Meadowlily Road Area Class B EA

Project File Report

Final

Project Location:
Meadowlily Road, London, ON

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Engineers, Scientists, Surveyors.

CONTENTS

LIST OF ACRONYMS

E0 Executive Summary and Recommendations i

E0.1 Executive Summary i

E0.2 Recommendations iii

1.0 Introduction and Background 1

1.1 Project Initiation 1

1.2 Class Environmental Assessment 2

1.3 Study Organization 2

1.4 Indigenous Consultation 3

1.5 Agency Consultation 3

1.6 Description of the Study Area 4

1.7 Supporting Policies 5

1.7.1 Provincial Policy Statement 5

2.0 Objective of the Study and Problem Statement 5

2.1 Objective 5

2.2 Problem Statement 6

3.0 Existing Conditions 7

3.1 Physical Environment 7

3.1.1 Physiography and Topography 7

3.1.2 Geotechnical Conditions 7

3.1.3 Surface Water Features 7

3.1.4 Hydrogeology 7

3.2 Municipal Infrastructure 8

3.2.1 Transportation 8

3.2.2 Stormwater Management 8

3.2.3 Sanitary Sewers 8

3.2.4 Water Distribution 8

3.2.5 Sanitary Design Flow 9

3.3 Natural Environment 9

3.3.1 Designated Natural Areas and Species At Risk 9

3.3.2 Species Records 9

3.3.3 Vegetation Communities and Botanical Inventory 11

3.3.4 Botanical Inventory 13

3.4 Significant Wildlife Habitat 14

3.4.1 Bat Maternity Colonies 14
3.4.2 Turtle Wintering Areas 14
3.4.3 Deer Winter Congregation Areas 14
3.4.4 Other Rare Vegetation 14
3.4.5 Bald Eagle and Osprey Nesting, Foraging, Perching 15
3.4.6 Turtle Nesting Areas 15
3.4.7 Springs and Seeps 15
3.4.8 Special Concern and Rare Wildlife Species 15
3.5 Aquatic Habitat Assessment 15
3.6 Species at Risk 17
3.7 Heritage and Cultural Environment 18
3.7.1 Archaeological Environment 18
3.7.2 Built and Cultural Heritage Environment 18
4.0 Alternative Solutions 19
4.1 Development of Alternatives 19
4.1.1 Sanitary Pumping Station (SPS) 19
4.1.2 Multi-Use Pathway 29
5.0 Community Group and Indigenous Community Involvement 36
5.1 Notice of Project Commencement 36
5.2 Public Information Centre 36
5.3 Agency Correspondence 36
5.3.1 Upper Thames River Conservation Authority (UTRCA) 36
5.3.2 Ministry of Environment, Conservation and Parks (MECP) 36
5.3.3 City of London 37
5.4 Indigenous Communities 37
5.5 Notice of Study Completion 37
6.0 Evaluation of Alternatives & Preferred Alternative 37
6.1 Sanitary Servicing 38
6.1.1 Sanitary Servicing Alternative 1 40
6.1.2 Sanitary Servicing Alternative 2 41
6.1.3 Sanitary Servicing Alternative 3A 42
6.1.4 Sanitary Servicing Alternative 3B 44
6.1.5 Sanitary Servicing Alternative 3C 45
6.1.6 Sanitary Servicing Alternative 4 46
6.1.7 Sanitary Servicing Alternative 5 47

6.2 Multi-Use Pathway 48
6.2.1 Multi-Use Path Alternative 1 49
6.2.2 Multi-Use Path Alternative 2 50
6.2.3 Multi-Use Path Alternative 3A 51
6.2.4 Multi-Use Path Alternative 3B 52
6.2.5 Multi-Use Path Alternative 4 54
6.2.6 Multi-Use Path Alternative 5 55
7.0 Impacts and Mitigation Measures 56
7.1 Key Impacts and Mitigation 56
7.2 Climate Change 59
7.2.1 Air Quality 59
8.0 Permits Approvals and Next Steps 60
8.1 Approvals 60
8.2 Future Phases 61
8.3 Construction Staging 61
8.4 Noise and Vibration 61
8.5 Excess Soils 61
8.6 Information Gathering Form 62
8.7 Preliminary Servicing Study 62
8.8 Pumping Station Construction Cost Estimate 62
9.0 Summary and Recommendations 63

List of Tables

Table 1: Protected Species Occurrence Data Review (Potential Within 10 km of Study Area) 10
Table 2: SOCC Occurrence Data Review (Potential within 10 km of the Study Area) 11
Table 3.1: Ecological Land Classifications for the Study Area 12
Table 3.2: Ecological Land Classifications for the Study Area 12
Table 3.3: Ecological Land Classifications for the Study Area 13
Table 4: Surface water features within the Study Area as documented in AECOM (2011) 16
Table 5: Alternative Evaluation Scoring Descriptions 37
Table 6: Criteria Weighting for SPS Alternatives 38
Table 7: Criteria Weighting for Pathway Alternatives 38
Table 8. Evaluation Summary of Design Alternatives 39
Table 9: Evaluation Summary of Multi-Use Path Alternative 49
Table 10: Preliminary Cost Estimate 63

List of Figures

Figure 1: Meadowlily Road Area (Study Area) 1
Figure 2: Class EA Planning Process (Municipal Engineers Association, 2023) 2
Figure 3: SPS Alternative 1 22
Figure 4: SPS Alternative 2 23
Figure 5: SPS Alternative 3A 24
Figure 6: SPS Alternative 3B 25
Figure 7: SPS Alternative 3C 26
Figure 8: SPS Alternative 4 27
Figure 9: SPS Alternative 5 28
Figure 10: Multi-Use Pathway Alternative 1 30
Figure 11: Multi-Use Pathway Alternative 2 31
Figure 12: Multi-Use Pathway Alternative 3A 32
Figure 13: Multi-Use Pathway Alternative 3B 33
Figure 14: Multi-Use Pathway Alternative 4 34
Figure 15: Multi-Use Pathway Alternative 5 35

Appendices

Appendix A Communications Log and Agency Correspondence
A1 – Communications Plan
A2 – PIC Comment Tracking
A3 – Notices
Appendix B Studies
B1 – Environmental Impact Study
B2 – Archaeological Assessment
B3 – Cultural Heritage Assessment
Appendix C Sanitary Design Sheet
Appendix D Public Information Centre Presentation
Appendix E Evaluation Matrices
E1 – Sanitary Evaluation
E2 – Multi-Use Pathway Evaluation
Appendix F Terms of Reference

LIST OF ACRONYMS

Abbreviation	Meaning
AECOM	Architecture, Engineering, Construction, Operations and Management
AODA	Accessibility for Ontarians with Disabilities Act
BHR	Built Heritage Resources
CHL	Cultural Heritage Landscapes
CHRECPIA	Cultural Heritage Report Existing Conditions and Preliminary Impact Assessment
CHVI	Cultural Heritage Value or Interest
CLI-ECA	Consolidated Linear Infrastructure – Environmental Compliance Approval
EA	Environmental Assessment
EIS	Environmental Impact Study
ESA	Environmentally Significant Area
GMIS	Growth Management Implementation Strategy
HIA	Heritage Impact Assessment
LIO	Land Information Ontario
MECP	Ministry of Environment, Conservation and Parks
MH	Manhole
MUP	Multi-Use Pathway
NHIC	National Heritage Information Centre
NRSI	Natural Resource Solutions Inc.
OBBA	Ontario Breeding Bird Atlas
OBC	Ontario Building Code
OGS	Oil Grit Separators
ORAA	Ontario Reptile and Amphibian Atlas
PCP	Pollution Control Plant
PIC	Public Information Centre
ROW	Right of Ways
SARO	Species of Risk in Ontario
SOCC	Species of Conservation Concern
SPS	Sanitary Pumping Station
SWH	Significant Wildlife Habitat
SWM	Stormwater Management

TMHC	Timmins Martelle Heritage Consultants
TVP	Thames Valley Parkway
UTRCA	Upper Thames River Conservation Authority

E0 EXECUTIVE SUMMARY AND RECOMMENDATIONS

E0.1 Executive Summary

The City of London has completed a Schedule "B" Class Environmental Assessment (EA) Study to identify the preferred alternative for a new municipal sanitary pumping station to service future developments within the Meadowlily Road area. In addition, the EA also assessed the most appropriate means of establishing primary recreational linkages between Meadowlily Bridge and the Citywide Sports Park within the Meadowlily Road South and Commissioners Road East, Right of Ways (ROWs).

The Meadowlily Road area is located within the City of London, bounded by Highbury Avenue to the west, Commissioners Road to the South and Hamilton Road to the north. The Thames River bisects the Study Area. The study area of the Municipal Class EA is approximately 167 hectares (ha) (412 acres (ac)), with the Meadowlily Woods Environmentally Significant Area (ESA) located mostly on the south side of the Thames River.

The Meadowlily Road Area has recently gained development interest within the City of London and represents a viable opportunity for infill and intensification within the Built Area of the City. However, there is currently no municipal sanitary servicing along Meadowlily Road to accommodate future development. The EA is a requirement under the EA Act to allow for the evaluation of a location for a new municipal sanitary pumping station to service this area.

The scope of this EA Study included the identification of the constraints and opportunities within the study area for evaluation by the project team. Utilizing this information, the project team developed alternative solutions for the servicing of the Meadowlily Road area. All solutions were then evaluated in a manner consistent with the Municipal Class EA process for Schedule "B" projects, with the primary objective to identify a "Preferred Alternative" for servicing this area.

The problem statement developed for this study is as follows:

> ***"The Meadowlily Road Area (Study Area) has gained interest for future development opportunities within the City of London. Currently, the Study Area has limited municipal servicing, and existing properties are serviced through private systems.***
>
> ***In addition, consistent with the Cycling Master Plan Environmental Assessment, there is a need to address the gap in the recreational pathway system between the Meadowlily Bridge and the Citywide Sports Park on Commissioners Road East within the Right of Ways that meets all City design standards for the Thames Valley Parkway, multi-use pathway.***
>
> ***The City of London has initiated a Class Environmental Assessment Study for a new municipal pumping station to facilitate the servicing of future developments within the Study Area and determine the most appropriate means of establishing primary recreational pathway linkages between Meadowlily Bridge and the Citywide Sports Park within the Meadowlily Road South and Commissioners Road East, Right of Ways (ROWs).***

Through the Municipal Class Environmental Assessment Schedule "B" process (Class EA), a review of design alternatives will be conducted to determine a preferred alternative for servicing and providing a recreational pathway system within the Study Area, while maintaining the objectives of: protection of the environment; minimal disruption to residents and surrounding areas; optimizing costs; engaging a broad range of community groups; and documenting the study process in compliance with the Municipal Class Environmental Assessment Schedule "B" process."

To guide the decision-making process for this Class EA Study, a Project Team was assembled consisting of representatives of the City of London and a consultant team led by MTE Consultants Inc. (MTE). Project Team meetings were held throughout the duration of the study.

A formal "Notice of Study Commencement" was posted to the City of London's EA webpage on May 2, 2022, to invite the public to review and comment on the identification of a sanitary sewage servicing solution. Alternatives, evaluation criteria, and assessment of alternatives were presented at an in-person Public Information Centre (PIC) held at Pond Mills Library on December 8, 2022. Prior to the PIC, a "Notice of Public Information Centre" was mailed to nearby property owners and was also advertised on the City's Webpage that was created for the Meadowlily Road Area EA.

Feedback received from the public during the PIC was generally in favour of Sanitary Alternatives 3A and 3B. Public feedback received for the Multi-Use Pathway (MUP) Alternatives were varied based on connectivity to developments, natural landscape impacts, and future MUP routing through private property. This was taken into consideration during the selection of the "Preferred Alternative".

The preferred sanitary servicing alternative is Alternative 3B; Sanitary Pumping Station (SPS) on Meadowlily Road South - Only Services Meadowlily Road South (Sanitary Forcemain Connection to MH S20 [Manhole reference in Meadowlark Subdivision Site Plans]). The general feedback from the Public was supportive of the "Preferred Alternative", with a portion of the forcemain alignment to be defined through the future subdivision at the 168 Meadowlily Property. The preferred Multi-Use Pathway alternative is Alternative 3A; MUP on West Side of Meadowlily Road North and South with an East-West Connection to the Citywide Sports Park. The general feedback from the Public was supportive of the "Preferred Alternative", with most of the public's comments focused on safety of active transportation and automobile users and avoiding negative impacts to cultural heritage and natural resources. The intent of the MUP on the west side of Meadowlily Road South is to maximize direct access to the MUP without having to cross the road at the front of each development (as future development is proposed on the west side of Meadowlily Road South). The preferred alternatives for the sanitary and the MUP are generally aligned to be implemented together to minimize disturbance, increase efficiency, and reduce construction costs.

