 12: Established Invasive Species and Watch List

Species	Type	Presence in MVHF ESA (south)	Rapid Response Management if Detected
Established Invasive			
Non-native Buckthorn (Common and Glossy)	Shrub	See Table 7 and Figure 3 in for details on species distribution in the MVHF ESA (south and Restoration Overlays currently undergoing active management.	If determined during Step 4 that the species presence poses a risk to the ESA, rapid response management should be implemented. Available Technical Bulletins and Best Management Practices from the Ontario Invasive Plant Council (OPIC) are reviewed prior to control. If a species lacks an OPIC document, a control plan is to be developed prior to implementation of control efforts.
Japanese Knotweed	Herbaceous Plant		
Garlic Mustard	Herbaceous Plant		
Non-native Honeysuckles	Bush Shrub		
European Common Reed	Grass		
Norway Maple	Tree		
English Ivy	Groundcover		
Periwinkle	Groundcover		
Oriental Bittersweet	Shrub		
Japanese Barberry	Shrub		
Purple Loosestrife	Herbaceous Plant	Known to occur in the ESA but not in great numbers. Biological control funded by City provides control in ESA. Monitoring is occurring.	
Emerald Ash Borer	Forest Pest	Known to occur throughout ESA	Bi-annual Tree-azin injections

Species	Type	Presence in MVHF ESA (south)	Rapid Response Management if Detected
		and currently impacting Ash trees.	protect 74 Ash Trees in MVHF ESA. City is a leader in protecting Ash trees in Natural Areas.
Watch List			
Giant Hogweed	Herbaceous Plant	Known to occur in the City limits but not the MVHF ESA	If determined during Step 4 that the species presence poses a risk to the ESA, rapid response management should be implemented.
White Sweet Clover	Herbaceous Plant	Known to occur in the MVHF ESA (north)	
Himalayan Balsam	Herbaceous Plant	Not known to occur in the ESA but present in London	Available Technical Bulletins and Best Management Practices from the Ontario Invasive Plant Council (OIPC) should be reviewed prior to control. If a species lacks a OIPC document, a control plan is to be developed prior to implementation of control efforts.
Japanese Stiltgrass	Grass	Not known to occur in Ontario	
Kudzu	Vine	Known only to occur in Leamington and USA as of 2017	
Silvergrass (<i>Miscanthus</i>)	Grass	Not known to occur in Ontario	
Wild Chervil	Herbaceous Plant	Not known to occur in the ESA but present in Ontario	
Asian Long-horned Beetle	Forest Pest	Not known to occur in the ESA but present in Ontario	If confirmed during step 3, notify OIPC and MNRF, develop a species specific management plan and implement rapid response management.
Gypsy Moth	Forest Pest	Not known to occur in the ESA but present in Ontario	
Mountain Pine Beetle	Forest Pest	Not known to occur in Ontario	
Hemlock Woolly Adelgid	Forest Pest	Not known to occur in the ESA but present in Ontario	
Beech Bark Disease	Forest Pathogen	Not known to occur in the ESA but present in Ontario	
Oak Wilt	Forest Pathogen	Not known to occur in Ontario	
Thousand Cankers Disease	Forest Pathogen	Not known to occur in Ontario	
Sudden Oak Death	Forest Pathogen	Not known to occur in Ontario	

5.2.2.3	Wildlife & Wildlife Habitat
	Monitoring of wildlife and wildlife habitats could be based on the survey methods for species groups assessed during Phase I. Generally, the results from these surveys will be considered in comparison to the species data collected as part of Phase I as a means of documenting species presence/non-detect.
5.2.3	Cultural
	Monitoring of cultural elements is to include documenting anthropogenic influences to the MVHF ESA (south) that may be associated with trail users, adjacent landowners and management activities such as restoration and naturalization.
5.2.3.1	Encroachment
	The boundary for the MVHF ESA (south) is considered the baseline for comparison when reviewing whether there has been encroachment into the MVHF ESA (south) over the management period (2018-2028). This review is to include comparisons of the most recent aerial imagery with the mapped boundary and on-site reviews of the boundary on public lands to determine other types of encroachment such as yard waste dumping, gates in rear yard fences, encroachment of gardens, vegetation clearing and mowing of meadow areas.
5.2.3.2	Trails
	The policies and process outlined in the Guidelines provide guidance for the design, implementation, management, monitoring and potential closure of trails and trail structures in ESAs. The UTRCA ESA team monitors, maps and keeps an inventory of the managed trails, closed trails and trail structures within the ESA. Trail structures are monitored for lifecycle renewal to ensure public safety and assist in planning for capital projects. Members of the public submit Observation Reports when issues arise with trails to further assist in the monitoring of trails.
5.2.3.3	Non-permitted Uses
	In addition to encroachment within the MVHF ESA (south), other non-permitted uses are documented through incidental observations during other monitoring as well a review of ESA Observations Forms submitted to the City. Other non-permitted uses may include bicycles, dogs off-leash, littering, and campfires.
5.2.3.4	Restoration
	As restoration areas generally involve control of invasive species and planting of trees/shrubs, monitoring would be a combination of the EDRR program and monitoring of the health and vigour of plantings.
5.2.3.5	Naturalization
	Monitoring of these areas is to include a combination of other monitoring such as noting non-permitted uses (i.e. mowing), EDRR and noting the health/vigour of plantings. Monitoring can include stem counts to document the density of shrubs and trees and how quickly succession is occurring. This will help to determine whether additional planting is needed to quicken succession of an area.

5.3 Monitoring

The variables outlined in the above sections along with the methods for monitoring, recommended frequency for monitoring, triggers for a management response and management responses for the MVHF ESA (south) are outlined in Table 13.

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Table 13: Monitoring Framework for the MVHF ESA (south)

Element	Monitoring Variable	Focus of Monitoring	Methods and Locations(s) for Monitoring	Frequency	Lead Agency & Funding Source	Requirements for Management Response	Management Response
Abiotic	Bank Migration	Bank erosion and distance to trail segments	Tracking rate of bank migration from the eight erosion monitoring stations found along Medway Creek, one station for Snake Creek and one station for Gainsborough Ravine.	Annual	Storm Water Management Unit ESA Mg Team – Operating Budget	When natural bank erosion of watercourses presents a hazard to trail segments that are adjacent to Snake Creek and Medway Creek. Hazard distance to be set by recommendations in the MCSSU. Other areas of bank erosion may require rehabilitation but priority for a response would be for areas adjacent to managed trails.	Following process in Guidelines review of the trail segment and whether the segment can be moved back from the bank or whether the trail needs to be closed.
	Trail Condition	General trail condition including: <ul style="list-style-type: none"> Condition of trail surface (e.g. cracking of wood) Trail width Creation of side trails and/ or off-trail areas (i.e. for viewing or passing) Areas of water saturation/ponding along the trail Mobilization of soils 	On trails, mapping and documenting locations of trail widening, saturation (i.e. wet areas).	Every two years, beginning in the spring of 2018	ESA Mg Team – Operating Budget	Review every two years. If data indicates on-going trail issues the management response is triggered.	Following process in Guidelines review of the trail segment and whether the issue can be addressed through re-design of the trail or whether the trail should be closed.
Biotic	Sensitive Species	Presence and abundances of Species at Risk and rare species within or adjacent to management activities (restoration/naturalization) or trail work.	Use the methods as outlined under Section 2.1 of the Phase I report for identifying Sensitive Species. May be combined with other monitoring such as vegetation, birds etc.	Survey for one to three years following activity.	ESA Mg Team – Operating Budget	Review before and after data to determine if there are impacts to species. If declines in species are identified implement management response. If declines not documented, survey frequency can be decreased.	More detailed review of data for specific species in decline. ESA Management Committee to determine next steps if decline not attributed to external factors (i.e. province-wide species decline).
	Invasive Species	Undesirable species in restoration/naturalization areas.	On-going monitoring of ESA and restoration areas and use of EDRR (see Section 5.2.2.2 and Table 7) and continue to encourage public to submit observations.	On-going observations from public through EDRR. Annual targeted surveys of restoration areas with known Species at Risk/ rare species. Targeted surveys every two years of restoration areas without Species at Risk/rare species	ESA Mg Team – Operating Budget ESA Mg Cte – Capital Budget (Development of EDRR program)	If species reported through Early Detection or other monitoring events is determined to be a risk to the ESA, implement management response.	Implement rapid response management depending on the species. Follow best management practices for control or if species lack practices, development of species specific management plan.
	Wildlife & Wildlife Habitats	Survey of wildlife/wildlife habitat within or adjacent to management activities (restoration/naturalization) or trail work Key areas for monitoring include species abundance/ presence that define the habitat significance for the following key habitats: Colonial-Nesting Bird Breeding Habitat	Surveying species populations and wildlife habitats	Targeted survey, for one to three years following activity.	ESA Mg Team – Operating Budget	Review data to document trends in populations. If habitats decline implement management response.	ESA Management Committee to determine next steps if decline not attributed to external factors (i.e. province-wide species decline).

Element	Monitoring Variable	Focus of Monitoring	Methods and Locations(s) for Monitoring	Frequency	Lead Agency & Funding Source	Requirements for Management Response	Management Response
		(Bank & Cliff) (CNB1) Amphibian Breeding Habitat (ABH1-ABH4) Seeps and Springs					
	Encroachment	Mowing, yard waste, fences, gates, or other incursions on City owned ESA lands.	Continue to encourage community reporting of encroachment into City ESA lands for follow up. By-law staff/ESA Team initiate encroachment enforcement process initiation to achieve compliance for encroachments into City ESA lands.	On-going observations from public will continue to initiate enforcement process to reduce encroachments and increase compliance as By-law staff time permits	City By-law staff and ESA Mg Team – Operating Budget	Where there appears to be encroachment into the City owned ESA boundary.	Continue to educate residents who back onto ESAs about encroachment issues through mail outs of EEPAC's Living with Natural Areas brochure etc. Enforcement by the UTRCA and City by-law staff, where required.
	Trail Usage (Linkages)	Usage of trail(s) before and after implementation of Linkage A.	Installation of trail counter(s) at select locations north and south of Linkage A to collect usage data, and, monitor user compliance with associated informal trail closure east of Medway Creek.	Annual	ESA Mg Cte – Capital Budget	Following implementation of Linkage A, review the feasibility and appropriateness of Linkage D with the Guidelines, regulations, visual impact study and consultation. Options for D include seasonal crossing options such as stepping stones. Determine if implementation of D would minimize the current impacts to creek banks and use of informal trails identified at D in Table 10 as the priority is on protecting ecological integrity and second on user experience and connectivity.	Decision on whether to install Linkage D or not install Linkage D
Cultural	Managed Trails	Frequency of trail use	Installation of trail monitors to collect data on users - noting initial cost of \$5,000.00 each to purchase and install.	Annual	ESA Mg Team – Capital Budget	Review the user data after the initial year of monitoring to determine baseline data The monitoring data is to be reviewed every two years afterwards.	Further detailed review of collected usage data may help to inform next steps. Follow process in Guidelines to review trail surface/ design/ location.
	Informal trails	Continued use of informal trails or creation of new informal trails.	On trails, mapping and documenting level of use of informal trails by review of wear on trail and success of rehabilitation.	Annual	ESA Mg Team – Operating Budget	Review every two years. If data collected indicates on-going use of informal trail(s) where vegetation is worn away management response is triggered.	Review of informal trail. Follow Trail Closure steps in Guidelines in section 7.2.6 if still present.
	Non-permitted Uses	By-law infractions: • dogs off-leash • bicycles • littering	Review of ESA Observation Forms submitted to the City. Input from ESA team enforcement officers.	Every two years, beginning in 2018	ESA Mg Team – Operating Budget	Review every two years for trends. If data indicates on-going or increasing infractions, implement management response.	Further review of the infraction type and ESA management committee to discuss approach to address corrective action. May include additional or revised signage.
	Restoration	Restoration Overlay areas	On site review of the restoration areas listed in Table 9 to document health and condition of plantings. Review of succession progress (where applicable). May be combined with	Every two years, beginning the year after restoration has taken place	ESA Mg Team – Operating Budget	Review the data collected every two years from monitoring to determine whether restoration efforts have been effective or if additional effort required. If additional effort is determined, implement management response.	Development of a detailed restoration plan if additional effort is required. ESA Management Committee to review plan prior to implementation.

Element	Monitoring Variable	Focus of Monitoring	Methods and Locations(s) for Monitoring	Frequency	Lead Agency & Funding Source	Requirements for Management Response	Management Response
			other monitoring such as Invasive Species, Vegetation etc.				
	Naturalization	Naturalization Areas	On site review of the naturalization areas listed in Table 12 to document health and condition of plantings. Review of succession progress (where applicable). May be combined with other monitoring such as Invasive Species, Vegetation etc.	Every two years, beginning the year after initial naturalization efforts have taken place	ESA Mg Team – Operating Budget	Review the data collected every two years from monitoring to determine whether naturalization efforts have been effective or if additional effort required. If additional effort is determined, implement management response.	Development of a detailed naturalization plan if additional effort is required. ESA Management Committee to review plan prior to implementation.

6.0

Continued Community Engagement

The primary role of community engagement in the protection of natural areas is to build awareness, foster education and encourage participation in order to create or increase a culture of conservation. This culture of conservation promotes natural areas as a common good and that conservation is a collective responsibility for all that visit and enjoy the natural area. Within the MVHF ESA (south), community engagement has included existing stewardship programs with opportunities to implement and promote new programs for stewardship as well as education, research and outreach.