All public correspondence and subsequent responses have been documented in this final Class EA Schedule "B" Project File Report. The EA Study has been completed in accordance with the Environmental Assessment Act. This Meadowlily Road Area Class EA Study – Project File Report will be presented to the City of London Council for approval. Pending Council approval, the "Notice of Study Completion" will be advertised, and this report will be made available for public viewing on the getinvolved.london.ca webpage with a hyperlink to this site included on

the City of London's Environmental Assessment webpage for the mandatory 30-day review period.

E0.2 Recommendations

Based on the results of this Class EA Study, the following are recommended:

Sanitary Pumping Station

- A new municipal sanitary pumping station be constructed on the west side of Meadowlily Road South, outside the existing City right of way, and outside the ESA.
- New gravity sewers be installed to convey wastewater to the new municipal sanitary pumping station.
- A new forcemain be installed to discharge wastewater to the manhole located near the Meadowlark Ridge subdivision. Forcemain alignment to coincide with preferred MUP alignment.
- A preliminary design of the Preferred Alternative be completed, taking into account the foregoing recommendations; and
- The City of London solicit an engineering consulting firm to undertake the detailed design of the Preferred Alternative.

Multi-Use Pathway

- A new MUP be constructed on the west side of Meadowlily Road North and South, with the Meadowlily Bridge connecting Meadowlily Road North to South.
- Construct an East-West Connection MUP from Meadowlily Road South to the Citywide Sports Park. MUP alignment to coincide with preferred sanitary forcemain alignment.
- Parts of the Meadowlily Road South corridor consisting of both the road Right-of-Way (ROW) and a buffer were identified as a potential cultural heritage landscape. A Heritage Impact Assessment (HIA) for road construction (as well as for the MUP) would be required to assess any impacts to this Cultural Heritage Landscapes (CHL's).
- A preliminary design of the Preferred Alternative be completed, taking into account the foregoing recommendations; and
- The City of London solicit an engineering consulting firm to develop the detailed design of the Preferred Alternative.

1.0 INTRODUCTION AND BACKGROUND

1.1 Project Initiation

In May 2022, the City of London initiated a Schedule “B” Class Environmental Assessment Study for a new municipal pumping station to service future developments within the Meadowlily Road Area. The City of London developed terms of reference and following a competitive bidding process, retained MTE to undertake this assignment. In addition, the assignment included the assessment for a means of establishing primary recreational pathway linkages between Meadowlily Bridge and the Citywide Sports Park.

The Study Area features approximately 167 ha (412 ac) of mixed-use land primarily located on either side of the south branch of the Thames River. It reflects a multifaceted landscape of natural areas, interspersed with cultural heritage features, and a small assemblage of mid-to-late 20th century residential development. The area is composed of the Meadowlily Woods ESA and the Meadowlily Nature Preserve that features densely wooded areas, meadowlands, recreational trails, and the Citywide Sports Park. The Thames River bisects the Study Area from east to west, and Meadowlily Road from north to south. The Study Area is shown in **Figure 1.**

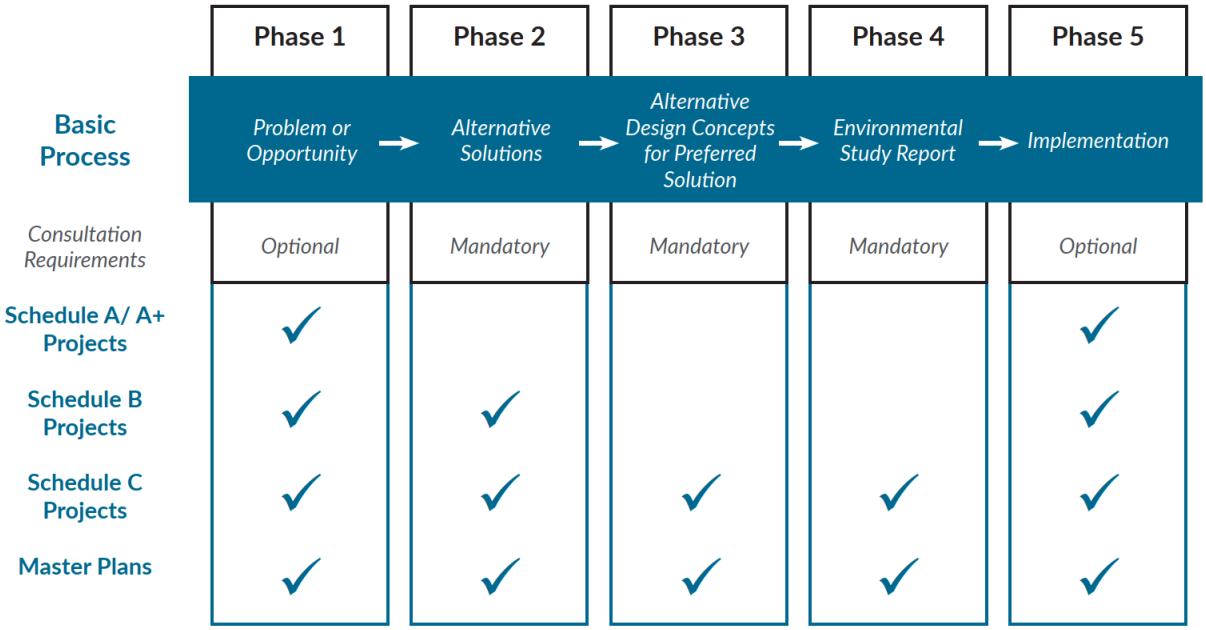
Figure 1: Meadowlily Road Area (Study Area)

1.2 Class Environmental Assessment

The Class EA has been planned as a Schedule "B" undertaking in accordance with Part C of the *Municipal Class Environmental Assessment Document* published by the Municipal Engineer's Association. For Schedule "B" projects, the proponent shall apprise specific agencies and potentially affected members of the public of the situation and proposed solution with two mandatory points of contact, Public Information Meeting and Notice of Project Completion.

This project conforms to the Class EA planning process **(Refer to Figure 2)** and is described under Section 3 of the Class EA Document as a new sanitary pumping station to accommodate future growth and development. The study process consists of four of the five Phases of Planning and Design Process. Phases 1 through 4 will be covered in this document with the Preliminary Design being completed separate from this document.

Figure 2: Class EA Planning Process (Municipal Engineers Association, 2023)



The purpose of this Class EA is to summarize all information collected and alternatives developed and evaluated (including the "do nothing" alternative), in a manner consistent with the Class EA process for Schedule "B" projects. The primary objectives are to identify the "Preferred Solution" for the location of the Meadowlily Road sanitary pumping station and forcemain, and location for the recreational pathway linkages between the Meadowlily Bridge and the Citywide Sports Park based on an evaluation of natural and social environmental concerns, operational, constructability and economic analysis, as well as public health and safety concerns. If the EA is accepted by City Council, it will then proceed to detailed design and ultimately construction. Timing of construction will be determined through the 2028 One Water Development Charges Background Study, subject to any adjustments through the City's Growth Management Implementation Strategy (GMIS).

1.3 Study Organization

A Project Team was assembled with MTE and City staff. Project team members are as follows:

Project Team Members

Name	Company
Mr. Kevin Graham, GDPA, P.Eng.	City of London – Project Manager
Mr. Vince Pugliese, P.Eng., MBA, PMP	MTE Consultants Inc. – Project Manager
Mr. Nick Romero, P.Eng.	MTE Consultants Inc.
Mr. Brandon Pereira, BASc., EIT	MTE Consultants Inc.

Formal Project Team meetings were held throughout the duration of the study to assess pertinent data, to develop alternative concepts, to solicit public/agency input, and to prepare for the PIC. Sub-consultants were contracted by MTE to conduct various studies within the Study Area and provide input on the proposed alternatives:

Sub – Consultants

Name of Company	Work Provided
Timmins Martelle Heritage Consultants Inc. – Heritage Consultants	Archaeological and Cultural Heritage
MTE Consultants Inc. – Environmental Division	Natural Environment

1.4 Indigenous Consultation

Full communication and participation by the Indigenous communities in the Study was encouraged from the outset of the project. Each of the following Indigenous communities received the Notice of Commencement informing them that a Schedule "B" Class EA was being conducted and requesting their comment and input to the Study (letter dated May 2, 2022) as well as notification prior to the PIC (letter dated November 15, 2022) (refer to **Appendix A** for further details):

- Walpole Island First Nation
- Oneida Nation of the Thames
- Munsee Delaware Nation
- Kettle and Stoney Point First Nation
- Delaware Nation
- Chippewas of the Thames First Nation
- Caldwell First Nation
- Aamjiwnaang First Nation

1.5 Agency Consultation

Full communication and participation by the review agencies (both directly and indirectly involved) in the Study was encouraged from the outset of the project. Each of the following received the Notice of Commencement informing them that a Schedule "B" Class EA was being conducted and requesting their comment and input to the Study (letter dated May 2, 2022) as well as notification prior to the PIC (letter dated November 15, 2022) (refer to **Appendix A** for further details):

- Area Property Owners and Community Groups

- Local Area Developers
- Environment Canada
- Upper Thames River Conservation Authority
- Ministry of the Environment, Conservation and Parks
- Ministry of Natural Resources and Forestry
- Ministry of Citizenship and Multiculturalism
- Hydro One
- London Transit
- Middlesex London Health Unit

Appendix A2 contains public correspondence, including indigenous consultation. **Section 5** discusses the input and responses provided by community groups.

1.6 Description of the Study Area

The Study Area consists primarily of the undeveloped portions of the Meadowlily Road area within the planning districts of both Jackson and Hamilton Road in the City of London. The Study Area is shown on **Figure 1**. The Meadowlily Road area is generally bounded by Highbury Ave South to the west, Commissioners Road East to the south, Hamilton Road and Thames River to the north.

Included in the Study Area is Meadowlily Road North and South, several other residential roadways, interspersed segments of private land, the majority of the Meadowlily Woods ESA and the Meadowlily Nature Preserve that features densely wooded areas, meadowlands, and trails. The study area includes the Park Farm (located at 120 Meadowlily Road South), Meadowlily Bridge, a portion of the Thames River and the Citywide Sports Park.

South of the Thames River is the Summerside sanitary trunk sewer that runs under the intersection of Chelton Road and Commissioners Road East, travels through Meadowlark Ridge subdivision, which eventually crosses the Thames River through a siphon and ultimately connects to the Pottersburg Pollution Control Plant (PCP). Feren Avenue (located North of the Thames River) has a sanitary sewer that also connects to the Pottersburg PCP. There is a sanitary forcemain along Norlan Avenue which connects the Potterburg PCP and Vauxhall PCP. There exists a local sanitary sewer crossing Commissioner's Road East at Meadowlily Road South that conveys flows into the Summerside subdivision and a local sanitary sewer crossing Commissioner's Road East at Meadowgate Boulevard that conveys flows into the Summerside subdivision.

Within the Study Area, the Meadowlily Bridge connects Meadowlily Road South to the Thames Valley Parkway (TVP) (multi-use recreational pathway) which is located north of the Thames River. Meadowlily Road North and South currently do not include a designated pathway for safe active transportation routes to connect the TVP to Commissioners Road East or the Citywide Sports Park.

The socio-economic environment surrounding Study Area is predominantly residential. The main parcels being considered are Municipal Addresses (MA) 65, 85, 101, & 129 Meadowlily Road along with part of Westminster Concession 1 Lot 15 (Lot 15). Municipal addresses 135-171 Meadowlily Road and the Citywide Sports Park are also within the Study Area. There is

development interest within the Study Area, hence the purpose of this study is to support servicing for future development.

1.7 Supporting Policies

As part of the Class EA, several policies were identified that support the assignment, as well as form the basis for establishing the evaluation criteria of the project. The supporting policies are as follows:

- Provincial Policy Statement, 2024 Under the Planning Act
- The London Plan (Official Plan)
- City of London Cycling Master Plan, 2016
- The Thames Valley Corridor Plan, 2011

1.7.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) is a consolidated statement of the government's policies on land use planning. It gives provincial policy direction on key land use planning issues that affect communities, such as:

- Efficient use and management of land and infrastructure
- The provision of sufficient housing to meet changing needs, including affordable housing
- The protection of the environment and resources including farmland, natural resources (for example, wetlands and woodlands) and water
- Opportunities for economic development and job creation
- The appropriate transportation, water, sewer and other infrastructure needed to accommodate current and future needs
- The protection of people, property and community resources by directing development away from natural or human-made hazards, such as flood prone areas

The PPS is issued under section 3 of the *Planning Act* and according to the act all decisions affecting planning matters shall be consistent with the Provincial Policy Statement.

This study provides and supports the direction stipulated under the PPS.

2.0 OBJECTIVE OF THE STUDY AND PROBLEM STATEMENT

2.1 Objective

The Meadowlily Road Area has started to receive significant attention as a location for infill and intensification within the City of London and, as a result, the City initiated a Secondary Plan in 2010 to establish goals, objectives, and policies for any potential development of the area. Central to this work was the study of opportunities and constraints for water, stormwater, and wastewater management within the Study Area. Neither the secondary plan nor servicing study were completed and the lack of infrastructure within the Study Area has impacted the development potential of the lands. The City of London has now reinitiated the Class EA Study to identify and evaluate alternative solutions for a sanitary servicing strategy, including the location of a new municipal sanitary pumping station within the Study Area. This Class EA study

will also explore the most appropriate means of establishing recreational pathway linkages between the Meadowlily Bridge and Citywide Sports Park.

The primary objective of this Class EA Study was to identify the "Preferred Alternative" for a new municipal sanitary pumping station servicing the Meadowlily Road Area, and means for the recreational pathway linkage between the Meadowlily Bridge and the Citywide Sports Park. The selection of the "Preferred Alternative" was based on the evaluation of the natural, economic, operational, constructability, technical and social implications of each alternative.

The intent of this Class EA Study is to identify opportunities and constraints as they relate to the natural and physical environment, and to select the "Preferred Alternative" for completion of the study. The "Preferred Alternative" represents the cooperative effort of the Public, the adjacent landowners, government agencies, the City of London staff, and the Project Team.

2.2 Problem Statement

This Municipal Class EA addresses the following Problem Statement:

> ***"The Meadowlily Road Area (Study Area) has gained interest for future development opportunities within the City of London. Currently, the Study Area has limited municipal servicing, and existing properties are serviced through private systems.***
>
> ***In addition, consistent with the Cycling Master Plan Environmental Assessment, there is a need to address the gap in the recreational pathway system between the Meadowlily Bridge and the Citywide Sports Park on Commissioners Road East within the Right of Ways that meets all City design standards for the Thames Valley Parkway, multi-use pathway.***
>
> ***The City of London has initiated a Class Environmental Assessment Study for a new municipal pumping station to facilitate the servicing of future developments within the Study Area, and determine the most appropriate means of establishing primary recreational pathway linkages between Meadowlily Bridge and the Citywide Sports Park within the Meadowlily Road South and Commissioners Road East, Right of Ways (ROWs).***
>
> ***Through the Municipal Class Environmental Assessment Schedule "B" process (Class EA), a review of design alternatives will be conducted to determine a preferred alternative for servicing and providing a recreational pathway system within the Study Area, while maintaining the objectives of: protection of the environment; minimal disruption to residents and surrounding areas; optimizing costs; engaging a broad range of community groups; and documenting the study process in compliance with the Municipal Class Environmental Assessment Schedule "B" process."***

3.0 EXISTING CONDITIONS

Below is a brief description of the existing conditions within the Study Area, which provides the context within which solutions for the project were considered. Further detail of the existing conditions is contained in the various studies which were undertaken as part of this EA **(refer to Appendix B)**.

3.1 Physical Environment

3.1.1 Physiography and Topography

The Study Area is generally bounded by Highbury Ave South to the west, Commissioners Road East to the south, Hamilton Road and Thames River to the north. Defining features of the Study Area includes a portion of the Thames River which bisects the Study Area from east to west.

The Study Area is located within the Thames River valley and consists of low-lying areas, steep slopes, floodplains, ravines, valleys and gully features (NRSI, 2019). Land use within the area is a mixture of crop agricultural, rural residential and park land.

In the general vicinity of the Thames River, the southern portion is characterized by steep slopes with a number of ravines that cut through the slopes (NRSI, 2019). These slopes direct surface water runoff and groundwater into the Thames River. The area north of the Thames River has been determined to be more level than the southern portion (NRSI, 2019). Further details of the existing conditions is contained in the Environmental Impact Study (EIS) **(refer to Appendix B1)**.

3.1.2 Geotechnical Conditions

The soils within the Study Area are dominated by silty clay loam, silty clay, and occasionally clay loam glacial till that is moderately well to imperfectly drained on strong to gentle slopes (NRSI, 2019). The far eastern portion of the Study Area consists of gravelly or cobble glaciofluvial outwash with rapid to imperfect drainage (NRSI, 2019). The soils within the southern portion consist of imperfectly drained loam and occasionally fine sandy loam and the soils on the northern portion, along the Thames River, are comprised of increased sand and are characterized by very steep slopes and floodplains (NRSI, 2019).

3.1.3 Surface Water Features

Surface water drainage of the tableland is described as uncontrolled surface water that flows overland from south to north in ravine and gully features, eventually flowing into the Thames River. There are four high gradient gully features located along the Thames River that flow south within the Study Area and provide tableland drainage (AECOM, 2011). There is also an un-named creek present within the western portion of the Study Area.

3.1.4 Hydrogeology

The Study Area is not located within a “Wellhead Protection Zone” according to UTRCA mapping; however, there is some minor infiltration, pooling of precipitation and groundwater seepage located along the Thames River valley within the Study Area. Further details of the existing conditions is contained in the EIS **(refer to Appendix B1)**.

3.2 Municipal Infrastructure

3.2.1 Transportation

Meadowlily Road bisects the Study Area from north to south. Meadowlily Road North is a generally straight north-south local road which connects Hamilton Road (civic boulevard) to Feren Avenue, Norlan Avenue, and the Meadowlily Bridge. Meadowlily Road South is a generally straight north-south local road which connects the Meadowlily Bridge to Commissioner's Road East (civic boulevard). The Meadowlily Bridge connects Meadowlily Road South to the Thames Valley Parkway (TVP) (multi-use recreational pathway) which is located north of the Thames River. Meadowlily Road North and South do not include a designated pathway for safe active transportation routes to connect the TVP to Commissioners Road East or the Citywide Sports Park. Feren Avenue and Norlan Avenue (located north of the Thames River) do not have sidewalks.

3.2.2 Stormwater Management

Meadowlily Road North, Feren Avenue, and Norlan Avenue do not include curb and gutter. Stormwater sewers are located within Meadowlily Road North and ultimately discharge to the Thames River at an outfall east of the Meadowlily Bridge (1,525 mm diameter). Meadowlily Road South includes curb, gutter (on west side) and stormwater sewers that ultimately discharge to the Thames River at an outfall west of Meadowlily Bridge (675 mm diameter). A stormwater management facility exists to service the Citywide Sports Park, discharging northward to a shallow swale across the Environmentally Significant Area (ESA). Near the southeast portion of the Study Area (Meadowlark Ridge), a stormwater sewer travels north into the study area and discharges into the Thames River (2,700 mm diameter).

3.2.3 Sanitary Sewers

Within the Study Area, properties along Meadowlily North (south of Feren Avenue), Norlan Avenue, and Meadowlily Road South do not have a municipal sanitary collection system. South of the Thames River is the Summerside sanitary trunk sewer that travels under the intersection of Chelton Road and Commissioners Road East (600 mm diameter), travels through Meadowlark Ridge (600 mm to 975 mm diameter sanitary sewers), and eventually crosses the Thames River through a 1,350 mm diameter siphon to connect to the Pottersburg Pollution Control Plant (PCP). Meadowlark Ridge (near the southeast portion of the Study Area) includes 200 mm diameter sanitary sewers that service the development and discharge into the Summerside Sanitary trunk sewer north of the property.

Currently, there is a local 200 mm diameter sanitary sewer crossing Commissioner's Road East at Meadowlily Road South that conveys flows into the Summerside subdivision. There is also a local 200 mm diameter sanitary sewer crossing Commissioner's Road East at Meadowgate Boulevard that conveys flows into the Summerside subdivision. There is an existing 375 to 400 mm diameter sanitary sewer along Feren Avenue (located North of the Thames River) that runs along rear lots which ultimately connects to the Pottersburg PCP. There is a sanitary forcemain along Norlan Avenue which is intended to connect the Potterburg PCP and Vauxhall PCP. The purpose of this forcemain is to transfer flows between the PCPs during peak flows.

3.2.4 Water Distribution

There is an existing 600 mm diameter low-level watermain located on the north side of Commissioner's Road East which travels along Meadowlily Road South, turns west onto the City owned corridor and crosses under Highbury Avenue South. A 400 mm diameter high

pressure watermain is located along the south side of Commissioners Road East. The high level-watermain also connects into the Citywide Sports Park. North of the Thames River there exists 150 mm diameter watermains along Meadowlily Road North, Feren Avenue and Norlan Avenue. The Meadowlily Road North and Norlan Avenue 150 mm watermains are being looped as part of further development in the future. There exists a 50 mm diameter polyethylene pipe along Norlan Avenue, which will be removed in the future when watermain looping is completed in the area. There is currently no existing watermain within Meadowlily Road South (between the Meadowlily Bridge and the City owned corridor), and partially on Meadowlily Road North (between 101 Norlan Avenue and 26 Norlan Avenue).

3.2.5 Sanitary Design Flow

Refer to ***Appendix C*** for Meadowlily Road Sanitary Sewer Design Sheet, completed in accordance with the City of London Design Specification and Requirements Manual (March 2025). Flows from both Meadowlily Road North and South were calculated based on existing land uses and proposed site plan applications at the time of writing this report. The peak flow for Meadowlily Road North and South is 3.23 L/s and 32.02 L/s, respectively.

3.3 Natural Environment

An EIS was prepared to identify natural heritage constraints and opportunities within the broader Study Area to support the alternative evaluation, identify potential impacts of the preferred alternatives, informing of mitigation and avoidance measures. Further detail can be found in the EIS in **Appendix B1**.

3.3.1 Designated Natural Areas and Species At Risk

The Land Information Ontario (LIO) mapping (NDMNRF, 2021), Natural Heritage Information Centre (NHIC) online database, and Map 5 of the London Plan were reviewed for natural heritage features within and adjacent to the Study Area. The Study Area includes significant woodland (including Highbury Woods), Meadowlily Woods PSW, significant valleyland, the Meadowlily Woods ESA, and unevaluated vegetation patches. Further detail can be found in the EIS report in **Appendix B1**.

3.3.2 Species Records

For this report, protected species are those listed as endangered or threatened on the Species at Risk in Ontario (SARO) List of the ESAct. Only protected species and their habitat receive protection under the ESAct.

Species of Conservation Concern (SOCC) are those listed as special concern on the SARO list and species with a provincial ranking of S1-S3. Provincial status rankings for plants, vegetation communities, and wildlife are based on the number of occurrences in Ontario and have the following meanings:

- S1: critically imperiled; often fewer than 5 occurrences
- S2: imperiled; often fewer than 20 occurrences
- S3: vulnerable; often fewer than 80 occurrences
- S4: apparently secure
- S5: secure
- S?: unranked, or, if following a ranking, rank uncertain (e.g., S3?)

Provincial status rankings are established by the NHIC and do not provide an indication of regional abundance or rarity (i.e., species uncommon in the province may still be locally abundant in some regions).

A review of the NHIC database, Ontario Breeding Bird Atlas (OBBA), Ontario Reptile and Amphibian Atlas (ORAA) database, DFO Aquatic Species at Risk Distribution Mapping, and Citizen Science sources (iNaturalist and eBird) was conducted to create an updated list of protected species and SOCC that may be present within the area of the Study Area. The areas included in the background review vary, including 10 km Atlas squares (OBBA and ORAA) and a 1 km Atlas square (NHIC). The OBBA occurrence data are from 2001-2005 but the dates of the NHIC records are unknown. The remainder of the records are from within the past 10 years. The year of observation is provided for each species where possible. As these sources display data from a broad area, they provide only a general potential for species presence on or near the Study Area.

These results were compared to the list of protected species and SOCC identified within the Study Area during the *Meadowlily Woods ESA Conservation Master Plan (NRSI, 2019)*. One new protected species, the endangered Red-headed Woodpecker (previously included under SOCC), has been added to the list of potential protected species in the Study Area, as shown in **Table 1**.

Table 1: Protected Species Occurrence Data Review (Potential Within 10 km of Study Area)

Taxonomic Group	Common Name	Scientific Name	SARO Status	S-Rank	Year Observed (If known)	Source
Birds	Acadian Flycatcher	*Empidonax virescens*	END	S2S3B	-	OBBA
	Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	S4B	2015	eBird
	Bank Swallow	*Riparia riparia*	THR	S4B	2021	eBird
	Barn Swallow	*Hirundo rustica*	THR	S5B	2022	eBird
	Bobolink	*Dolichonyx oryzivorus*	THR	S4B	-	OBBA
	Cerulean Warbler	*Setophaga cerulea*	THR	S3B	2021	iNaturalist
	Chimney Swift	*Chaetura pelagica*	THR	S4B, S4N	2021	eBird
	Eastern Meadowlark	*Sturnella magna*	THR	S4B	2013	eBird
	Louisiana Waterthrush	*Parkesia motacilla*	THR	S3B	2020	eBird
Reptiles	Spiny Softshell Turtle	*Apalone spinifera*	END	S2	-	NHIC
Fish & Mussels	Round Pigtoe	*Pleurobema sintoxia*	END	S1	-	DFO
	Black Redhorse	*Moxostoma duquesnei*	THR	S2	-	DFO
	Silver Shiner	*Notropis photogenis*	THR	S2S3	-	NHIC
Plants	Butternut	*Juglans cinera*	END	S2	2017	NHIC
	Eastern Flowering Dogwood	*Cornus florida*	END	S2	-	NHIC
	Wood-Poppy	*Stylophorum diphyllum*	END	S1	-	NHIC
	Blue Ash	*Fraxinus quadrangulata*	THR	S2?	2021	NHIC

In addition to the above list, there are several other protected species that are poorly represented in the background information sources and which may be present within the City of London. These additional species to consider include endangered species such as Little Brown Myotis, Northern Myotis, Tri-coloured Bat, Eastern Small-footed Myotis, American Badger, and American Chestnut.