6.1 Stewardship

A stewardship ethic refers to the thoughtful care of ecological systems to preserve or enhance their natural qualities and recognizes that the values and goals of all users of natural areas are more similar than they are different.

6.1.1 Existing Programs

A number of programs have promoted stewardship of the MVHF ESA (south) and community engagement. Currently, these include the City's Adopt-an-ESA program and many other volunteer based community groups.

6.1.1.1 Adopt-An-ESA Program

The City encourages civic clubs, local businesses, neighbourhood associations, faith groups and school groups to get involved in the preservation and enhancement of publically owned ESAs. By participating in the Adopt-An-ESA Program, volunteers donate time and resources to give special care to an ESA by helping to maintain, enhance and protect the ESA's natural features and functions. A group signed up to the program commits to helping maintain the adopted area of the ESA for a minimum of two years. Within those two years, the group will lead a minimum of two clean-ups per adopted year. Three groups participate in the Adopt-An-ESA Program for the MVHF ESA and include the following:

- Friends of Medway Creek
- Sherwood Forest / Orchard Park Ratepayer Association
- Sunningdale West Ratepayers Association

6.1.1.2 Friends of Medway Creek

In 2008, the Friends of Medway Creek was established to help implement restoration activities and environmental initiatives that improve the health of the Medway Creek watershed. The mission statement is "*Community members promoting the protection and improvement of the Medway Creek Watershed*".

6.1.2 Proposed New Programs

While existing programs may provide much needed support in carrying out stewardship projects for the MVHF ESA (south), there is opportunity to implement additional programs to continue stewardship but also coordinate the collection of data and potentially combine with the monitoring recommended in Section 5.0.

6.1.2.1 Citizen Science Projects

Local stewardship and knowledge of the ESA could be enhanced by providing community members with a chance to participate in ecological monitoring, environmental training and education. This could include encouraging community members to participate in the regular monitoring, as recommended under Section 5.0.

The [Toronto and Region Conservation Authority's \(TRCA\) Terrestrial Volunteer Monitoring Program](#) trains local citizens to monitor habitat in the TRCA watershed. By engaging volunteers in this type of monitoring, the TRCA provides an opportunity for citizens to contribute to environmental protection in a meaningful way, and to learn more about local native species and their habitat needs.

Other types of Citizen Science projects that could be implemented for the MVHF ESA (south) to not only engage the public but also contribute to the collection of provincial species data could include the following:

- Christmas Bird Count – annual event held between December 14 and January 5 each year and is organized by Bird Studies Canada. The count coordinator for London could be contacted to see if data specific to the MVHF ESA (south) can be kept separate.
- Great Lakes Worm Watch – Establish study plots in the older patches of forest within the MVHF ESA (south) to collect baseline data on the density and spread of invasive earthworms using the Great Lakes Worm Watch study protocol. Data collected by volunteers could help to guide future restoration and plantings as forests with high densities of earthworms may have trouble regenerating and may require supplemental plantings.
- Bumble Bee Watch – a collaborative effort to track and conserve North America's bumble bees.

6.1.2.2 MVHF ESA BioBlitz

A BioBlitz brings together taxonomic experts, citizen scientists and the general public to inventory all species (plants, animals, fungi and more) in a particular area over a 24 hour period. Participants record all the organisms they find, and then experts verify their identity. As the Blitz proceeds and after it is done, the species records are compiled into a single data set: the species list, which provides a snapshot of the biodiversity in that location on that date. With potential changes in species biodiversity occurring due to changes in climate, establishing a BioBlitz for the MVHF ESA (south) could help with tracking changes in species diversities from the findings documented during Phase I.

For the provincial based Ontario BioBlitz program, there are three main components: the intensive scientific survey, the Guided BioBlitz, and public programs. Each activity differs in the amount of prior knowledge and experience required, and in time commitment. Generally, the province based program has focused on larger watersheds (e.g. Credit River, Rouge River, Don River, Humber River) as opposed to specific natural areas. Smaller community-led BioBlitzes are becoming more frequent and several Provincial Parks have held park specific Blitzes.

The diagram to the right from OntarioBioBlitz.ca below offers more detail, and could be used to help develop a Blitz for the MVHF ESA (south). Should this be considered, consideration should be provided for providing participants direction regarding trail use and sensitive areas.



6.2 Education

In addition to the education opportunities provided to the community by Adopt an ESA and other stewardship programs, a number of schools and post-secondary institutions are located in the vicinity of the MVHF ESA (south) and represent another opportunity to extend ecological knowledge and stewardship. Options for engaging staff/students in education about the MVHF ESA (south) but also active monitoring/management could continue to include:

- In-Class Presentations
- Guided Hikes
- Citizen Science projects
- Restoration Activities (e.g. tree planting)
- Co-op Opportunities with the UTRCA/City

Options for engaging students should be designed to strengthen stewardship of the MVHF ESA (south) amongst young people. Creative presentations and hands on activities in the ESA that allow an opportunity to provide input to ongoing management can provide students with a better understanding the need for the management of sensitive habitats, and potentially spark interest in becoming more involved in community efforts to enhance and protect the MVHF ESA.

6.3 Community Events

Community based events raise the profile of environmental stewardship and unite neighbourhoods in a common initiative. The City of London's Clean & Green Community Clean Up Day and Adopt an ESA "clean-up days" encourage community members to pick up litter. Events centered on tree planting or removal of non-native plants (e.g. Garlic Mustard pulling) will continue to be facilitated by the Adopt and ESA groups and others, with cooperation of the City and UTRCA, through guidance, provision of services such as removal of debris once it is collected to a central location, providing garbage bags and basic tools (shovels, etc.), and periodically recognizing participants' contributions. Such events also result in the public investing time and energy in stewardship, thus increasing their value, raising support for allocating funds for CMP implementation and increasing the likelihood of compliance with ESA rules by leading by example.

6.4 Opportunities for Scientific Research

Scientific research by qualified individuals which contributes to the knowledge of the natural history, cultural history and environmental management within the publically owned portions of MVHF ESA (south) is to be encouraged.

Research must meet all requirements under applicable provincial and federal legislation. Permission is generally granted after review of a work plan that demonstrates no negative impacts and sign off from the Managing Director of Parks and Recreation as required under City By-law.

The following general fields of research are particularly appropriate for the MVHF ESA (south) and will be encouraged:

- Landforms, vegetation, fish, wildlife, and archaeology of the ESA;
- The status and life history requirements of species at risk and other rare species and communities;
- Density and spread of invasive species such as European earthworms, vegetation, forest pests/pathogens;
- The density of deer populations; and,
- Environmental restoration and management.

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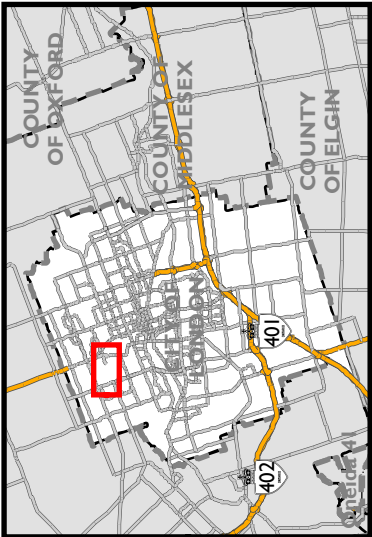
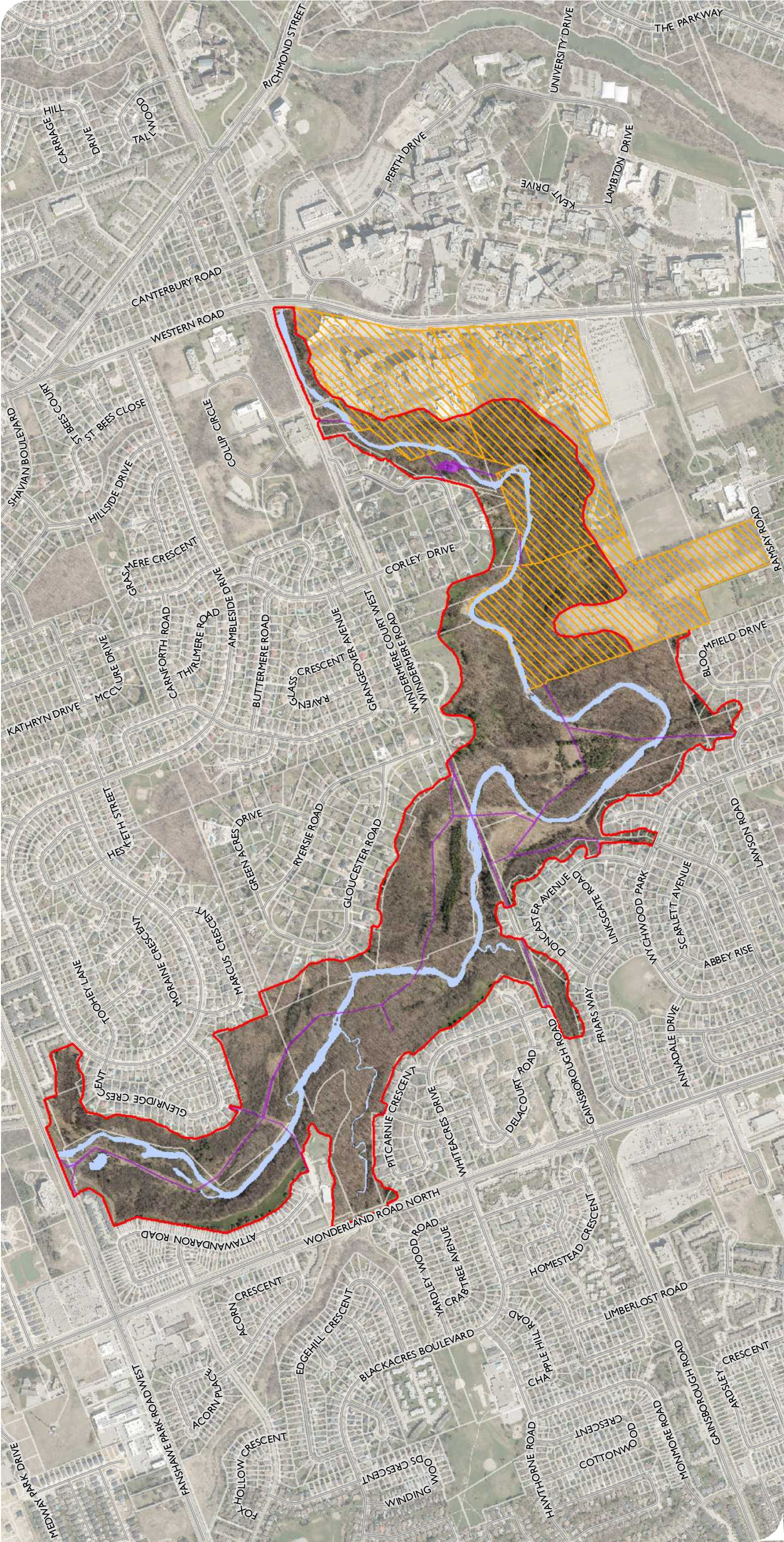
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DRAFT

Draft Figures



CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 1
MVHF ESA (SOUTH) OVERVIEW

Utility Overlay (4 m)

MVHF ESA (south) Boundary (Refined as per Phase I)

Watercourse

Western/Huron Properties

Property Boundaries

MAP DRAWINGS INFORMATION:
DATA PROVIDED BY MNRF (2017) &
CITY OF LONDON (2016)