Several SOCC were also identified through a background review within 10 km of the Study Area. These species are provided in **Table 2**, below.

Table 2: SOCC Occurrence Data Review (Potential within 10 km of the Study Area)

Taxonomic Group	Common Name	Scientific Name	SARO Status	S-Rank	Date Observed (If known)	Source
Birds	Bald Eagle	*Haliaeetus leucocephalus*	SC	S2N, S4B	2022	eBird
	Black Tern	*Chlidonias niger*	SC	S3B	-	OBBA
	Common Nighthawk	*Chordeiles minor*	SC	S4B	2018	eBird
	Eastern Wood-Pewee	*Contopus virens*	SC	S4B	-	OBBA
	Peregrine Falcon	*Falco peregrinus*	SC	S3B	-	OBBA
	Wood Thrush	*Hylocichla mustelina*	SC	S4B	-	OBBA
Reptiles	Northern Map Turtle	*Graptemys geographica*	SC	S3	-	NHIC
	Snapping Turtle	*Chelydra serpentina*	SC	S4	2019	ORAA
Fish & Mussels	Northern Sunfish	*Lepomis peltastes*	SC	S3	-	DFO
	Northern Brook Lamprey	*Ichthyomyzon fossor*	SC	S3	-	DFO
	Rainbow Mussel	*Villosa iris*	SC	S2S3	-	DFO
	Wavy-rayed Lampmussel	*Lampsilis fasciola*	SC	S1	-	DFO
Plants	Green Dragon	*Arisaema dracontium*	SC	S3	-	NHIC

Habitat investigations from the *Draft Meadowlily Area Plan: Natural Heritage Study (AECOM, 2011),* background information from the *Meadowlily Woods ESA Conservation Master Plan (NRSI, 2019)*, and updated field surveys by MTE were used to assess the likelihood of the presence of these protected species and SOCC in the Study Area. Methods and results of these assessments are presented in the following sections.

3.3.3 Vegetation Communities and Botanical Inventory

A total of 21 vegetation communities were identified within the Study Area based on data presented in the *Meadowlily Woods ESA Conservation Master Plan (NRSI, 2019)* and confirmed by MTE during 2022 field investigations, as shown in **Table 3**. The vegetation community classifications and boundaries observed by MTE were generally consistent with those presented by NRSI in 2019. A portion of the Study Area north of the Thames River, which had not been previously studied, was included and classified based on observations by MTE field ecologists in July 2022.

Table 3.1: Ecological Land Classifications for the Study Area

Polygon	ELC Code	Description	S-rank	Study Area Representation
1	CUM	Cultural Meadow	N/A	1.08 ha
2	CUM1-1	Dry-Moist Old Field Meadow Type	N/A	17.72 ha
3	CUS1	Mineral Cultural Savannah Ecosite	N/A	3.74 ha
4	CUT1	Grey Dogwood Cultural Thicket	N/A	1.44 ha
5	CUT1-4	Grey Dogwood Cultural Thicket	N/A	0.79 ha
6	CUW	Cultural Meadow	N/A	5.47 ha
7	CUW1	Mineral Cultural Woodland Ecosite	N/A	3.91 ha
		Cultural Communities		34.15 ha or 23%

Table 3.2: Ecological Land Classifications for the Study Area

Polygon	ELC Code	Description	S-rank	Study Area Representation
8	FOD3-1	Dry-Fresh Poplar Deciduous Forest	N/A	0.72
9	FOD5	Dry-Fresh Sugar Maple Deciduous Forest Ecosite	S5	8.23
10	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest Type	S5	12.21
11	FOD5-2	Dry-Fresh Sugar Maple – Beech Deciduous Forest Type	N/A	18.64
12	FOD5-5	Dry-Fresh Sugar Maple Hickory Deciduous Forest Type	S5	7.40
13	FOD5-8	Dry-Fresh Sugar Maple White Ash Deciduous Forest Type	S5	1.43
14	FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type	N/A	13.41
15	FOM3-2	Dry-Fresh Sugar Maple – Hemlock Mixed Forest Type	N/A	1.28
22	FOD7-4	Fresh – Moist Black Walnut Lowland Deciduous Forest	N/A	0.70
		Forest Communities		64.02 ha or 43%

Table 3.3: Ecological Land Classifications for the Study Area

Polygon	ELC Code	Description	S-rank	Study Area Representation
7a	MAS2-1	Cattail Mineral Shallow Marsh Inclusion	S5	0.25
14a	SWD2	Mineral Deciduous Swamp Inclusion	N/A	0.50
16	MAS2-1	Cattail Mineral Shallow Marsh Type	S5	0.22
17	MAM2-10	Mixed Forb Mineral Meadow Marsh Type	N/A	0.57
18	SWD2-2	Green Ash Mineral Deciduous Swamp Type	S5	0.27
19	SWD4-1	Willow Mineral Deciduous Swamp Type	N/A	0.37
20	SWD7	Birch Poplar Organic Deciduous Swamp Ecosite	S5	0.73
21	SWT2-2	Willow Mineral Deciduous Thicket Swamp Type	S5	0.44
		Wetland Communities		3.35 ha or 2%

Further detail can be found in the EIS report in **Appendix B1**.

3.3.4 Botanical Inventory

A comprehensive botanical inventory was conducted as part of the *Meadowlily Woods ESA Conservation Master Plan (NRSI, 2019)*. The Study Area is comprised of forest and wetland communities that include common native and non-native species, as well as several unique and provincially rare species. Field studies resulted in a total of 435 vascular plant species found within the Study Area of which 73% (316) are native and 27% (119) were non-native (NRSI, 2019). A supplementary botanical inventory was completed by MTE during 2022 field investigations. One hundred and seventy-seven (177) species were recorded by MTE within the Study Area, of which 72 were not included in the 2019 NRSI study. The status of all plant species is based on the provincial NHIC database (MNRF, 2020) and the list of vascular plants for the Carolinian Zone (Oldham, 2017).

MTE field investigations confirmed the presence of five Kentucky Coffee-tree stems and one dead Butternut within the Study Area. Butternut and Kentucky Coffee-tree were also both observed during previous field investigations (NRSI, 2019); however, the locations of these trees were not provided. One species of special concern (Green Dragon) was also observed during previous investigations (NRSI, 2019) but the locations of individuals are unknown.

The following eight provincially rare species were observed within the Study Area: Striped Cream Violet (S3); Hooker's Orchid (S3); Lizard's Trail (S3); Carey's Sedge (S2); Creeping Fragile Fern (S2S3); Scarlet Beebalm (S3); Soft-hairy False Gromwell (S2); and Gray-headed Prairie Coneflower (S3) (MTE, current study; NRSI, 2019; ESG, 2002 as cited in NRSI, 2019). Gray-headed Prairie Coneflower is frequently used in native plant gardens, including within seed mixes, and may not be a natural occurrence within the Study Area. Two other provincially rare but probable garden-escapees were observed by MTE in 2022: Honey-locust (S2?); and Trumpet Creeper (S2?). These two species are considered introduced rarities in Middlesex

County (Oldham, 2017). The following three regionally rare species were also observed: Fragrant Sumac; Sweet Ox-eye; and Wood Horsetail (NRSI, 2019). Not all rare species observed within the Meadowlily ESA during previous studies are present within the current Study Area boundaries.

The complete list of botanical species from NRSI (2019) and MTE (2022) can be found in **Appendix B1**.

3.4 Significant Wildlife Habitat

The *MNRF Significant Wildlife Habitat (SWH) Criteria Schedules for Ecoregion 7E (January 2015)* uses ELC ecosite codes and habitat criteria (e.g., size of ELC polygon, proximity to other natural features) to define candidate SWH. Additional candidate SWH types for the City of London were obtained from the London Plan (Policy 1354). An assessment of candidate SWH, including habitat for SOCC, was completed for the Study Area using a combination of desktop analysis and field observations **(refer to Appendix B1)**.

Candidate SWH was further evaluated using site-specific life science data collected during previous studies and recent MTE field investigations based on the defining criteria (e.g., species presence, abundance, and diversity) to confirm the presence or absence of SWH. A summary of candidate and confirmed SWH in the Study Area is provided below. Further detail can be found in the EIS report in **Appendix B1.**

3.4.1 Bat Maternity Colonies

Suitable forest habitat and large cavity trees within forest communities were observed during previous NRSI and recent MTE field investigations. Bat acoustic monitoring was not completed in candidate habitat (FOD7, FOM, SWD) and as such, will be conservatively carried forward as Candidate SWH.

Due to the vast area of forested communities within the Study Area, candidate bat maternity habitat has not been mapped.

3.4.2 Turtle Wintering Areas

Field studies undertaken as part of the *Meadowlily ESA Conservation Master Plan (NRSI, 2019)* confirmed the presence of Snapping Turtle within the Thames River, indicating that the turtles are likely over-wintering in deep-water pools of the river. As such, the Thames River is Confirmed SWH.

3.4.3 Deer Winter Congregation Areas

The Study Area contains woodlots of an appropriate size for congregation of White-tailed deer. Areas of high white-tailed deer use were identified during field studies (NRSI, 2019), but surveys were not conducted in the winter months to confirm SWH. Candidate deer winter congregation areas have not been mapped as it remains unconfirmed.

3.4.4 Other Rare Vegetation

One rare vegetation community was confirmed within the Study Area: Fresh-Moist Lowland Black Walnut Deciduous Forest (FOD7-4), S2S3. This community is mapped as ELC Community 22.

3.4.5 Bald Eagle and Osprey Nesting, Foraging, Perching

Appropriate habitat for Bald Eagle and Osprey nesting, foraging and perching habitat is present in the Study Area, but no nests were observed during field investigations. As such. these communities will be conservatively carried forward as Candidate SWH. Candidate Bald Eagle and Osprey nesting, foraging and perching habitats have not been mapped.

3.4.6 Turtle Nesting Areas

Suitable turtle nesting habitat (exposed soils adjacent to wetland MAS2-1) was observed in the Study Area; however, nesting activity was not confirmed. As such, this community will be conservatively carried forward as Candidate SWH. Candidate turtle nesting areas have not been mapped.

3.4.7 Springs and Seeps

Seeps and springs were identified throughout the Meadowlily Woods ESA along the ravines draining into the Thames River (NRSI, 2019) and as such, is Confirmed SWH.

3.4.8 Special Concern and Rare Wildlife Species

Confirmed habitat for Eastern Wood-pewee, Snapping Turtle, Wood Thrush and two provincially rare species, Striped Cream Violet, and Hooker's Orchid, is present within the Study Area (NRSI, 2019) and shown.

Candidate SWH for Bald Eagle, Common Nighthawk and Northern Map Turtle is present within the Study Area (NRSI, 2019). Candidate habitats for SOCC have not been mapped as individuals were not observed during field investigations to confirm.

3.5 Aquatic Habitat Assessment

An aquatic habitat assessment was completed as part of the *Draft Meadowlily Area Plan: Natural Heritage Study (AECOM, 2011)* to characterize local drainage functions as well as identify and document existing aquatic habitat features within the Study Area.

The Study Area lies within the Thames River valley with uncontrolled surface runoff from tablelands that flows overland, south to north, into ravine and gully features along the valley slope and eventually into the Thames River (AECOM, 2011). Six main surface water features were identified within the Study Area that include the Thames River, Unnamed Creek, and Ravines A, B, C and D.