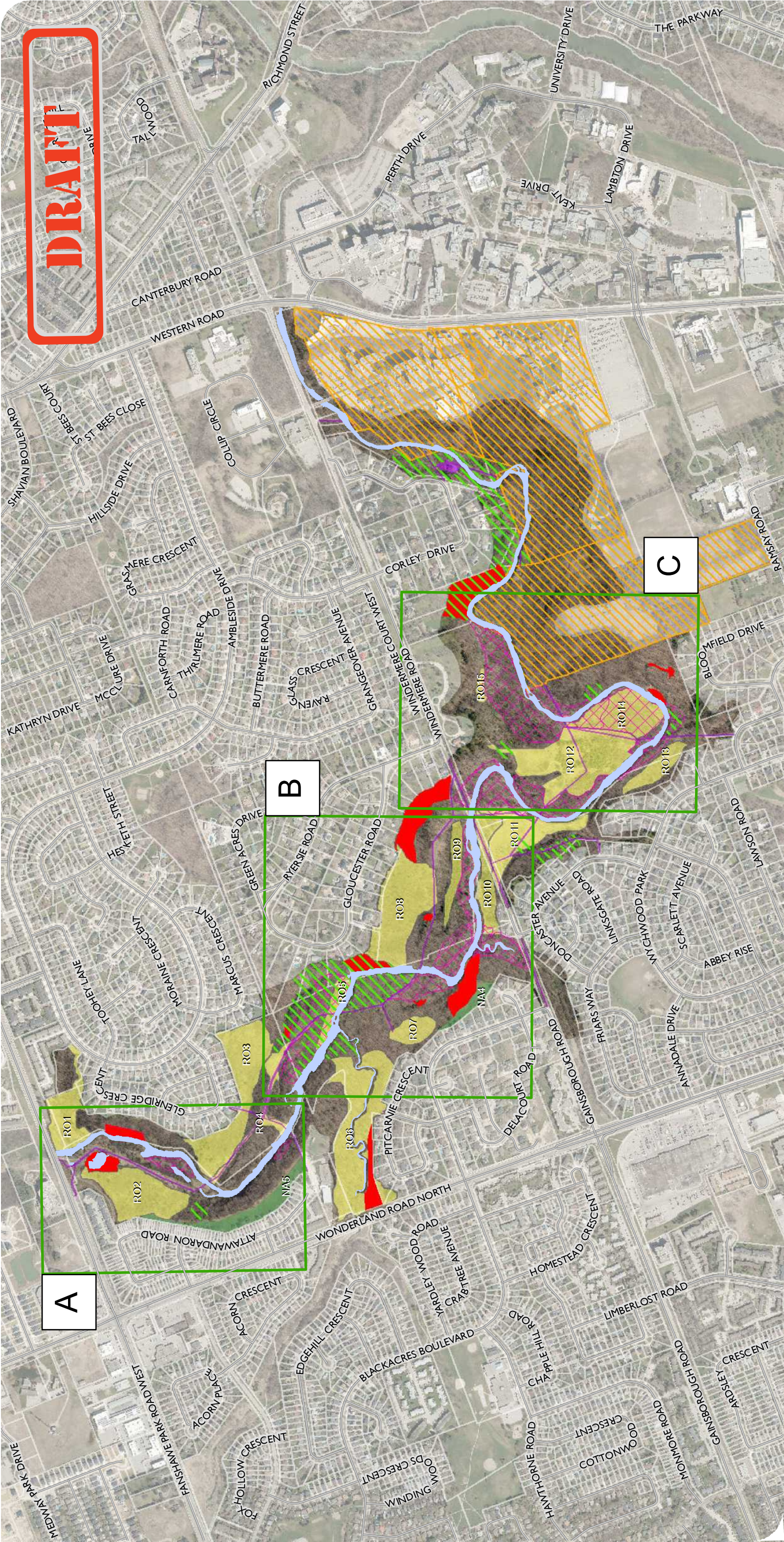
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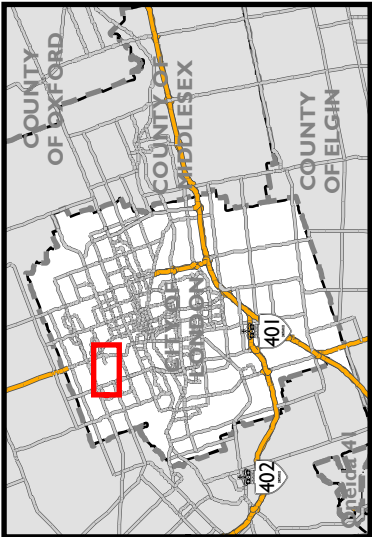


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A

B

C



Watercourse

Utility Overlay (4 m)

SAR Habitat

Habitat for Species of Conservation Concern

Wildlife Habitat

Western/Huron Properties

Property Boundaries

Naturalization Area

Restoration Overlay

MAP DRAWINGS INFORMATION:
DATA PROVIDED BY MNRF (2017) &
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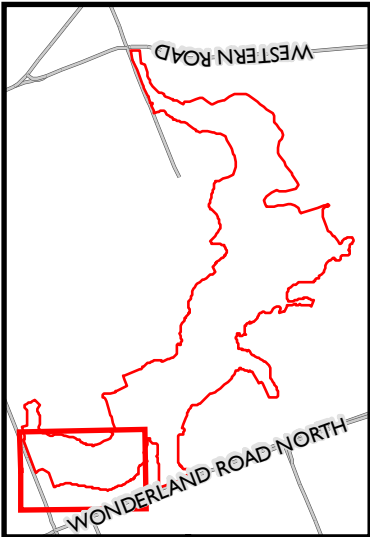
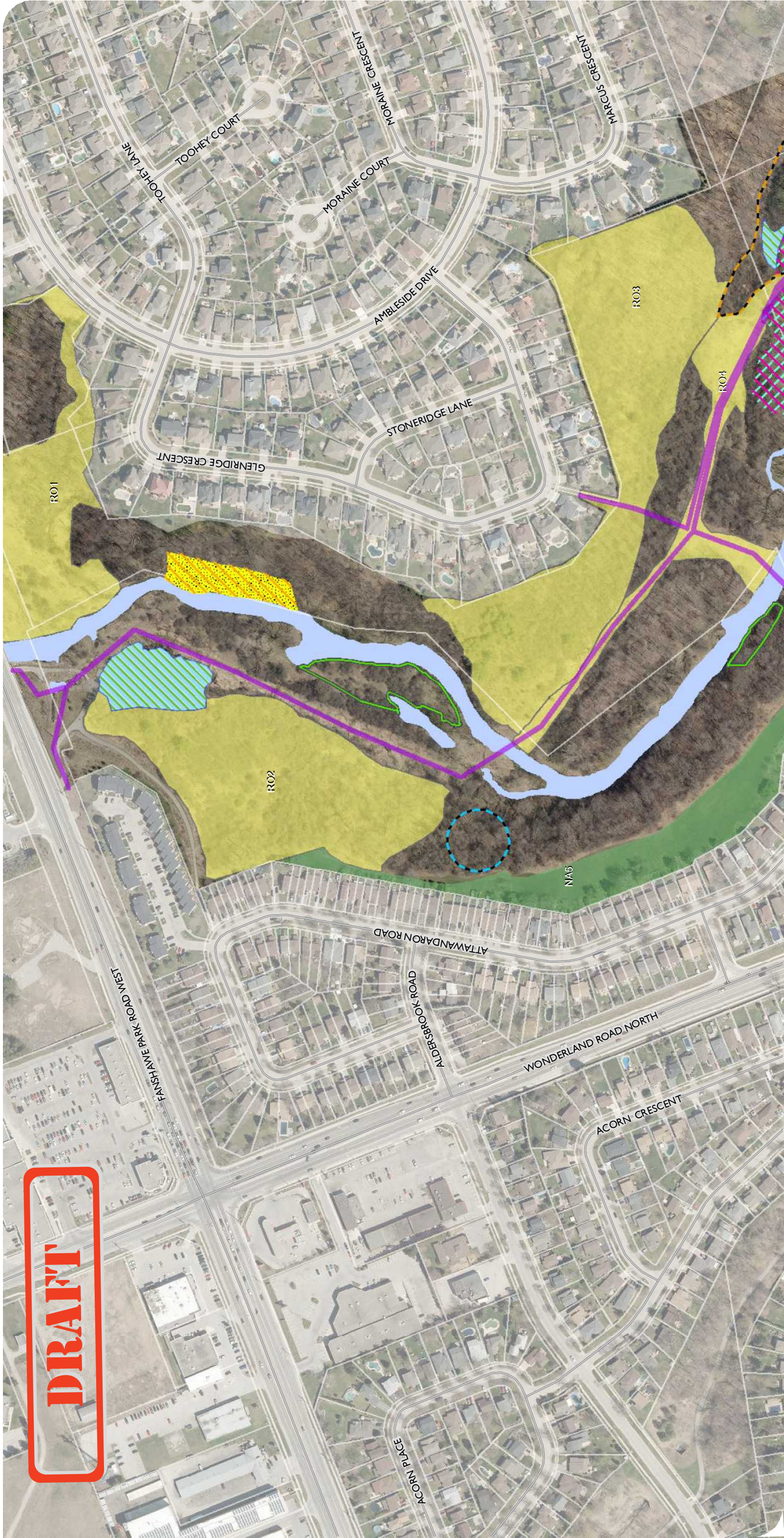
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CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 2
ENVIRONMENTAL MANAGEMENT STRATEGY
(RESTORATION & NATURALIZATION)

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CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 2a
ENVIRONMENTAL MANAGEMENT STRATEGY
(RESTORATION & NATURALIZATION)

- | | | | | | | | | | | | |
|--|-------------------|--|---|--|--|--|--|--|--------------------------|--|-----------------------|
| | Butternut | | Amphibian Breeding Habitat | | Habitat for Rare Species (American Gromwell) | | Habitat for Rare Species (Shrubby St. John's Wort) | | Western/Huron Properties | | Naturalization Area |
| | False Rue Anemone | | Habitat for Rare Species (Cream Violet) | | Habitat for Special Concern Species (Green Dragon) | | Property Boundaries | | Restoration Overlay | | Utility Overlay (4 m) |
| | | | | | Seeps and Springs Area | | Watercourse | | | | |

MAP DRAWINGS INFORMATION:
DATA PROVIDED BY: MNRF (2017) &
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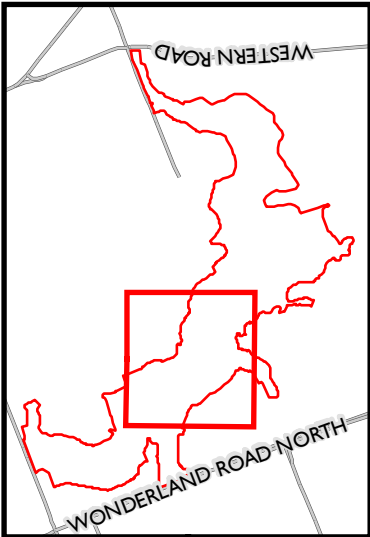
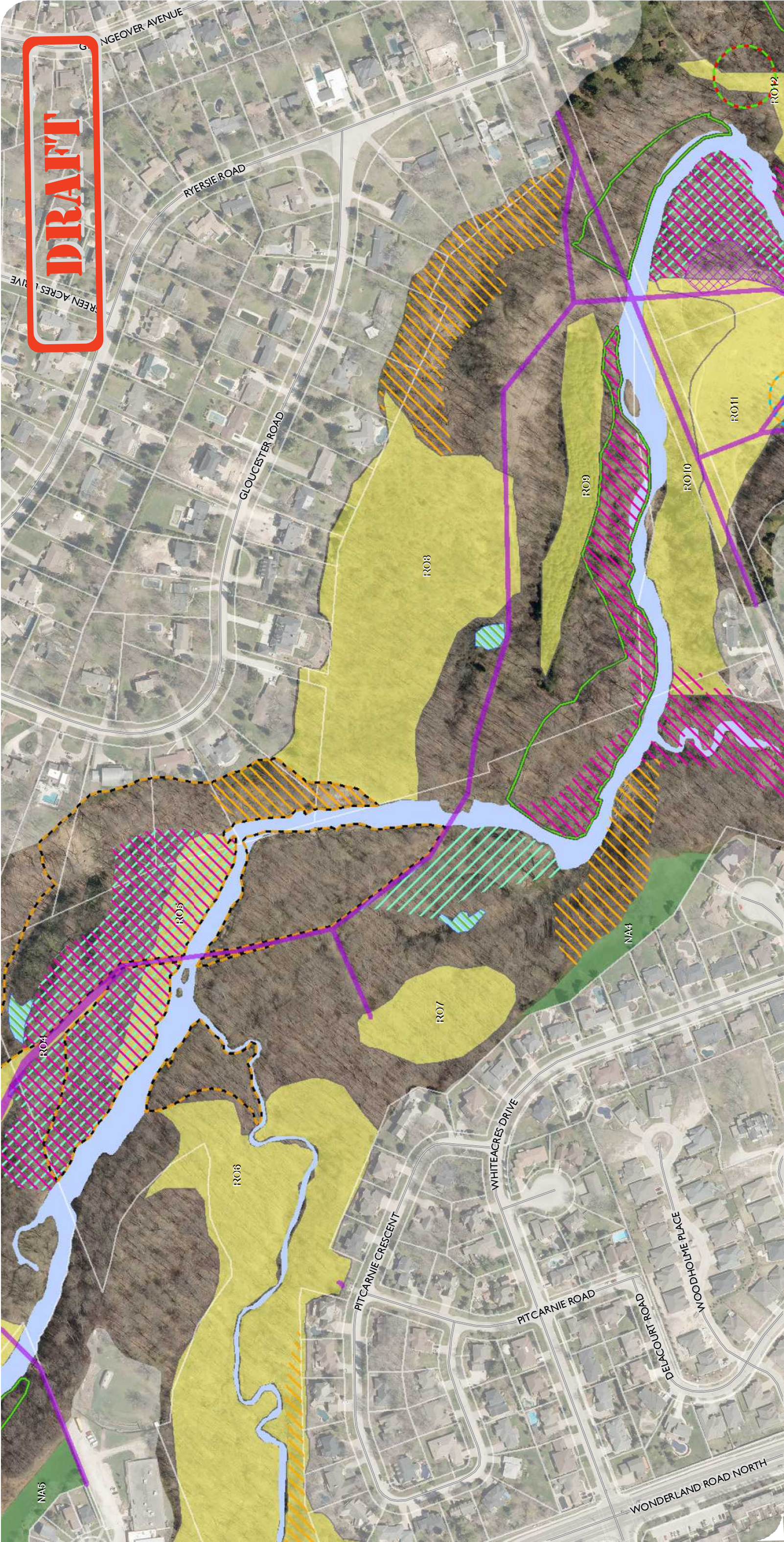


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CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 2b
ENVIRONMENTAL MANAGEMENT STRATEGY
(RESTORATION & NATURALIZATION)

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LEGEND

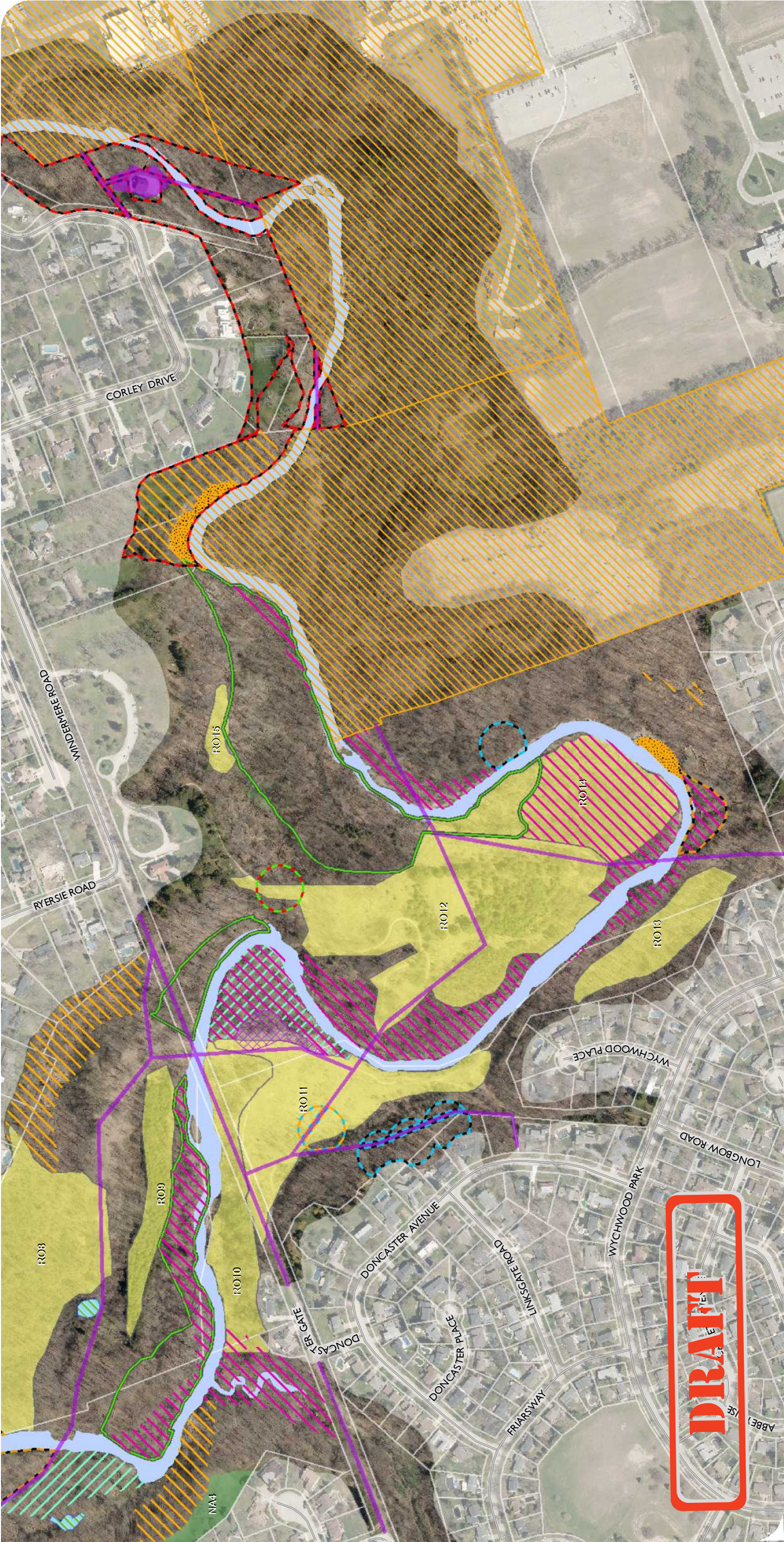
Cucumber Magnolia	Amphibian Breeding Habitat	Habitat for Rare Species (Slender Satin Grass)	Western/Huron Properties	Naturalization Area
False Rue Anemone	Habitat for Rare Species (American Gromwell)	Habitat for Special Concern Species (Green Dragon)	Property Boundaries	Restoration Overlay
Kentucky Coffee-tree	Habitat for Rare Species (Cream Violet)	Seeps and Springs Area	Watercourse	Utility Overlay (4 m)

Scale: 1:3,000

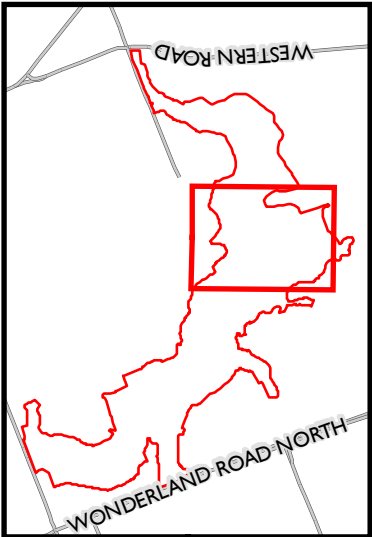
North Arrow: N, E, S, W

Scale Bar: 0, 37.5, 75, 150 m

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Butternut

Cucumber Magnolia

False Rue Anemone

Kentucky Coffee-tree

Queensnake

Amphibian Breeding Habitat

Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)

Habitat for Rare Species (American Gromwell)

Habitat for Rare Species (Cream Violet)

Habitat for Rare Species (Slender Satin Grass)

Habitat for Special Concern Species (Green Dragon)

Seeps and Springs Area

Western/Huron Properties

Property Boundaries

Watercourse

Naturalization Area

Restoration Overlay

Utility Overlay (4 m)

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50

100

200 m

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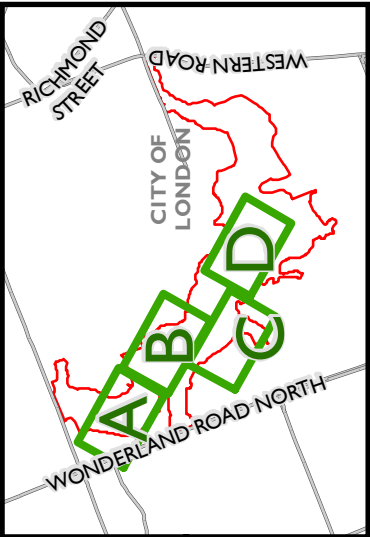
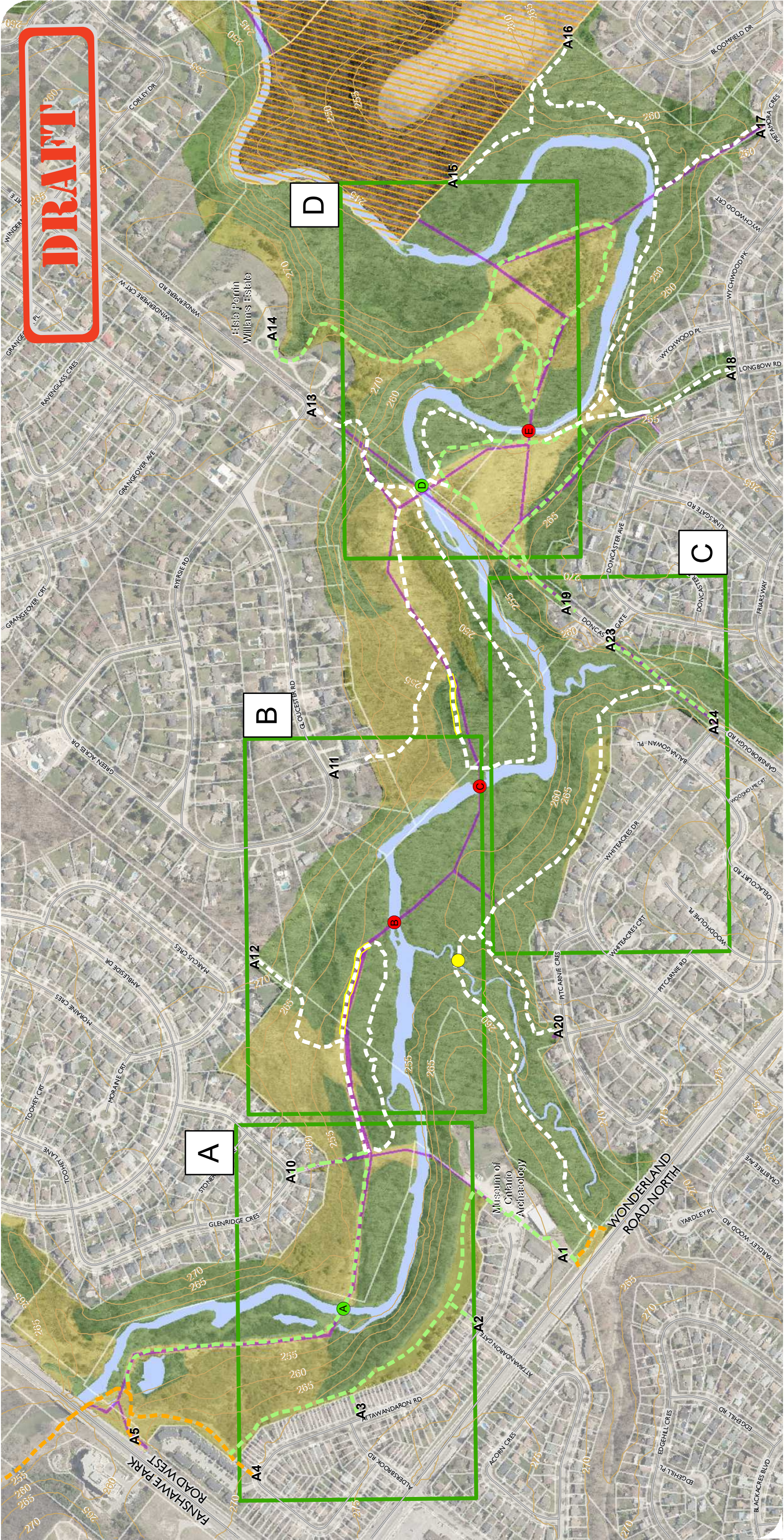
CONSERVATION MASTER PLAN

MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 2c

ENVIRONMENTAL MANAGEMENT STRATEGY
(RESTORATION & NATURALIZATION)

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CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 5
DRAFT "ENHANCED CONNECTIVITY"
SUSTAINABLE TRAIL CONCEPT PLAN

Trail Linkage (Medway Creek) (Does not comply with Guidelines)
Trail Linkage (Medway Creek)
Stepping Stones (Snake Creek)
A# Access Point

Level One Trail
Level Two Trail
Level Three Trail
Improved Trail Surface
Contour (5 metre Elevation)
Property Boundaries

Utility Overlay (4 m)
Western/Huron Properties
Watercourse (also Nature Reserve)

Management Zone
Nature Reserve
Natural Environment

UNMANAGED EXISTING TRAILS HAVE BEEN REMOVED FROM MAPPING FOR THIS OPTION

DATE: 8/20/2017

STATUS: DRAFT

PROJECT: 17-5428



CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 5a
DRAFT "ENHANCED CONNECTIVITY"
SUSTAINABLE TRAIL CONCEPT PLAN

- Utility Overlay (4 m)

Contour (5 metre Elevation)

Trail Linkage (Medway Creek)

A# Access Point
- Level One Trail

Level Two Trail

Level Three Trail
- Butternut

False Rue Anemone
- Habitat for Rare Species (American Gromwell)

Habitat for Rare Species (Cream Violet)

Habitat for Special Concern Species (Green Dragon)
- Property Boundaries

Management Zone

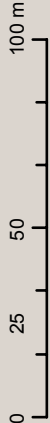
Nature Reserve

Natural Environment

Watercourse (also Nature Reserve)

MAP DRAWING INFORMATION:
DATA PROVIDED BY: MMRF (2017) &
CITY OF LONDON (2016)