Table 4 outlines the key findings from the assessment accompanied by the habitat types that are supported in each feature. Further detail can be found in the EIS report in **Appendix B1.**

Table 4: Surface water features within the Study Area as documented in AECOM (2011)

Feature Name	Feature Habitat	Flow Regime
Thames River	• Shoreline vegetation consists mainly of deciduous Carolinian forest. • Shoreline substrate consists of sand with some silt and gravel areas. • Supports fish habitat for 34 fish species and 9 freshwater mussel species, including SAR.	• 56% Permanent • 44% Intermittent
Unnamed Creek	• Flows through woodlands and the Meadowlily Woods ESA to the east. • Indicators of groundwater seepage were observed within the headwaters and are expected to contribute to base flow. • Warm-water system that supports warm-water fish species.	• Intermittent in upstream reaches • Permanent in mid to lower reaches
Ravine A	• Originates within agricultural tablelands with swales that meet and form three branches that form into Ravine A. • The upper reach is classified as a well-defined channel with severe erosion resulting in unstable banks containing bare soil and little to no vegetation. • The feature includes an abundance of woody debris, detritus, and other refuse materials. • Has been confirmed to not be utilized as fish habitat (AECOM, 2011).	Intermittent
Ravine B	• Originates from three short branches in a depression within a cultural meadow. • The ravine consists of eroded banks with substrates consisting of fine sand and silt with an exposed clay bottom. • Is unlikely to support fish habitat but is possible that the feature supports migration of small-bodied fish within the lower reaches during times of high flow (AECOM, 2011).	Intermittent
Ravine C	• Originates from four branches starting at the top of the valley crest and come together north of the tablelands. • Main branch contains uncontrolled flow from the Citywide Sports Park SWM Pond outfall as well as contributions from groundwater seepages and surface water runoff. • Substrates are described as gravel and small cobble within the lower reaches changing to gravel, course grained sands and fines in the middle to upper reaches.	Intermittent

Feature Name	Feature Habitat	Flow Regime
	• Is unlikely to support fish habitat but is possible that the feature supports migration of small-bodied fish within the lower reaches during times of high flow (AECOM, 2011).	
Ravine D	• Originates from two short branches on the valley slope that receive surface water runoff as well as groundwater seepages. • The ravine consists of steep high banks with freshly exposed soils. • Classified as indirect, contributing fish habitat as it provides cool, clear flow from groundwater seepages to the Thames River. • Is unlikely to support fish habitat but is possible that the feature supports migration of small-bodied fish within the lower reaches during times of high flow (AECOM, 2011).	Intermittent

3.6 Species at Risk

As discussed in **Section 3.3.2**, a list of protected species potentially found within the Study Area was compiled using information in the NHIC database, eBird, the Ontario Bird Breeding Atlas, iNaturalist, the Ontario Reptile and Amphibian Atlas and DFO Species at Risk Mapping. Habitat with potential for SAR in the Study Area was evaluated using a combination of desktop review, satellite photo interpretation, and field investigations. The following protected species were confirmed present (or assumed to be present) within the Study Area:

- **Butternut** was observed during previous field investigations but were not disclosed (NRSI, 2019). MTE also observed one dead Butternut tree along the Thames River.
- Five **Kentucky Coffee-tree** stems were confirmed growing within the Study Area during MTE field investigations. Kentucky Coffee-tree was also identified near an old homestead adjacent to Meadowlily Road; however, the precise location was not disclosed (NRSI, 2019).
- **Chimney Swift** was also confirmed foraging within the Study Area and potentially suitable nesting or roosting sites were observed in unlined chimneys of old buildings within the Study Area (NRSI, 2019). However, studies to confirm nesting or roosting were not conducted.
- Maternity roosting habitat for **Little Brown Myotis, Northern Myotis and Tri-coloured Bat** is assumed present within the forested portions of the Study Area given the number of potentially suitable trees.
- **Silver Shiner** critical habitat is confirmed to be present within the Thames River that flows through the Study Area. The general habitat description for Silver Shiner identifies the Thames River as Category 1 and/or 2 habitats, and the floodplain and riparian edges adjacent to the potentially occupied reached of the Thames River as Category 3 Silver Shiner habitat (MECP, 2021c).

- **Black Redhorse** critical habitat is confirmed to be present within the Thames River that flows through the Study Area.
- **Round Pigtoe** critical habitat is confirmed to be present within the Thames River that flows through the Study Area.
- **Spiny Softshell** is known to be present within and along the shoreline of the Thames River (NRSI, 2019). This species was not observed during field investigations.

The complete SAR screening, including species with potential habitat present is provided in the EIS report in **Appendix B1.**

3.7 Heritage and Cultural Environment

3.7.1 Archaeological Environment

Timmins Martelle Heritage Consultants (TMHC) carried out a Stage 1 archaeological assessment as part of the Class EA study to determine whether there was potential for the discovery of archaeological resources within the Study Area.

The Stage 1 background research and field inspection confirmed that portions of the study area no longer contain archaeological potential as a result of deep and extensive land alterations, steep slopes, low and permanently wet areas, and previous assessments for which no further assessment was recommended. However, the majority of the study area (76.5 ha, 56.2%) continues to hold archaeological potential and requires additional assessment. These lands are comprised of grasslands, seasonally wet floodplains, and woodlot. As such, the Stage 2 assessment should consist of a test pit survey at 5 m intervals. Timing for the assessment of the seasonally wet floodplains should be considered well in advance for any proposed works in these locations. Furthermore, two archaeological sites are located within the study area: AfHh-150 and AfHh-965, the remains of the 19th-century Meadowlily Mill complex. These sites each have cultural heritage value or interest (CHVI) and require further assessment. Finally, there are two cemeteries with the Meadowlily Woods ESA that will require a boundary investigation if they are to be impacted.

If there are to be any in-water impacts to this portion of the Thames River (3.7 ha; 2.7%) a Marine Archaeology Checklist should be completed to determine if a marine archaeological assessment would be required.

Oneida of the Thames have indicated that the Meadowlily ESA is a highly sensitive area that all impacts on the east side of Meadowlily Road should be avoided if possible. If impacts cannot be avoided, they have requested that they be involved in the planning process and the execution of the archaeological assessments to ensure that their interests are respected.

In keeping with the London Plan Policy 615, local Indigenous communities should be engaged as part of any Stage 2 or 3 archaeological assessments within the study area. Provisions should also be made to include a monitor for the assessment work.

A report summarizing the archaeological assessment can be found in **Appendix B2.**

3.7.2 Built and Cultural Heritage Environment

TMHC carried out a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (CHRECPIA) for the Meadowlily Road Area as part of the Class EA study to screen properties for built and cultural heritage, evaluate, and prepare a preliminary heritage impact

assessment (HIA) on all properties identified as potentially having cultural heritage value or interest.

The Study Area includes Park Farm and Meadowlily Bridge, both Ontario Heritage Act Part IV designated heritage properties. The Thames River, designated as a Canadian Heritage River, bisects the Study Area. Meadowlily Road curves through the Study Area, tying these independent features together and contributing to the sustained rural character of the area.

The cultural heritage screening for this CHRECPIA determined that of the 43 properties, structures, and landscapes reviewed in the Study Area, 35 were found to contain recognized or have potential for Built Heritage Resources (BHRs)/Cultural Heritage Landscapes (CHLs). Of the 35 properties, structures, and landscapes reviewed, five CHLs and three BHR/CHLs, were determined to have recognized Cultural Heritage Value or Interest (CHVI) or potential CHVI. During fieldwork, it was found that potential BHRs were no longer present on three of the properties that had initially been identified as having potential CHVI based on those structures.

The HIA portion of the report concluded that the proposed construction activities in the Study Area, being the combination of the proposed sanitary servicing alternatives and multi-use pathway alternatives have the potential to cause direct and indirect impacts to the cultural heritage resources and defined mature rural character located within the Study Area. These impacts include the potential destruction or alteration of heritage attributes associated with the Park Farm (BHR-03/CHL-08), Meadowlily Bridge (BHR-01/CHL-01), as well as Meadowlily Road South (CHL-02). Indirect impacts include isolation, obstruction of significant viewscapes, land-use changes, and other potential impacts such as vibration, drainage pattern changes, and access.

Several mitigation measures have been proposed to remedy the direct and indirect impacts identified for the preferred alternatives and to create the conditions for long-term conservation of the known cultural heritage resources and mature rural character landscape exhibited by the Meadowlily Road Area. Mitigation measures are broken down into combined measures applicable to both the sanitary servicing and multi-use pathway as well separate mitigations for both of these development components.

Furthermore, it is recommended that the Meadowlily Road Area be the subject of future study for its merit as a potential cultural heritage landscape. Any future reports with this objective should define the boundaries of the potential heritage landscape, the key contributing features and attributes, as well as recommendations for managing and mitigating any future change or development in the area.

A report summarizing the cultural heritage assessment can be found in **Appendix B3.**

4.0 ALTERNATIVE SOLUTIONS

4.1 Development of Alternatives

The following sections outline the alternative designs that were considered for the preferred solution of the sanitary pumping station and recreational pathway linkage.

4.1.1 Sanitary Pumping Station (SPS)

Alternatives were developed to address the limited municipal servicing within the Meadowlily Road Area. Initial alternatives developed included single SPS configurations, double SPS configurations and do-nothing and each were presented, along with advantages and disadvantages, to City staff at a workshop and meetings. Singular SPS configurations included

servicing Meadowlily Road North and South with the use of a siphon under the Thames River and an SPS and forcemain on the other side of the river.

Double SPS configurations included servicing both Meadowlily Road North and South with the use of two SPSs located on either side of the river and suspending a forcemain across the Meadowlily Bridge or avoiding the bridge and routing the forcemains to a gravity sewer on each side of the Thames River. Based on the technical evaluation of the alternatives, including double SPSs for servicing Meadowlily Road North was not preferred, and as such, the EA was focused on Meadowlily Road South.

The following considerations were developed:

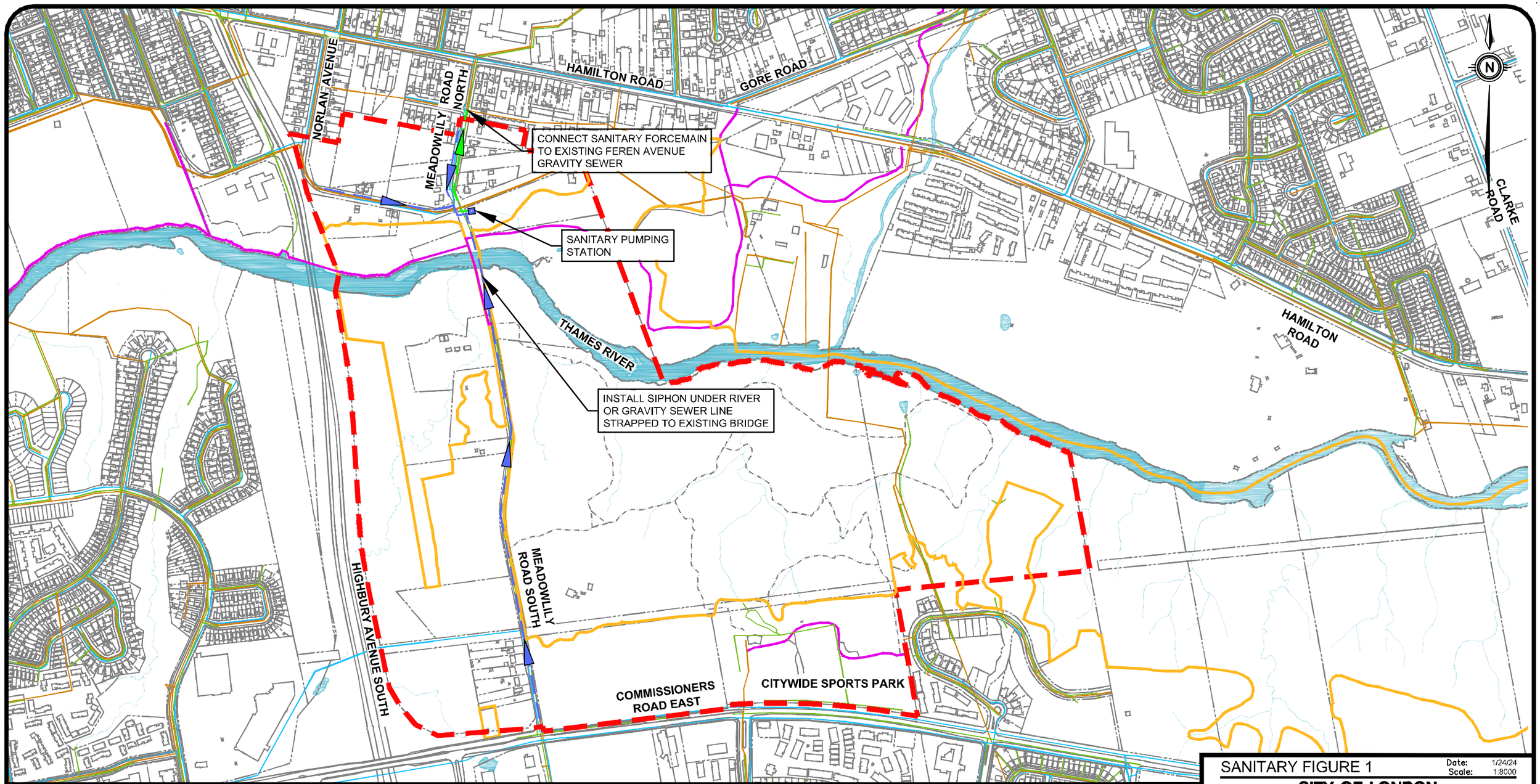
- Suspending pipes on the Meadowlily Bridge is preferred over directional drilling under the Thames River due to cost implications and risk to environment; nevertheless, all alternatives were considered and evaluated appropriately.
- Double SPS configurations are not preferred. Implications such as the land north of the Thames River being in the flood plain or owned by London Hydro, will limit the development north of the Thames River, and will not justify the installation of a second SPS for servicing Meadowlily Road North properties. In addition, considerations associated with capital, operating, and maintenance costs of multiple SPSs, as well as environmental factors were reviewed, and as part of this EA, the preferred alternative did not include double SPS, and a single SPS to service Meadowlily Road South only.
- The Norlan Avenue municipal sanitary pipe is a forcemain that connects both the Pottersburg PCP and Vauxhall PCP. This forcemain is not intended to be connected to the municipal sanitary conveyance system.
- Directly connecting the sanitary forcemain to the Summerside sanitary trunk sewer at the intersection of Commissioners Road East and Chelton Road will pose challenges given the depth of the trunk sewer, no existing manhole structures, and exasperated corrosion, which is typically a concern with connecting a forcemain to a gravity sewer.
- The Summerside trunk sewer has capacity to accommodate future development within the Study Area based on the design sheets for the Meadowlark Subdivision.
- A sanitary forcemain alignment entirely through the ESA are not feasible options to pursue. However, there should be an evaluated option of routing the forcemain through the City-owned corridor north of the Citywide Sports Park (within the ESA limits).
- The Summerside subdivision local sanitary sewers at Commissioners Road East/Meadowlily Road South and Commissioners Road East/Meadowgate Boulevard do not have spare capacity for the anticipated Study Area flows.