MAP CREATED BY: JWH
MAP CHECKED BY: JLP
MAP PROJECTION: NAD 1983 UTM, Zone 17N



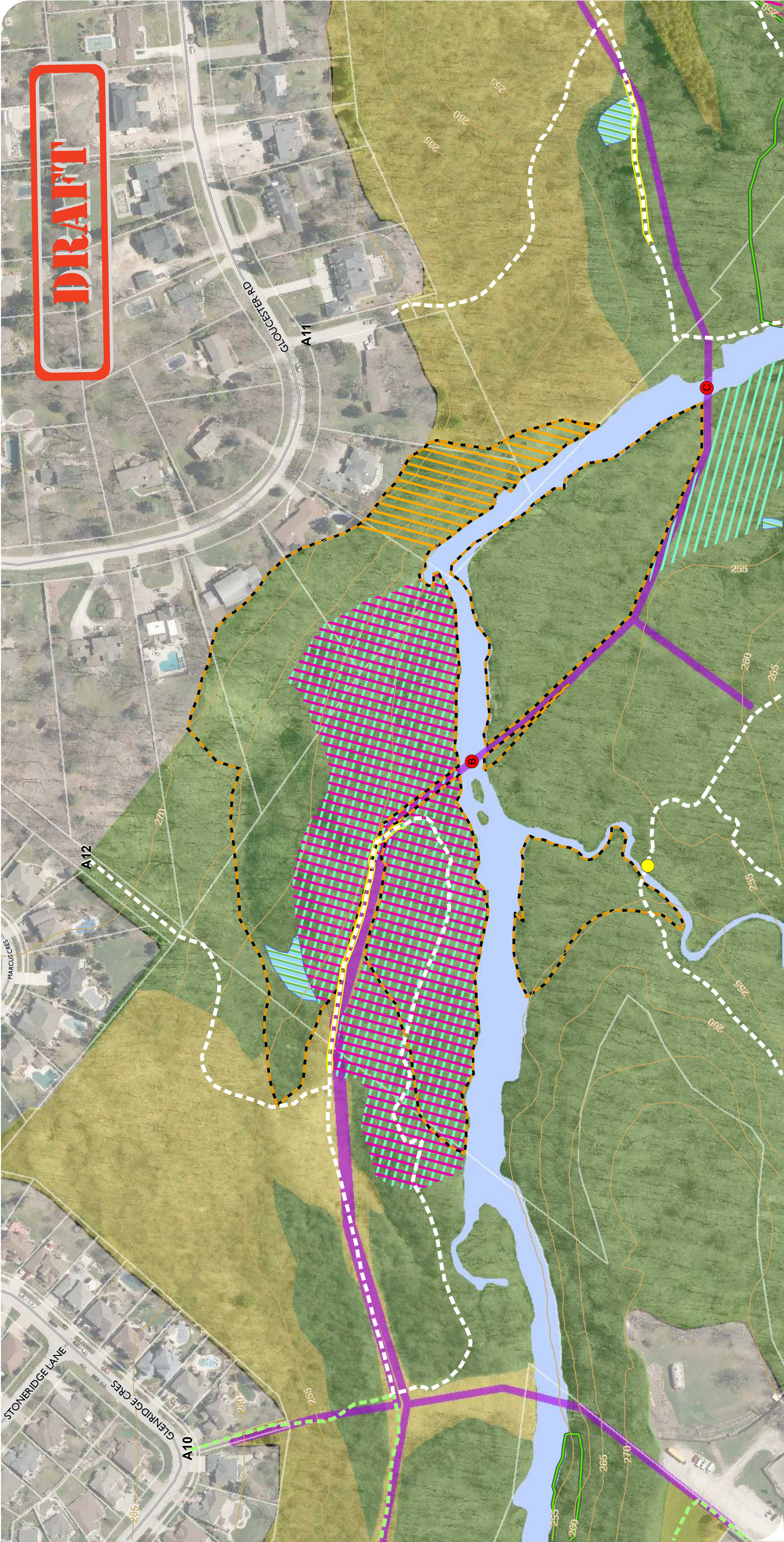
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THE OPTIONS PRESENTED IN THIS DRAFT CONCEPT PLAN
COMPLY WITH THE COUNCIL APPROVED GUIDELINES FOR
MANAGEMENT ZONES AND TRAILS IN ESAS (2016) UNLESS OTHERWISE NOTED

PROJECT: 17-5428 STATUS: DRAFT DATE: 9/20/2017

UNMANAGED EXISTING TRAILS HAVE BEEN REMOVED
FROM MAPPING FOR THIS OPTION

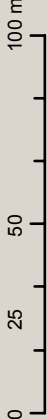




CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 5b
DRAFT "ENHANCED CONNECTIVITY"
SUSTAINABLE TRAIL CONCEPT PLAN

- Utility Overlay (4 m)
- Contour (5 metre Elevation)
- Trail Linkage (Medway Creek) (Does not comply with Guidelines)
- Stepping Stones (Snake Creek)
- A# Access Point
- Level One Trail
- Level Two Trail
- Improved Trail Surface
- Amphibian Breeding Habitat
- False Rue Anemone
- Habitat for Rare Species (American Gromwell)
- Habitat for Rare Species (Cream Violet)
- Habitat for Special Concern Species (Green Dragon)
- Seeps and Springs Area
- Property Boundaries
- Management Zone
 - Nature Reserve
 - Natural Environment
 - Watercourse (also Nature Reserve)



1:2,000

THE OPTIONS PRESENTED IN THIS DRAFT CONCEPT PLAN
COMPLY WITH THE COUNCIL APPROVED GUIDELINES FOR
MANAGEMENT ZONES AND TRAILS IN ESAS (2016) UNLESS OTHERWISE NOTED

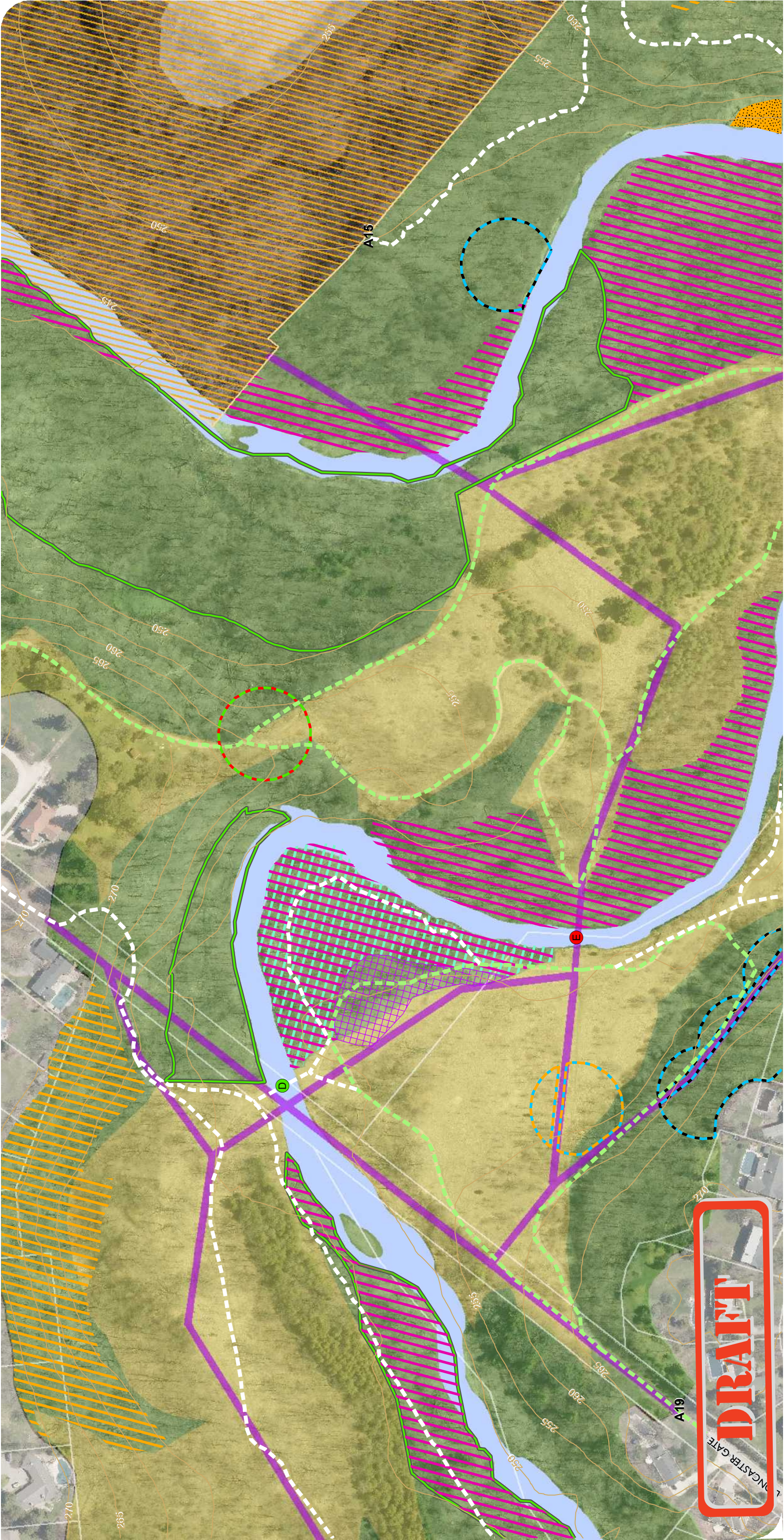
UNMANAGED EXISTING TRAILS HAVE BEEN REMOVED
FROM MAPPING FOR THIS OPTION



MAP DRAWING INFORMATION:
DATA PROVIDED BY: MMRF (2017) &
CITY OF LONDON (2016)

MAP CREATED BY: JWH
MAP CHECKED BY: JLP
MAP PROJECTION: NAD 1983 UTM, Zone 17N

PROJECT: 17-5428 STATUS: DRAFT DATE: 9/20/2017



CITY OF LONDON
CONSERVATION MASTER PLAN
MEDWAY VALLEY HERITAGE FOREST ESA (SOUTH)

FIGURE 5d
DRAFT "ENHANCED CONNECTIVITY"
SUSTAINABLE TRAIL CONCEPT PLAN

Utility Overlay (4 m)
Contour (5 metre Elevation)
Trail Linkage (Medway Creek) (Does not comply with Guidelines)
Trail Linkage (Medway Creek)
A# Access Point

Level One Trail
Level Two Trail
Butternut
Cucumber Magnolia
Kentucky Coffee-tree

Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)
Habitat for Rare Species (American Gromwell)
Habitat for Rare Species (Cream Violet)
Habitat for Rare Species (Slender Satin Grass)
Habitat for Special Concern Species (Green Dragon)
Seeps and Springs Area

Property Boundaries
Western/Huron Properties
Nature Reserve
Natural Environment
Watercourse (also Nature Reserve)

MAP DRAWING INFORMATION:
DATA PROVIDED BY: MMRF (2017) &
CITY OF LONDON (2016)

MAP CREATED BY: JWH
MAP CHECKED BY: JLP
MAP PROJECTION: NAD 1983 UTM, Zone 17N

PROJECT: 17-5428 STATUS: DRAFT DATE: 9/20/2017

THE OPTIONS PRESENTED IN THIS DRAFT CONCEPT PLAN
COMPLY WITH THE COUNCIL APPROVED GUIDELINES FOR
MANAGEMENT ZONES AND TRAILS IN ESAS (2016) UNLESS OTHERWISE NOTED

UNMANAGED EXISTING TRAILS HAVE BEEN REMOVED
FROM MAPPING FOR THIS OPTION

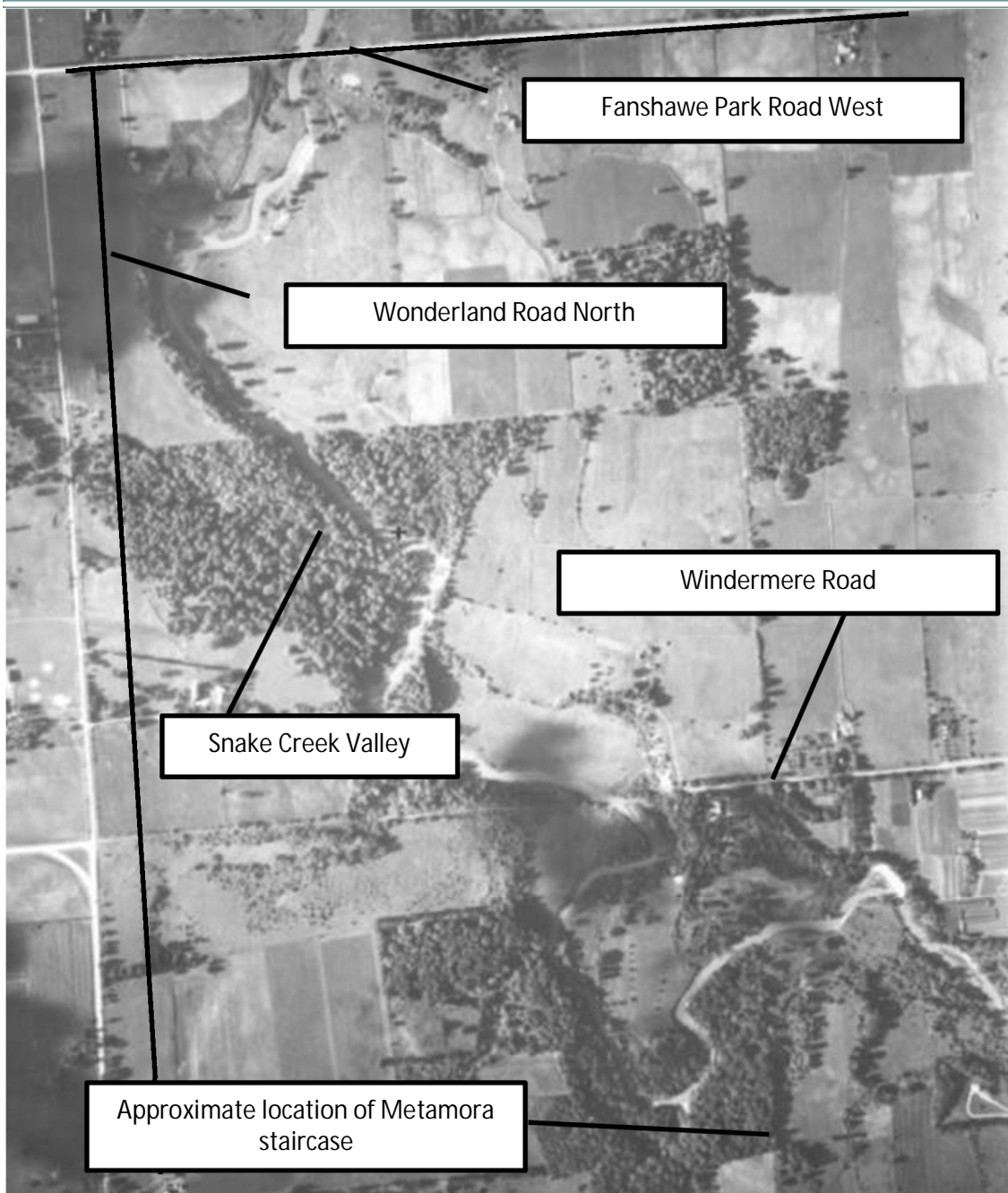
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0 25 50 100 m

Appendix A

Historic Aerial Photographs

Aerial Photographs of the MVHF ESA (south)¹



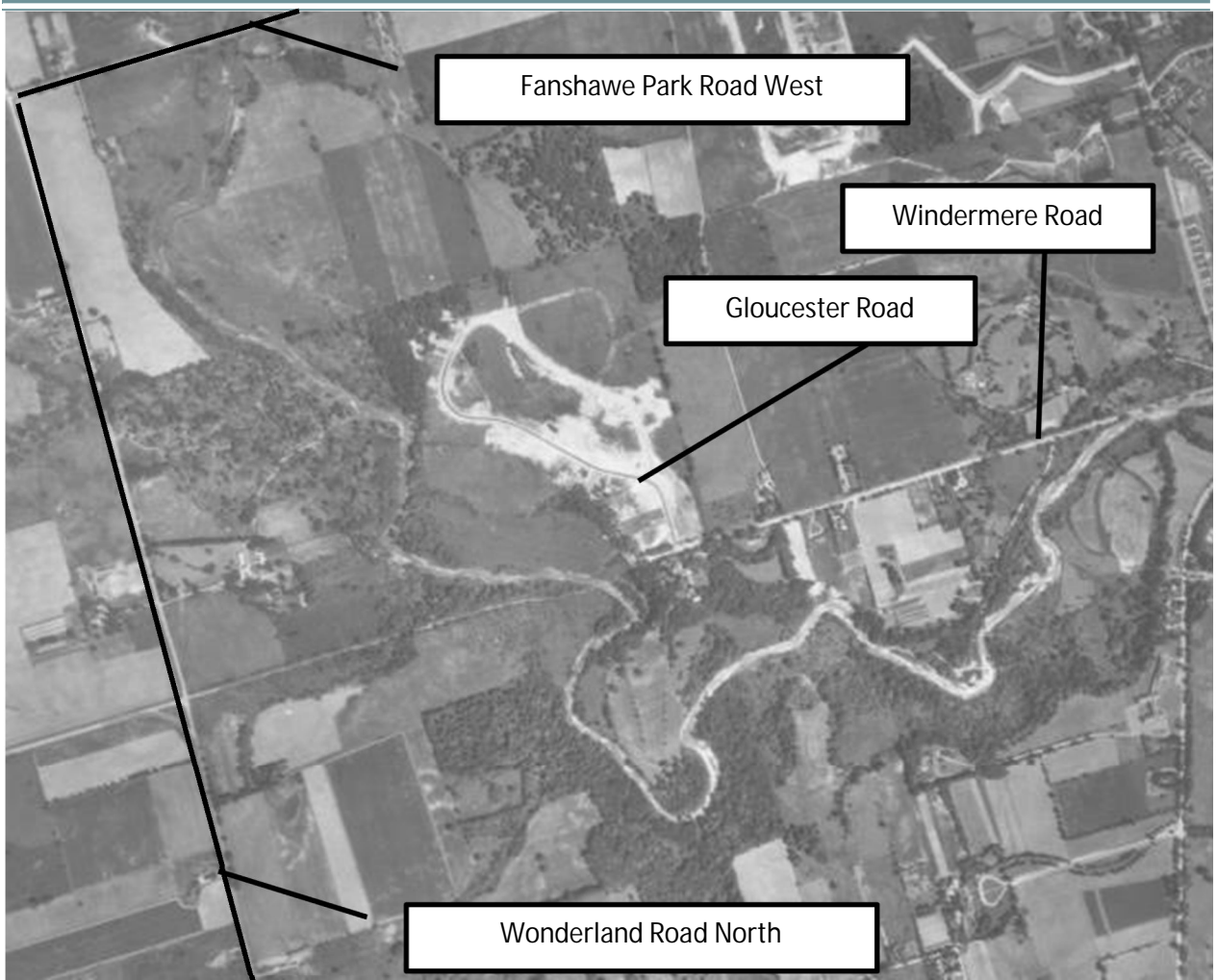
1942

Aerial Photographs of the MVHF ESA (south)¹



1950

Aerial Photographs of the MVHF ESA (south)¹



1955

¹ Under Copyright Law of Canada - where the negative is owned by a corporation, and the photograph was created after 1948 and before November 7, 2012, the photograph becomes public domain after a period of 50 years from which the photograph was made.

Appendix B

Local Advisory Committee Terms of Reference

Local Advisory Committee

Terms of Reference (2017)

Phase 2 Conservation Master Plan

The Medway Valley Heritage Forest (south) Environmentally Significant Area



1.0 Introduction and Background

The City of London is embarking on Phase 2 of the Conservation Master Plan (CMP) for the Medway Valley Heritage Forest (south) Environmentally Significant Area (ESA). Phase 1 of the CMP was approved by Council in 2017 and the reports and findings are available on the City's website. The Guidelines for Management Zones and Trails in ESAs document and process will be followed.

2.0 Purpose and Objectives of the LAC

The purpose of the LAC is to provide an opportunity for small group discussion with those who are identified stakeholders related to the Medway Valley Heritage Forest (south) ESA. The LAC is an advisory committee and is not an approval authority. The group will discuss and provide feedback on the Phase 2 work to achieve the following specific objectives:

- Review information provided and provide input and insight related to Phase 2 of the CMP;
- Provide input and insight related to the consultation with the broader community;
- Represent diverse perspectives and interests; and,
- Work collaboratively to try to resolve issues.

3.0 Membership

There are 17 members of the LAC, plus City staff. Membership is comprised of one representative from each of the following:

- Accessibility Advisory Committee (AACAC)
- Environmental & Ecological Planning Advisory Committee (EEPAC)
- Upper Thames River Conservation Authority (UTRCA)
- MVHF ESA Adopt an ESA
 - Sunningdale West RA Adopt an ESA
 - Friends of Medway Creek Adopt an ESA
 - Sherwood Forest / Orch Park RPA Adopt an ESA
- Ratepayer Associations / Community Associations
 - Sherwood Forest / Orch Park RPA
 - Sunningdale West RA
 - Old Masonville Ratepayers
 - Sunningdale North Residents Association

LAC Terms of Reference

Medway Valley Heritage Forest ESA (south) – Phase 2 CMP

- Attawandaron Residents Association
- University of Western Ontario (UWO)
- Huron University College
- Nature London
- Thames Valley Trail Association (TVTA)
- Heritage London Foundation
- Museum of Archeology

All members will identify an alternate who will participate in meetings if the member is not available or attend as observers (*see Section 5.0 below for further information on observers at meetings*).

4.0 Roles and Responsibilities

- City staff will set the meeting agenda, location and provide information required for discussion.
- A facilitator will run meetings and be responsible for meeting notes. Meeting notes will be distributed within 2 weeks following each the meeting. Notes will document areas of agreement as well as areas of difference.
- LAC members will attend all meetings including reviewing any materials provided in advance.
- LAC members are to be familiar with the CMP process and [Guidelines for Management Zones & Trails in ESAs 2016](#)
- LAC members commit to working in collaboration with each other and the City, to the extent practical, to complete Phase 2 of the CMP for Medway Valley Heritage Forest ESA.
- The LAC representatives will liaise with their respective stakeholder groups in order to share information as required.
- The role of the LAC includes:
 - Identifying and confirming ESA management issues;
 - Possible attendance during ESA site visits to help to resolve planning issues;
 - Help to develop the restoration plan, trail plan and recommendations;
 - Prioritize implementation of recommendations; and,
 - Review the draft Phase II CMP report.

5.0 Meetings and Attendance

There will be five LAC meetings, each up to 1.5 hours in length, held on a weekday evening:

LAC Terms of Reference

Medway Valley Heritage Forest ESA (south) – Phase 2 CMP

- LAC Meeting #1 – Kick-off meeting to introduce role of the LAC and launch the Phase 2 CMP, as well as identify areas for discussion
- LAC Meeting #2 – Discuss Community Open House #1 and review community survey questions
- LAC Meeting #3 – Review input from Community Open House #1 and survey responses. Resolve any areas of difference
- LAC Meeting #4 – Review Draft CMP Phase 2 Report with LAC for review and comment.
- LAC Meeting #5 – Endorsement of CMP Phase 2 Report by the LAC; Discuss Community Open House Meeting #2

These meetings will be open to observers. Non-LAC members and/or member alternates are welcome to observe LAC meetings as space permits. During the meeting, observers are not allowed to participate in the discussion.

6.0 Effective Practices for the LAC

In the interest of committee effectiveness, LAC members agree to be bound by the following practices:

- Members will listen to, review and consider the information provided for discussion.
- Members will strive at all times to ensure that the best interests of the broader community are taken into account.
- Members will be courteous, listen to and consider the opinions of other members.
- Members should participate fully in discussion but not dominate the discussion or allow others to do so.
- Members should speak one at a time and not cut off other members while they are speaking.
- Members wishing to make comments should do so through the facilitator, and wait their turn until they have the floor.
- Members will provide constructive feedback regarding the Phase 2 CMP information presented and discussed.
- LAC members will address their concerns within the meetings and will not, on their own, or as part of another association, engage in independent action that is in conflict with the objectives of the LAC.



MEETING MINUTES

Subject: Local Advisory Committee (LAC) #1 for MVHF ESA (south) Conservation Master Plan Phase 2
Date and Time: April 27, 2017 17:30 – 19:00
Location: City Hall, City of London
Our File: 17-5428

Attendees

Jacqueline Madden	Accessibility Advisory Committee (AACAC)
Susan Hall*	Environmental & Ecological Planning Advisory Committee (EEPAC)
Dan Jones	Upper Thames River Conservation Authority (UTRCA)
Keith Zerebecki	MVHF ESA Adopt an ESA: Sunningdale West Rate Payer Association (RPA)
Elgin Austen	MVHF ESA Adopt an ESA: Friends of Medway Creek
Sandy Levin	MVHF ESA Adopt an ESA: Sherwood Forest / Orchard Park RPA
Prof. Greg Thorn	Sherwood Forest / Orchard Park RPA
Chris Sheculski	Sunningdale West RPA
John Levstik	Old Masonville Ratepayers
Renee Agathos	Sunningdale North Residents Association
Bruce West	Attawandaron Residents
Michael Lunau	Western University
Jack Blocker	Huron University College
Mady Hymowitz	Nature London
Alex Vanderkam	Thames Valley Trail Association (TVTA)
Brenda McQuaid	Heritage London Foundation
Dr. Rhonda Bathurst	Museum of Ontario Archeology
Linda McDougall	City of London
Andrew Macpherson	City of London
Karla Kolli	Dillon Consulting Limited
Jennifer Petruniak	Dillon Consulting Limited
Jonathan Harris	Dillon Consulting Limited

*Indicates an alternate organization representative attended in place of the primary representative

Notes

- | Item | Discussion |
|--------|---|
| 1. | Agenda Item - Introductions |
| 1.1. | Sandy Levin posed the following question: Is this CMP just for the south ESA and, if it's just for the south, why are representatives associated with the north portion of the ESA included in the LAC? |
| 1.1.1. | Reps associated with the communities near the north ESA (Chris/Renee) reiterated that trails are connected. It was also confirmed by the City that representatives from the communities near the south ESA were included in consultations for the north ESA trail planning. |

2. Agenda Item – Overview of CMP Process
 - 2.1. Sandy Levin referenced page 10 of the Trail Guidelines document, noting that members should keep in mind our role is protection of the natural features and ecological functions in the ESA.
3. Agenda Item – Terms of Reference (ToR) for the LAC
 - 3.1. ToR was distributed to members for review at the beginning of the meeting and the committee purpose and format was discussed.
4. Agenda Item – Future Meetings
 - 4.1. Jack Blocker posed a question regarding LAC input into the draft CMP: Given that the first three meetings are an overview of consultation/engagement and then a draft CMP is provided, where is the opportunity for LAC input for CMP?
 - 4.1.1. A response was provided from Dillon that the draft CMP is to be based on the responses from public and the LAC which is to be discussed during meeting #3 and then used to develop the draft CMP which will be distributed for review and comment during meeting #4.
 - 4.2. A subsequent question was posed: How much time (Jack Blocker) is the LAC going to have to provide input into the draft CMP given the timeline of the meetings of the LAC? Linda provided insight that Phase 1 provides an Environmental Management Strategy and that Phase 2 is building upon the already approved Phase 1.
 - 4.2.1. Jack brought up that trail planning is generally the most contentious issue and wanted confirmation of how much time the LAC will have to overview and provide input. Sandy was in agreement with Jack and wanted confirmation of how much insight the LAC provides to Phase 2 and how the LAC will help the public provide good input towards Phase 2. Dillon highlighted that meeting #2 is will allow for the LAC to provide insight and help develop the public consultation forums. More information on how the LAC will provide input will be provided during meeting #2.
5. Agenda Item – Goal and Objectives of CMP Phase 2
 - 5.1. Keith wanted to know whether the draft CMP will be available before the Sept. meeting.
 - 5.1.1. Dillon responded the goal is to distribute the draft CMP to the LAC by mid-August.
 - 5.2. Keith wanted to know if there are examples of completed CMPs members could review prior to receiving the draft CMP.
 - 5.2.1. The City confirmed the Coves ESA is the most recent CMP and is available on the City website. Linda to share link with the LAC.
 - 5.3. Susan questioned whether the draft CMP will cover recommendations for level 1, 2 informal trails?
 - 5.3.1. Dillon confirmed the CMP will include trail planning.