Through continued feedback from City staff during workshops, meetings, and correspondence, seven Alternatives were considered for the SPS and forcemain alignment as follows:

Alternative 1 SPS on Meadowlily Road North, with Siphon Under River or Gravity Sewer Suspended to Existing Bridge to Convey Wastewater from Meadowlily Road South to North;

Alternative 2	SPS on Meadowlily Road South, with Siphon Under River or Gravity Sewer Suspended to Existing Bridge to Convey Wastewater from Meadowlily Road North to South;
Alternative 3A	SPS on Meadowlily Road South only (Sanitary Forcemain Connection to CAP 5);
Alternative 3B	SPS on Meadowlily Road South only (Sanitary Forcemain Connection to MH S20);
Alternative 3C	SPS on Meadowlily Road South only (Sanitary Forcemain Connection to MH S20 via City-Owned Corridor [On the edge of the ESA Limit]);
Alternative 4	SPS on Meadowlily Road South, with Sanitary Forcemain Suspended to Existing Bridge to Convey Wastewater from Meadowlily Road South to North;
Alternative 5	Do Nothing.

The above noted alternatives were presented at an in-person PIC and is included in **Appendix D.** Sanitary SPS Alternatives **Figures 3** through **9** present the alternative SPS locations and forcemain alignments.



LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING THAMES VALLEY PARKWAY/MUT
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. SANITARY SEWER
- PROP. SANITARY FORCEMAIN
- WATER BODY

SANITARY FIGURE 1

Date: 1/24/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
SANITARY SERVICING ALTERNATIVE 1

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:35 a.m. — Plotted By: KTaddeo

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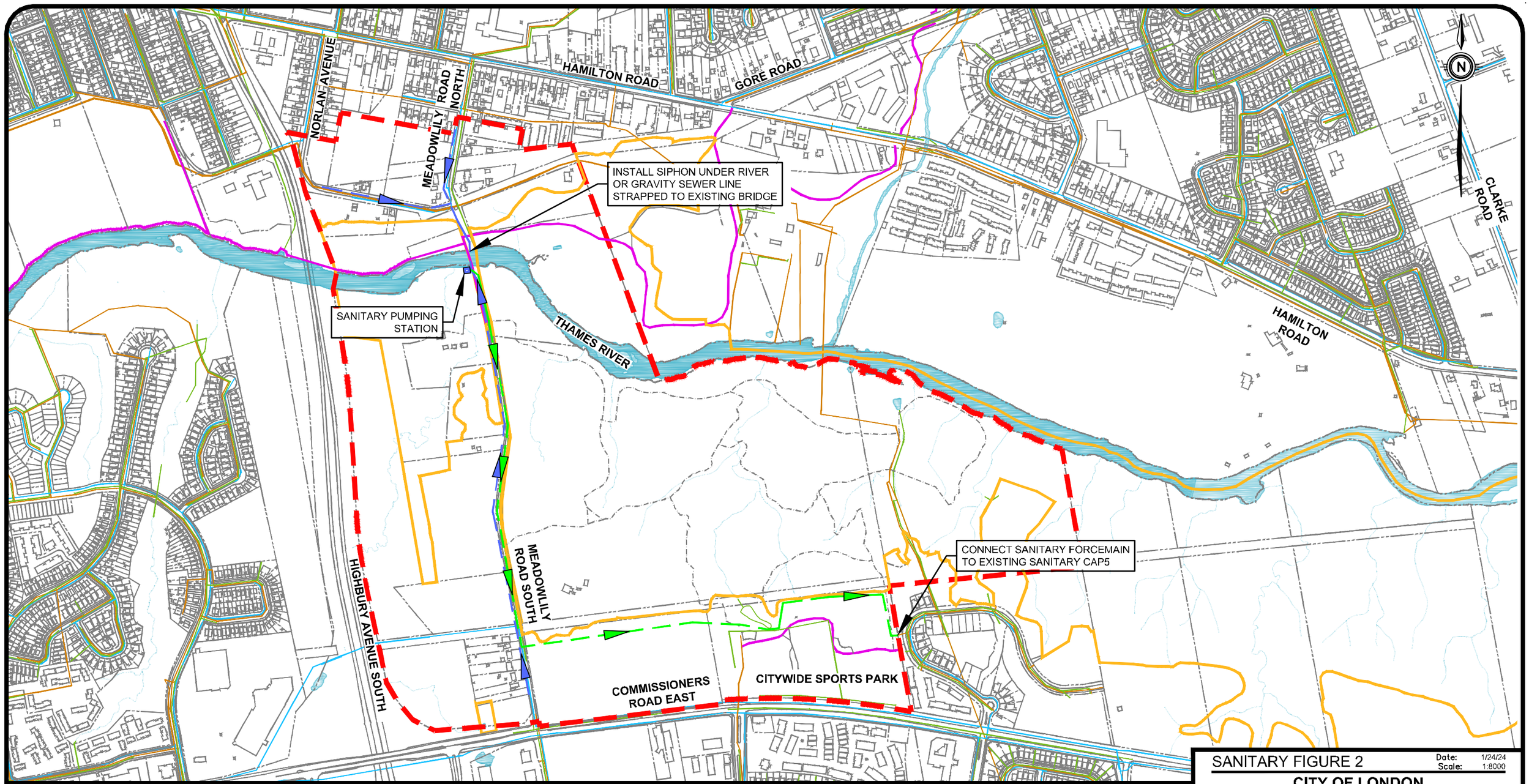

LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING THAMES VALLEY PARKWAY/MUT
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. SANITARY SEWER
- PROP. SANITARY FORCEMAIN
- WATER BODY

SANITARY FIGURE 2

Date: 1/24/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
SANITARY SERVICING ALTERNATIVE 2

MTE
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December 6, 2023 — 10:35 a.m. — Plotted By: KTaddeo

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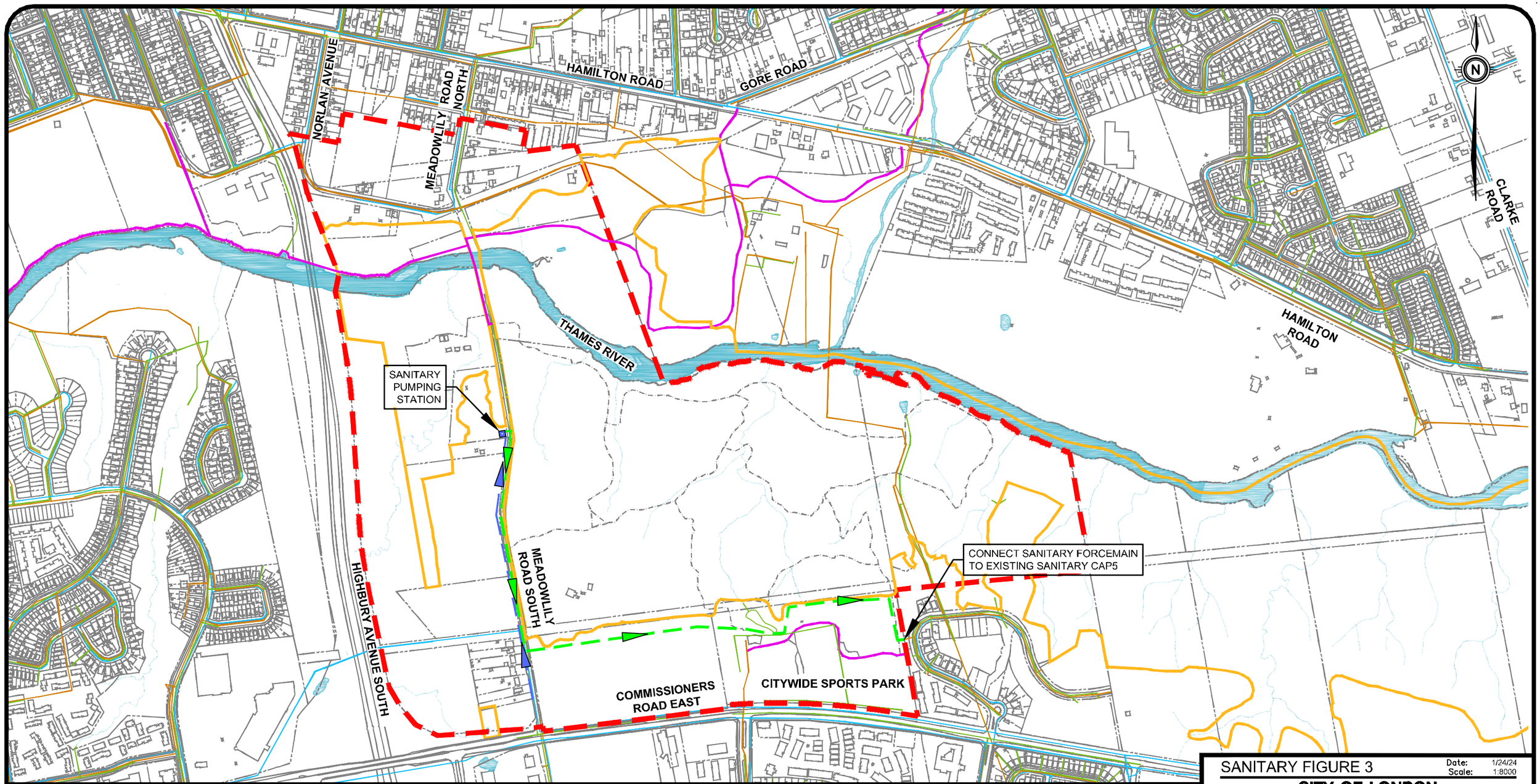

LEGEND:

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- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING THAMES VALLEY PARKWAY/MUT
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. SANITARY SEWER
- PROP. SANITARY FORCEMAIN
- WATER BODY

SANITARY FIGURE 3

Date: 1/24/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
SANITARY SERVICING ALTERNATIVE 3A

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:35 a.m. — Plotted By: KTaddeo