6. Agenda Item – Review of Environmental Management Strategy
 - 6.1. Linda presented an overview of the Phase 1 Environmental Management Strategy.
7. Agenda Item – Restoration Work to Date in Medway
 - 7.1. Linda presented the restoration work completed to date.
8. Agenda Item – Facilitated Discussion
 - 8.1. Members broke out into four groups (rotating participants) to discuss opportunities within the ESA for consideration during the CMP process. Blank maps with the existing trail system were provided to the groups to mark up. These were collected at the end of the session.
 - 8.1.1. Some members wanted to know where SAR and other sensitive features are located. Hard copy maps from the MVHF Phase 1 addendum with SAR and significant wildlife habitat identified (previously circulated to LAC / available on the City website) were distributed to members of the LAC for reference.
 - 8.2. Maps were collected from the groups for review of suggestions/concerns and opportunities noted by the members. The mapping and comments were reviewed to identify common themes in advance of LAC meeting #2.
 - 8.3. After maps were collected from the groups, Karla asked members to provide key points/take away points. These are summarized below (in no particular order):
 - One trail to provide continuity and avoid informal trails
 - Consider everybody's wants/wishes for ESA not just one group
 - Thankful for being part of the process
 - Hope for continued use of trails without damage to the ESA
 - We shouldn't do anything that doesn't support the integrity of the ESA
 - Accessibility should be maintained
 - Stewardship/Education
 - A good start
 - Looking for connection across the creek
 - Looking for connection of trails where they work
 - Lots of interesting stuff
 - Getting what everyone wants in the ESA may not be feasible but the feedback and input from LACs is crucial and much appreciated in the guiding the management of ESAs
 - Pleased to start learning from local knowledge
 - Thankful Species at Risk are considered
 - ESA and natural features shall be protected
 - Ecological Integrity of ESA should be maintained
 - Looking for connection of trails
9. Closing
 - 9.1. Mady Hymowitz asked whether draft questions for survey will be sent out to members for review prior to public distribution.

- 9.1.1. Dillon replied that questions would be shared during second meeting prior to the survey being finalized. Fewer than ten questions anticipated so review at meeting #2 is possible.
- 9.2. Next meeting scheduled for May 4 in the same room and same time as Meeting #1.
- 9.3. Meeting concluded at 19:00

Errors and/or Omissions

These minutes were prepared by Jonathan Harris who should be notified of any errors and/or omissions.



MEETING MINUTES

Subject: Local Advisory Committee (LAC) #2 for MVHF ESA (south) Conservation Master Plan Phase 2

Date and Time: May 4, 2017 17:30 – 19:00

Location: City Hall, City of London

Our File: 17-5428

Attendees

Jacqueline Madden	Accessibility Advisory Committee (AACAC)
Katarina Moser	Environmental & Ecological Planning Advisory Committee (EEPAC)
Dan Jones	Upper Thames River Conservation Authority (UTRCA)
Keith Zerebecki	MVHF ESA Adopt an ESA: Sunningdale West Rate Payer Association (RPA)
Elgin Austen	MVHF ESA Adopt an ESA: Friends of Medway Creek
Sandy Levin	MVHF ESA Adopt an ESA: Sherwood Forest / Orchard Park RPA
Sarah Pierce*	Sherwood Forest / Orchard Park RPA
Chris Sheculski+	Sunningdale West RPA
John Levstik	Old Masonville Ratepayers
Renee Agathos	Sunningdale North Residents Association
Bruce West	Attawandaron Residents
Michael Lunau	Western University
Jack Blocker	Huron University College
Mady Hymowitz	Nature London
Alex Vanderkam	Thames Valley Trail Association (TVTA)
Dr. Rhonda Bathurst	Museum of Ontario Archeology
Linda McDougall	City of London
Andrew Macpherson	City of London
Karla Kolli	Dillon Consulting Limited
Jennifer Petruniak	Dillon Consulting Limited
Jonathan Harris	Dillon Consulting Limited

*Indicates an alternate organization representative attended in place of the primary representative
 +indicates departure from meeting prior to adjournment.

Regrets

Brenda McQuaid	Heritage London Foundation
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Notes

Item	Discussion
1.	Agenda Item – Purpose of Meeting #2
1.1.	Mady Hymowitz requested an explanation of what the various management zones outlined in the <i>Guidelines for Management Zones & Trails in Environmentally Significant Areas</i> (the Guidelines) mean and how they apply to the MVHF ESA.

- 1.1.1. Dillon provided an explanation of what the management zones mean and which types of trails are permitted in each. This explanation can be found in the Guidelines.

2. Agenda Item – Overview of CMP Participant Roles

- 2.1. Sandy Levin mentioned that further explanation of the roles was helpful and encouraged a site visit to the ESA to facilitate input into the CMP.

3. Agenda Item – What We Heard During Meeting #1

- 3.1. Jack Blocker brought up an issue with the CMP Goal statement provided during meeting #1 (and again in meeting #2). Jack felt the statement underrepresented other components of maintaining ecological integrity such as restoration, naturalization etc.
 - 3.1.1. Jen Petruniak/Linda McDougall reiterated that the Environmental Management Strategy does incorporate those other components.
 - 3.1.2. Jack and Sandy Levin also noted that the Goal seems to conflict with page 4 of the Guidelines where the protection of ecological integrity is the first priority and recreational use is a secondary objective.
 - 3.1.3. Jack suggested that a full stop (period placement) be put in the goal after “achieving long-term ecological integrity and protection of the ESA through the implementation of an Environmental Management Strategy”.
 - 3.1.4. John Levstik requested that the Goal not exclude reference to recreational.
 - 3.1.5. Sandy also touched on the installation of benches and that to meet the *Accessibility for Ontarians with Disabilities Act* (AODA), these amenities would require concrete pads, resulting in significant changes to the ESA in south whereas benches installed in the north ESA is feasible due to the existing trail system.
 - 3.1.6. Andrew Macpherson noted later in the meeting that installation of benches may not require concrete pads but could still meet the AODA as it is understood that accessibility is for everyone. The AACAC rep (Jacqueline Madden) supported Andrew’s statement.
 - 3.1.7. Goal for the CMP was revised at the end of the discussion to the following:
To develop a comprehensive multi-year CMP that presents recommendations for achieving long-term ecological integrity and protection of the ESA through the implementation of an environmental management strategy.
 - 3.1.8. It was confirmed that the term environmental management strategy includes trails and thus the goal still incorporates recreation. This will be made clear in Open House materials.
- ## **4. Agenda Item – Overview of Public Open House Purpose**
- 4.1. Sandy asked for clarification on the type of input the team is looking for from the groups the LAC members represent.
 - 4.1.1. A response was provided from Dillon that this will be addressed further into the meeting and that follow-up after the meeting is possible if questions remain.

5. Agenda Item – Information to be Presented at the Public Open House

- 5.1. Jack Blocker posed a question regarding how the survey will be distributed online.
 - 5.1.1. Survey is to be hosted on Dillon website with notifications in local papers, mail-outs to residents adjacent to the ESA and mail-outs to Phase 1 public meeting attendees (where contact information is available) with links to the online survey. Paper copies of the survey will also be made available for those without access to internet.
- 5.2. Sandy Levin was puzzled as to why anybody could fill out the survey (i.e., the survey is open to anyone who has access to the internet).
 - 5.2.1. Karla touched on that it is a consultation tool and not to be used for statistical purposes.
- 5.3. Mady wanted clarification that maps would be online for posting comments/markups.
 - 5.3.1. Karla confirmed that mapping would be available online for comments.
- 5.4. Sarah Pierce wondered if the survey could include Postal Codes to help collect information on where people are from that are providing input.
- 5.5. Sarah also noted the application ArcGIS Collector may be useful for collecting data from the public by making the mapping available on mobile devices.
- 5.6. The idea of including the definition of the CMP from the Official plan as a lead-up to the Goal statement was discussed. This is in hopes of providing more clarity on the purpose of the CMP to the public.
- 5.7. John questioned whether there was a goal for the North MVHF ESA trail master plan.
 - 5.7.1. Linda was unsure as the development of the goal for the Trail Master Plan was prior to her time working on the MVHF. Keith mentioned there were goals but not quite to the full extent of what is currently proposed for the south and the process was different during that plan and has become more refined.
- 5.8. Sandy asked whether there could be some connection to outline the planning of the MVHF as a whole and mention the ever evolving and refining of the guidelines/standards etc. as information at the Open House. This was confirmed.
- 5.9. Chris Sheculski suggested showing where the CMP process is currently at would be beneficial for the public to see. This was agreed upon.
- 5.10. Sandy noted the exclusion of the Huron/ Western lands from Phase 1 and asked if there would be an explanation for the exclusion should the public inquire. It was confirmed that the mapping would reflect “data was not available at the time of analysis”.
- 5.11. Katrina Moser brought up the benefits of providing an explanation to public at the Open House as to what are Species at Risk (SAR) and which species shown on the mapping are SAR. Panels could specify which species are provincially protected by legislation such as the *Endangered Species Act, 2007*. This was confirmed as something that would be outlined at the Open House.
 - 5.11.1. Sandy also noted the panels should mention the habitat of SAR is also protected. This was confirmed to provide clarity to the public.

- 5.11.2. Renee Agathos suggested that the explanations of SAR should also include photos of the species and why they are risk. This was confirmed for representative species as not all could be highlighted given the diversity in the ESA.
- 5.11.3. Sandy suggested that photos only be included for those species that cannot be picked/picked up (i.e., trees). This will be considered.
- 5.11.4. Major takeaway from discussion on SAR is that the Open House presents an opportunity to educate the general public on SAR present in the ESA.

6. Agenda Item – Review of Survey Questions

- 6.1. Several members of the LAC noted incorrect or missing portions of organization names. This will be corrected and confirmed with the City prior to distribution of the survey.
- 6.2. One request was made that the survey include the first three digits of Postal Code.
- 6.3. Sarah expressed her concern that the first survey question listing all the organizations was overwhelming and provided a suggestion that it ask for the postal code and if whether you're part of a group (text answer).
 - 6.3.1. Keith suggested if the full list of organizations is kept, "general public" should be put first.
- 6.4. Keith suggested adding a question about whether you have ever been to the MVHF South and if yes, at what frequency?
- 6.5. Dr. Rhonda Bathurst noted that the list of activities people do in the ESA could be expanded to include things like foraging, which Linda noted is against ESA by-laws and can be reported for enforcement. Inclusion of other items like foraging may give insight as to the level of non-permitted activities.
- 6.6. Mady suggested that the option of hike be revised to be hike/walk.
- 6.7. Discussion was held regarding the question asking for thoughts on trail condition. It was determined that this question is unnecessary and wouldn't lead to useful data as people's perspective on trail condition may vary greatly.
- 6.8. Sandy noted that the questions should be written in way as to not raise the public expectations, in particular installation of trail amenities with the example being benches.
 - 6.8.1. Jacqueline Madden noted that certain amenities, like handrails, could be installed with significant impact and improve the ESA's accessibility. It was agreed to expand on the list of examples of amenities.
- 6.9. Bruce West noted that the Wonderland bridge that passes over Snake Creek has a number of people from the Aldershot and White Hills areas accessing the ESA and there should be consideration for those people as well in terms of mail-outs.
- 6.10. Mady suggested including a question asking what access or portion of the ESA you tend to use most.
- 6.11. Katrina questioned the question with the ranking of importance and that it needs some clarity for the public.
 - 6.11.1. Sandy noted again the ranking of importance again may raise expectations and that there should be panels to educate attendees on the City policy.

- 6.12. Katrina asked about the design and condition of trails and how important this information really is. Katrina suggested there may be another way to list this by including examples.
- 6.13. Renee touched on that members of the group would be good advocates for better bike routes/paths throughout the City to direct cyclists away from the ESA. This is beyond the mandate of this LAC.

7. Next Steps/Additional Comments

- 7.1. The City and Dillon confirmed the suggestions and input from LAC would be considered while the Open House survey was being finalized.
- 7.2. Keith noted for a small project in Sunningdale (park development), the access points had signs up to encourage attendance. Suggested physical signs at entrances to the ESA advertising the Open House and the survey. This was agreed to by the City.
- 7.3. Katrina noted that a number of staff from Huron/Western use the MVHF and wondered the best way to reach out to staff and notify them of the Open House. Jack and Michael as representatives of Huron and Western (respectively) will provide notice to their respective institutions.
- 7.4. Katrina suggested it may be nice to have computers/tablets at the Open House so attendees can fill out survey right away. Dillon responded there will be efforts to accommodate this.
- 7.5. Sandy noted in the surveys that there isn't a question regarding ranking of monitoring priorities and this should be considered as well.
- 7.6. The City and Dillon clarified that LAC members have from May 4 to July 1 to encourage their communities/associations to participate in the Open House and survey, as well as collect comments and input they feel will be useful as the CMP is drafted. Comments are to be provided using an MS Excel spreadsheet template file to be provided by the City within one week to facilitate compilation of comments and responses. An electronic file of the Phase 1 map will also be provided for additional comments and location references.
- 7.7. Next meeting is scheduled for July 27 in the same room and same time as Meeting #2. The LAC can expect to receive a summary of the survey responses and Open House comments received, as well as a compiled list of LAC comments and preliminary responses for review at least one week in advance of meeting #3 (i.e., July 20).
- 7.8. Meeting concluded at 19:10

Errors and/or Omissions

These minutes were prepared by Jonathan Harris who should be notified of any errors and/or omissions. Please note, Item 1.1.1 was revised based on a comment received on May 11, 2017



MEETING MINUTES

Subject: Local Advisory Committee (LAC) #3 for MVHF ESA (south)
Conservation Master Plan Phase 2

Date and Time: July 27, 2017 17:30 – 19:00

Location: City Hall, City of London

Our File: 17-5428

Attendees

Jacqueline Madden	Accessibility Advisory Committee (AACAC)
Katarina Moser	Environmental & Ecological Planning Advisory Committee (EEPAC)
Dan Jones	Upper Thames River Conservation Authority (UTRCA)
Keith Zerebecki	MVHF ESA Adopt an ESA: Sunningdale West Rate Payer Association (RPA)
Elgin Austen	MVHF ESA Adopt an ESA: Friends of Medway Creek
Sandy Levin	MVHF ESA Adopt an ESA: Sherwood Forest / Orchard Park RPA
Greg Thorn	Sherwood Forest / Orchard Park RPA
John Levstik+	Old Masonville Ratepayers
Dr. Rhonda Bathurst	Museum of Ontario Archeology
Michael Lunau	Western University
Jack Blocker	Huron University College
Mady Hymowitz	Nature London
Alex Vanderkam	Thames Valley Trail Association (TVTA)
Linda McDougall	City of London
Andrew Macpherson	City of London
James McKay	City of London
Karla Kolli	Dillon Consulting Limited
Jennifer Petruniak	Dillon Consulting Limited
Jonathan Harris	Dillon Consulting Limited

+indicates departure from meeting prior to adjournment.

Regrets

Chris Sheculski	Sunningdale West RPA
Bruce West	Attawandaron Residents
Renee Agathos	Sunningdale North Residents Association
Brenda McQuaid	Heritage London Foundation

Notes

Item Discussion

- 1. Agenda Item – Review of Public Engagement**
 - 1.1.** Sandy Levin requested an explanation of what comments received wouldn't be applicable to the CMP.

- 1.1.1. Dillon provided clarification that some members of the public used the online mapping/survey as a general forum to voice other issues to the City (e.g. road speeds). Those few comments that have nothing to do with the ESA wouldn't be applicable.
- 1.2. Greg Thorn had a question regarding the like/dislike feature on the Social Pinpoint and whether those were taken into consideration.
- 1.2.1. Jen Petruniak provided some clarification that the like/dislike feature is considered more of a "fun feature" to encourage feedback but as there isn't a way to track whether someone clicked like/dislike multiple times on one comment, that type of feedback can't be relied on to provide accurate statistical feedback.
- 1.3. Sandy Levin requested clarification on the comment Dillon had regarding users of the Social Pinpoint putting multiple comments on the same issue and whether if 5 comments (pins) from the same person were only counted as one.
- 1.3.1. Jen Petruniak noted that if a user commented 5 times on the same issue then that comment on that issue was only considered once as it was the same general topic. This generally occurred when a user posted a pin comment as well as survey comment with the same issue, sometimes using the same text.
- 1.3.2. Karla provided more clarity to the LAC on the engagement/survey process and that, with multiple platforms being used, comments have to be carefully considered as the comments are not weighted. The process was not intended to be one of statistical sampling/data collection for decision-making. Comments received during the engagement process from the public and the LAC to date were used to identify items for consideration in the Draft CMP and review with the Guidelines for Management Zones and Trails in ESAs rather than being tabulated to make decisions.
- 1.4. Elgin Austen noted that Friends of Medway Creek undertook a survey their membership and came up with similar results.
- 2. Agenda Item – Discussion on Connected Trails and Crossings**
- 2.1. **Gainsborough Ravine to Snake Creek Valley Trail** - Sandy Levin wanted to note the south end of the Gainsborough Ravine to Snake Creek Valley trail has very steep terrain which may result in the redesign of the trail being a challenge and should be taken into consideration.
- 2.2. **Gainsborough Ravine to Snake Creek Valley Trail** - Jack Blocker posed a question about the incorporation of the redesigned trail into a proposed naturalization area and if that is a contradiction.
- 2.2.1. Jen Petruniak noted that placement of the trail and the naturalization of the existing mowed lawn area would ideally occur at the same time. This means the redesign of the trail is incorporated into naturalization efforts and helps to prevent formation of informal trails and limiting mowing encroachments by providing direction and guidance for users.
- 2.3. Elgin Austen requested clarification on if there is a plan for the trail system being considered and what is the extent of where we're looking.
- 2.3.1. Jen Petruniak noted that the trail plan is currently being developed based on the

feedback from the public and the LAC following the Guidelines. The extent is just the area of the ESA on public lands.

- 2.4. John Levstik wanted to note to the LAC that having been walking in the MVHF since 1986 he has noticed those restricted to the east side of the valley tend to stick to the limited number of loop walks and without a connection(s) to the west side, there may a drive to go off-trail and cause formation of informal trails as well as put further stress on the managed trails by not distributing use throughout the valley.
- 2.5. **Enforced Closure of Informal Trail** - Mady Hymowitz requested clarification on what is proposed for the closure of the informal trail and placement of a connection.
 - 2.5.1. Jen Petruniak provided clarification that the informal trail would additional effort to enforce the trail closure and that without a connection, the trail may be continued to be used.
- 2.6. Elgin Austen posed the question of whether it would better to build/formalize improvements to trails before closing the informal trails so it encourages users to use managed trails instead of informal trails.
- 2.7. Jack Blocker presented another scenario where a connection may increase use of the informal trail south of Fanshawe Park Road West.
- 2.8. Sandy Levin brought up a summarized citation from the Guidelines from Leung and Marion (2000) that was incorrect in noting bridges, fences etc. Sandy offered to provide the 2000 paper as well as newer research paper from Leung and Marion from 2016.
 - 2.8.1. Jen Petruniak thanked Sandy for his comment and welcomed his offer to provide the papers.
 - 2.8.2. Upon review of the Guidelines and 2012 Trail Standards, it was noted that the citation was carried over to the 2016 Guidelines from the 2012 Trail Standards.
- 2.9. Keith Zerebecki requested clarification whether the feedback from the public was asking for 5 crossings or if there were 5 different locations for crossings suggested and would those crossings be designed to accommodate vehicles.
 - 2.9.1. Jen Petruniak noted that the feedback identified 5 potential locations for crossings.
 - 2.9.2. Andrew Macpherson noted the City hasn't received any direction for future potential crossings to be designed for vehicles.
- 2.10. Jack Blocker wanted to know why crossings are even being considered when the comments provided by the LAC members indicate a clear opposition to crossings.
 - 2.10.1. Jen Petruniak provided clarification that while the LAC comments are under consideration there was other feedback from the public also has to be considered and reviewed with the Guidelines which included requests for connections and crossings.
- 2.11. Andrew Macpherson noted that the Bloomfield crossing was community driven and the community members worked to fund its construction to connect existing trails and minimize impacts to the ESA. Project was successful in directing users from riparian areas and area is now habitat for sensitive species around the one trail.
- 2.12. Greg Thorn wanted to point out that the Bloomfield bridge crosses over a much small

feature whereas a crossing over the Medway Creek would have to be much larger.

- 2.13. Karla Kolli initiated a round-table discussion to get LAC member's specific feedback on crossings and whether there are other considerations outside of the Guidelines.
- 2.13.1. Elgin Austen – Asked if there would be consideration for a site visit for the LAC to view crossing areas. Would volunteer to attend.
- 2.13.2. Jack Blocker – There was a point made by a member of the LAC in the comments that doesn't appear to have been considered. By installing connections and increasing access there may be a decrease in illegitimate activities but on the flipside, with increased legitimate use where is the limit to when increased legitimate use (i.e. volume of users) starts to have a negative impact on the ESA. This consideration should have even more weight in the monitoring.
- 2.13.3. Michael Lunau – perhaps there could be consideration for a different type of connection outside of the trail system, such as a trestle bridge connecting Doncaster Gate to Windermere. This would allow for a connection that could also accommodate bicycles and keep them off the ESA trail system.
- 2.13.4. Sandy Levin – can we please include comments from observers (this was permitted, though kept until after LAC members had provided feedback). One major consideration is whether a crossing creates more of a problem than it solves. Once a crossing is installed it generally isn't going anywhere. If the crossing starts to impact the ESA in the future, how would it effectively be closed? Installation of connections have to be considered as a whole with other elements of the CMP. The example of crossing A would need effective closure and education for users for the informal trail to the east, otherwise it may continue to be used, even with a connection. Also, if there isn't budget to undertake the follow-up monitoring then the crossing doesn't meet the objectives. There has to be concurrent monitoring and effective closures with the installation of a crossing for it to work.
- 2.13.5. Greg Thorn – one of the very first things that should be considered is what the rationale is for a crossing. Would it meet the definition of fitting in with the ESA? An example that comes to mind is if a bridge was installed in the University/College properties to connect the residence with Huron College. It would bring much more traffic onto the campus. If a bridge is installed, would it not bring more users including those on bicycles? The draw for other users should be considered.
- 2.13.6. Mady Hymowitz – the slides say connection but the main body is always referring to a bridge. It should be very clear what the intention of the crossings is so people don't get the wrong idea. A common understanding on what to expect would be beneficial so people don't start dreaming about moss-laden stepping stones and we end up with bridges like the north. Andrew clarified that the stones recommended in the 1996 study were confirmed not to meet regulatory requirements but could be re-explored.
- 2.13.7. Dan Jones – was the request for a site visit for the LAC to visit recommended improvements or would that be a Trails Advisory Group? Clarification was made that the request for LAC to view crossing areas.
- 2.13.8. Alex Vanderkam – a temporary bridge was installed where crossing A is shown during

installation of the sewer. Consideration for previous crossings should be made.

- 2.13.9. Jacqueline Madden – noted that while some of the LAC comments do indicate opposition to crossings there are members of the LAC in favour of crossings
- 2.13.10. Keith Zerebecki – if one concern is the bridge drawing cyclists could it not be designed to restrict access for bikes.
- 2.13.11. John Levstik – there has been some positive and negative changes in the ESA during his time living adjacent to it. Positives being naturalization of the Elsie Perrin estate while negatives are increased stresses on the trail system (i.e. widening, creation of informal trails). A connection would help to lessen the strain on the trail system by dispersing users to both sides of the valley. Has witnessed people stuck on the same loops and still using closed trails.
- 2.13.12. Katrina Moser – there seems to be a focus on the individual components (i.e. crossings) and not looking at them as a whole within the ESA. Connectivity needs to be looked at as a whole and not in sections. While feedback did indicate a need for crossings, feedback also indicated opposition to crossings. Both sides need to be considered and there should be a strong rationale if the decision is to include crossings
- 2.13.13. Rhonda Bathurst – has there been consideration for the cultural aspect for crossings. Jen Petruniak noted that crossing installations would need to undertake archeology assessments.
- 2.13.14. Public Observer – if money is put into the building of structures, would that mean less money towards upkeep and maintenance of the trails? Consideration should be given to where a trail connects to.
- 2.13.15. Public Observer – was there consideration for a constraint map? If a map showing constraints like water, contours, SAR was provided there may have been more focused comments. Linda McDougall noted that the 2016 addendum to the Phase I findings identified constraints consistent with the Guidelines.
- 2.14. Greg Thorn noted that crossing D has significant topography (i.e. flat) and may require a long run and be very costly.
- 2.15. John Levstik noted just before departing at 19:00, the trail leading to Ambleside Park is quite lovely and provides for connection to the neighbourhoods to the east.
- 2.16. Keith Zerebecki wanted clarification that if the Bloomfield bridge was considered now it wouldn't meet the guidelines and does it make sense to take into other considerations that override the guidelines if the overall benefit outweighs the direction of the guidelines. If crossing B and crossing C are not included, what are the future impacts?
- 2.17. Sandy Levin noted that crossing D is adjacent to a trail loop to the southeast that passes through habitats for species of conservation concern. Consideration should be for what the potential impacts to those species may be with increased trail use.
- 2.18. Jack Blocker has concerns that crossings A and D would bring more people to one side of the creek and increase the volume of use.
- 2.19. Elgin Austen noted that Friends of Medway Creek completed surveys which indicated a number of residents are not even aware of the valley and doesn't imagine there would

an increase in volume. If the crossing are not feasible, what about conversion of informal to managed to provide a connection.

- 2.20. Sandy Levin provided some input regarding the trail north of crossing A and that it is very wet so there is more than just a bridge to consider. With installation of a crossing, that would bring more people to the south area where False Rue-anemone are located. What would be the impacts to those species with increase use.
- 2.21. Greg Thorn wanted to connect Sandy's point to Katrina's in that there really has to be consideration for the ESA as a whole and not focused on the individual components like crossings.
- 2.22. Jacqueline Madden provided some insight from living adjacent to the north part of the ESA and that with the connections, users seem to stick to the managed trail system and don't veer off and the trail surfaces are user friendly and not wet and slippery.
- 2.23. Sandy Levin countered Jacqueline noting the north was a different situation as the trail system got placed right after the sewer installation. Sandy also wanted to note even if crossing D was installed, people may still use the informal trails, in particular the one between B and C.
- 2.24. Greg Thorn noted the mown lawn associated with Attawandron Park should also be considered as an option for a trail to help provide connectivity without the need for connection A.
- 2.25. Jacqueline Madden wanted clarification if there would be one plan for the system.
- 2.25.1. Jen Petruniak clarified that the final version of the CMP would include one plan for the trail system.

3. Next Steps/Additional Comments

- 3.1. Next meeting (meeting #4) is scheduled for September 7 in the same room and same time as Meeting #3. The LAC can expect to receive a draft CMP in the later part of August for review prior to meeting #4. Meeting #4 is to provide members of the LAC with an opportunity to provide feedback on the draft CMP after which feedback will be taken back to make revisions to the CMP, as necessary, prior to finalizing.
- 3.2. Meeting concluded at 19:30

Errors and/or Omissions

These minutes were prepared by Jonathan Harris who should be notified of any errors and/or omissions.