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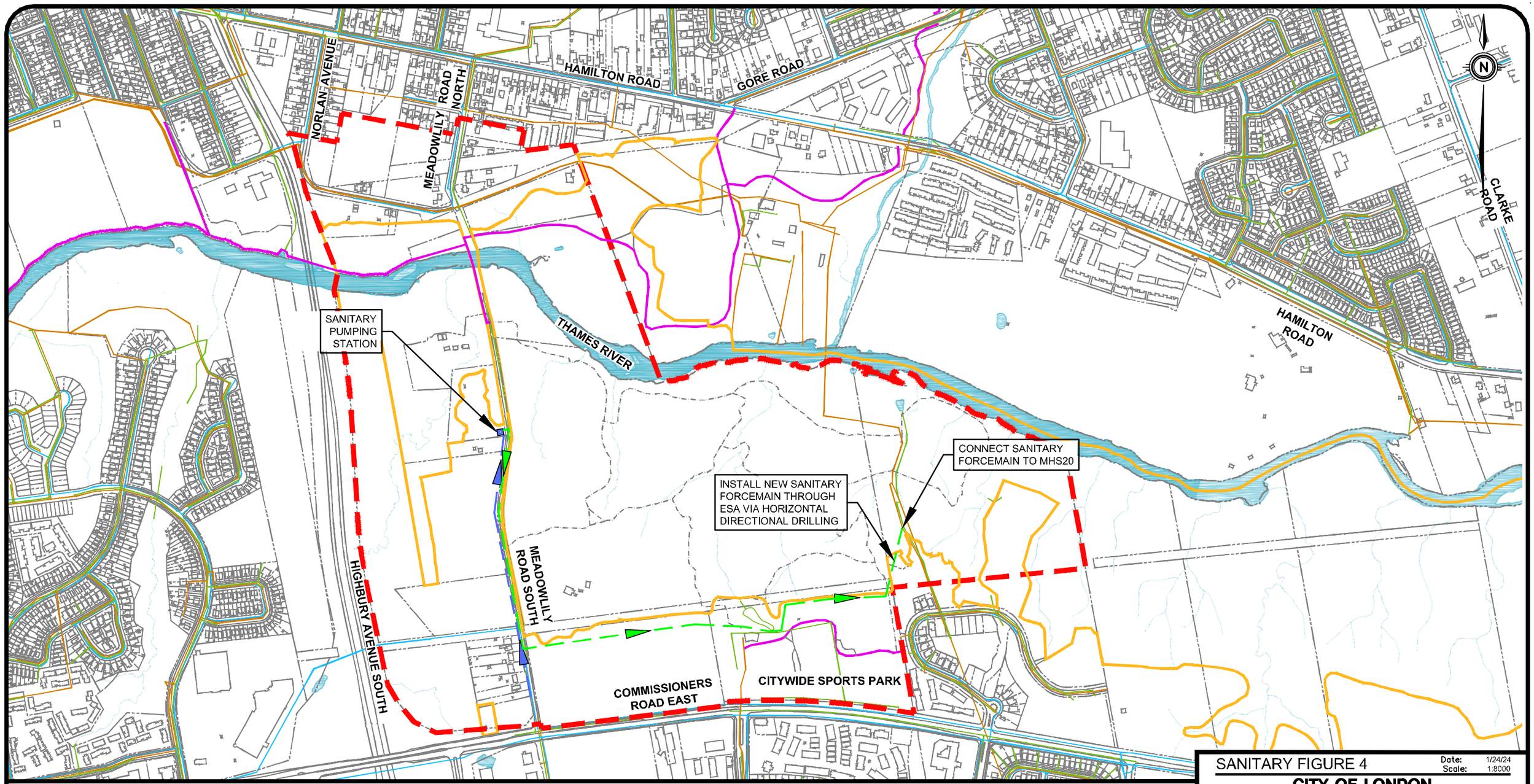

LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING THAMES VALLEY PARKWAY/MUT
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. SANITARY SEWER
- PROP. SANITARY FORCEMAIN
- WATER BODY

SANITARY FIGURE 4

Date: 1/24/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
SANITARY SERVICING ALTERNATIVE 3B

MTE
Engineers, Scientists, Surveyors

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December 6, 2023 — 10:35 a.m. — Plotted By: KTaddeo

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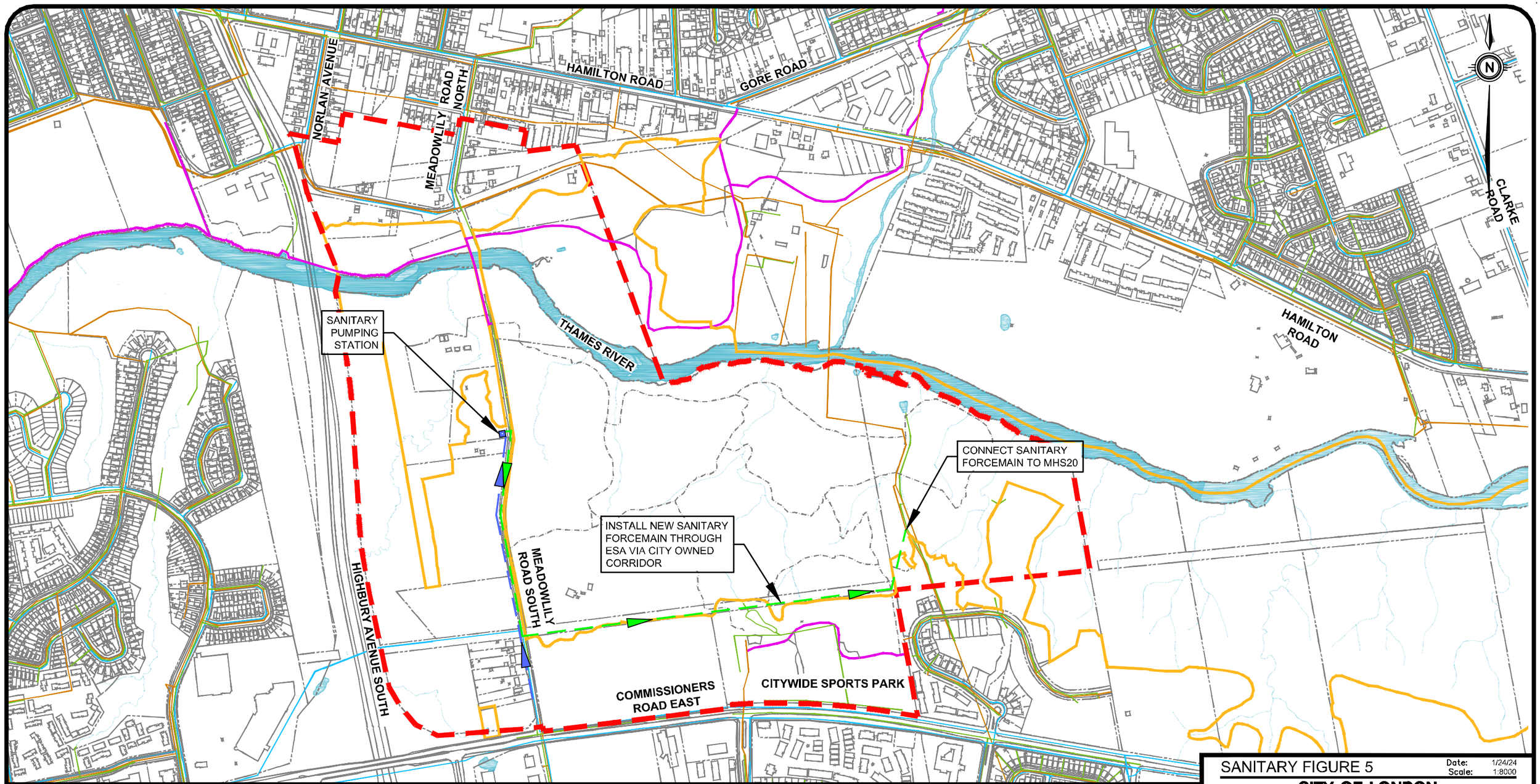

LEGEND:

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- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING THAMES VALLEY PARKWAY/MUT
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. SANITARY SEWER
- PROP. SANITARY FORCEMAIN
- WATER BODY

SANITARY FIGURE 5

Date: 1/24/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
SANITARY SERVICING ALTERNATIVE 3C

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:35 a.m. — Plotted By: KTaddeo

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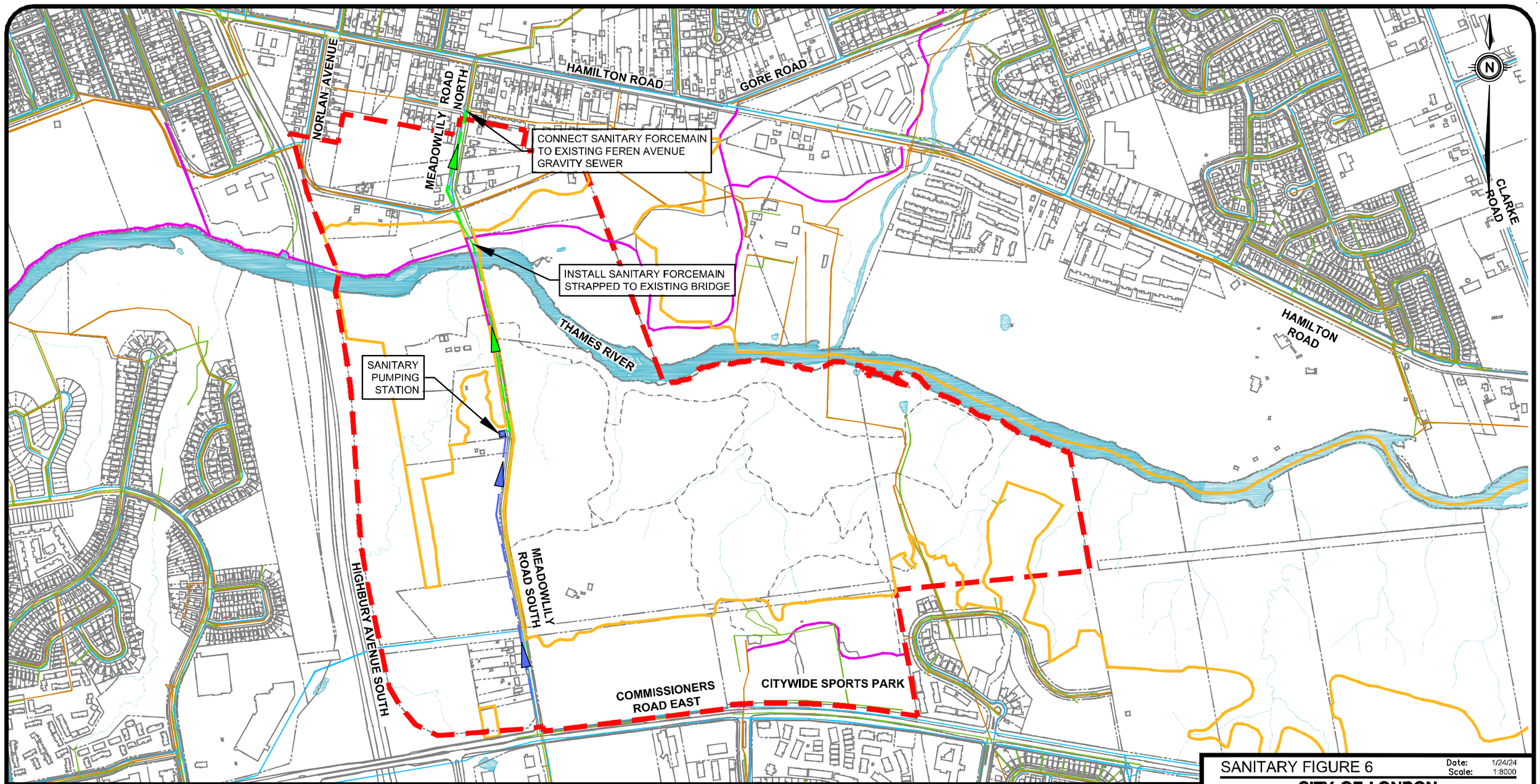

LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING THAMES VALLEY PARKWAY/MUT
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. SANITARY SEWER
- PROP. SANITARY FORCEMAIN
- WATER BODY

SANITARY FIGURE 6

Date: 1/24/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
SANITARY SERVICING ALTERNATIVE 4

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:35 a.m. — Plotted By: KTaddeo

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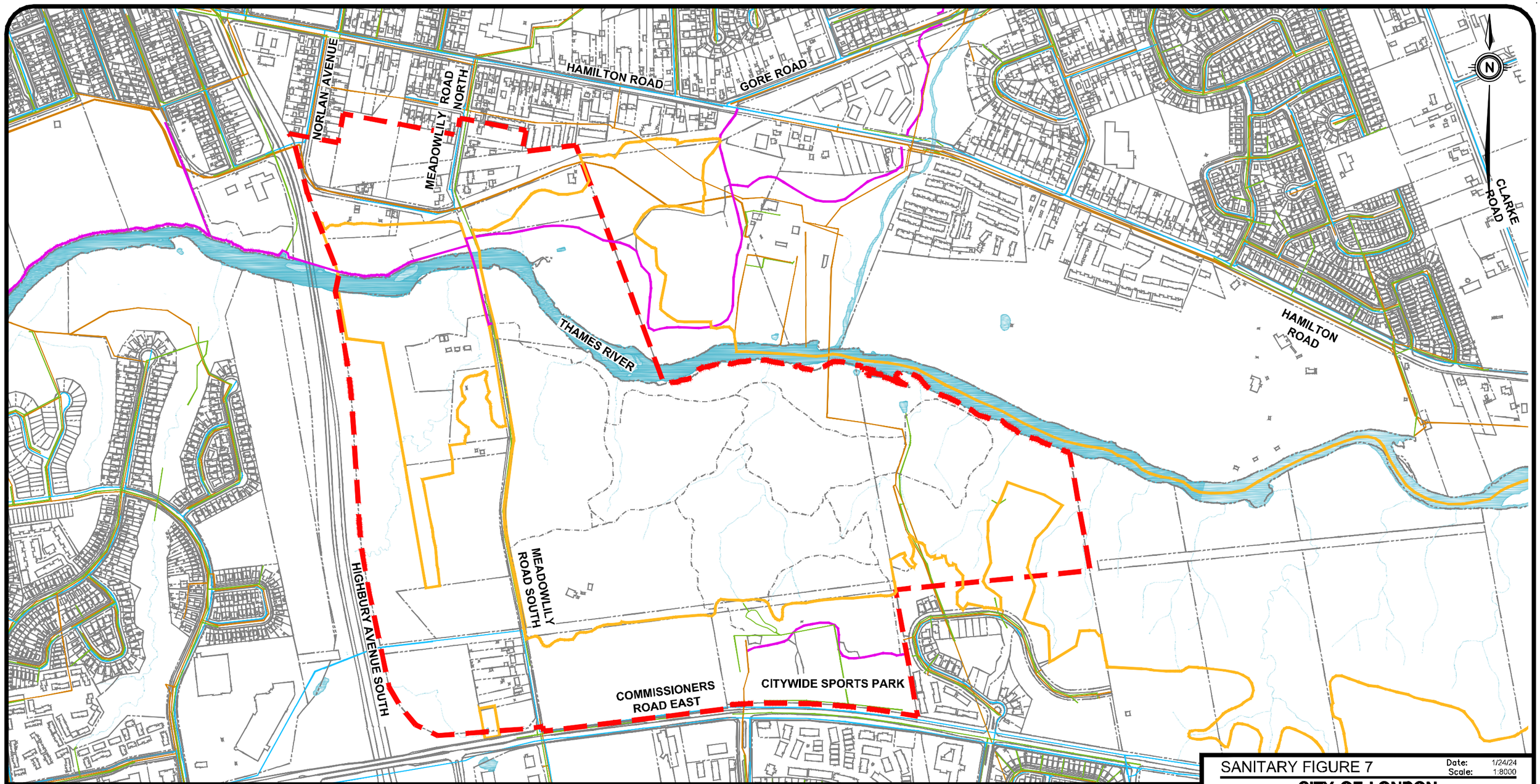

LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING THAMES VALLEY PARKWAY/MUT
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- WATER BODY

SANITARY FIGURE 7

Date: 1/24/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
SANITARY SERVICING ALTERNATIVE 5

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:35 a.m. — Plotted By: KTaddeo

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4.1.2 Multi-Use Pathway

A range of options were developed to address the gap in the recreational pathway system within the Meadowlily Road area. Initial alternatives were developed, and each were presented, along with advantages and disadvantages, to City staff at a workshop and meetings to generate feedback.

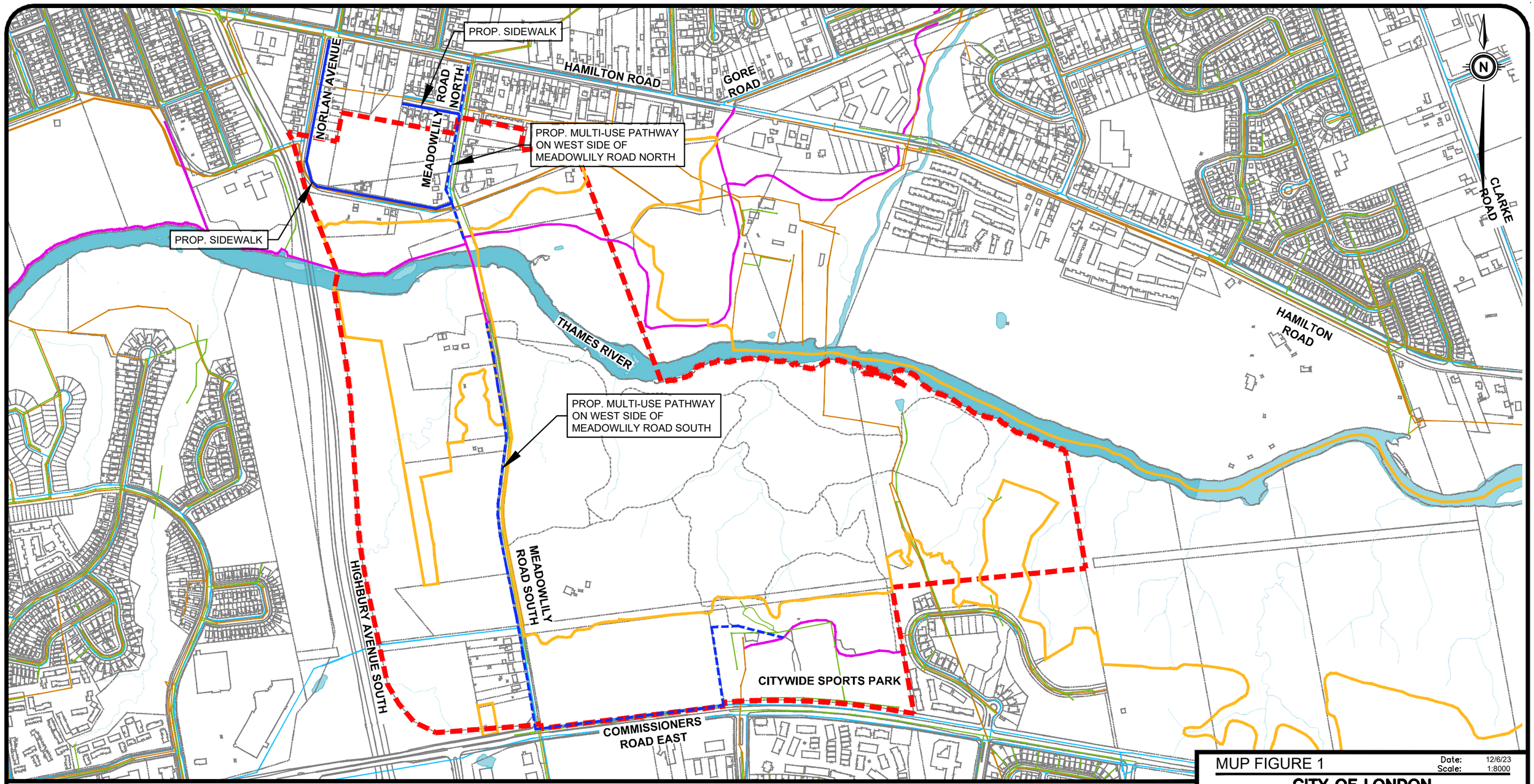
The following considerations were developed:

- A recreational pathway along the south side of Commissioners Road East will not be assessed due to the implications of forcing multi-use pathway users to cross the road twice.
- Include recreational pathway alternatives on the north side of Commissioners Road East.
- Include recreational pathway alternatives on west and east side of Meadowlily Road.
- Include recreational pathway alternatives that avoids the Commissioners Road East ROW yet still provides an east-west connection to the Citywide Sports Park.
- There should be an evaluated option of routing the pathway through the City-owned corridor north of the Citywide Sports Park (within the ESA limits).

Through continued feedback from City staff during workshops, meetings and correspondence, six Alternatives were considered for the recreational pathway linkage as follows:

Alternative 1	Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Connection to Citywide Sports Park on North Side of Commissioners Road E;
Alternative 2	Multi-Use Pathway on West Side of Meadowlily Road North and East Side of Meadowlily Road South, with an East-West Connection to Citywide Sports Park on North Side of Commissioners Rd. E;
Alternative 3A	Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Pathway Connection to Citywide Sports Park
Alternative 3B	Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Pathway Connection to Citywide Sports Park via City-Owned Corridor
Alternative 4	Multi-Use Pathway on West Side of Meadowlily Road North and East Side of Meadowlily Road South, with an East-West Pathway Connection to Citywide Sports Park
Alternative 5	Do Nothing.

The above noted alternatives were presented at an in-person PIC and is included in **Appendix D.** Multi-Use Pathway Alternatives **Figures 10** through **15** present the alternative MUP routes.



LEGEND:

- EA STUDY AREA
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- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING MULTI-USE PATHWAY/TVP
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. MULTI-USE PATHWAY
- PROP. SIDEWALKS
- WATER BODY

MUP FIGURE 1

Date: 12/6/23
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
MULTI-USE PATHWAY ALTERNATIVE 1

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 9:42 a.m. — Plotted By: KTaddeo

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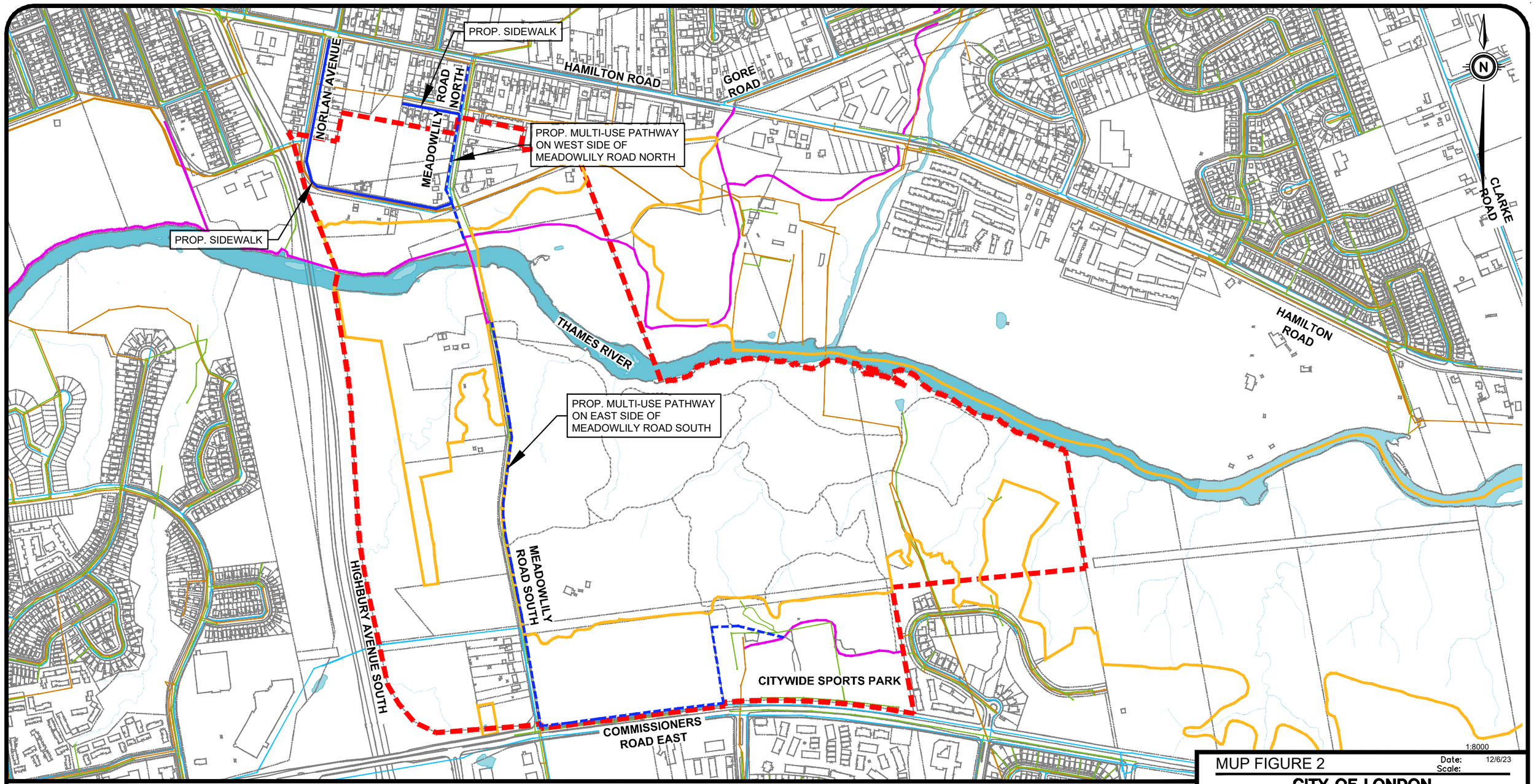

LEGEND:

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- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING MULTI-USE PATHWAY/TVP
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. MULTI-USE PATHWAY
- PROP. SIDEWALKS
- WATER BODY

MUP FIGURE 2

Date: 12/6/23
Scale:

CITY OF LONDON
MEADOWLILY LAND
MULTI-USE PATHWAY ALTERNATIVE 2

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 9:43 a.m. — Plotted By: KTaddeo

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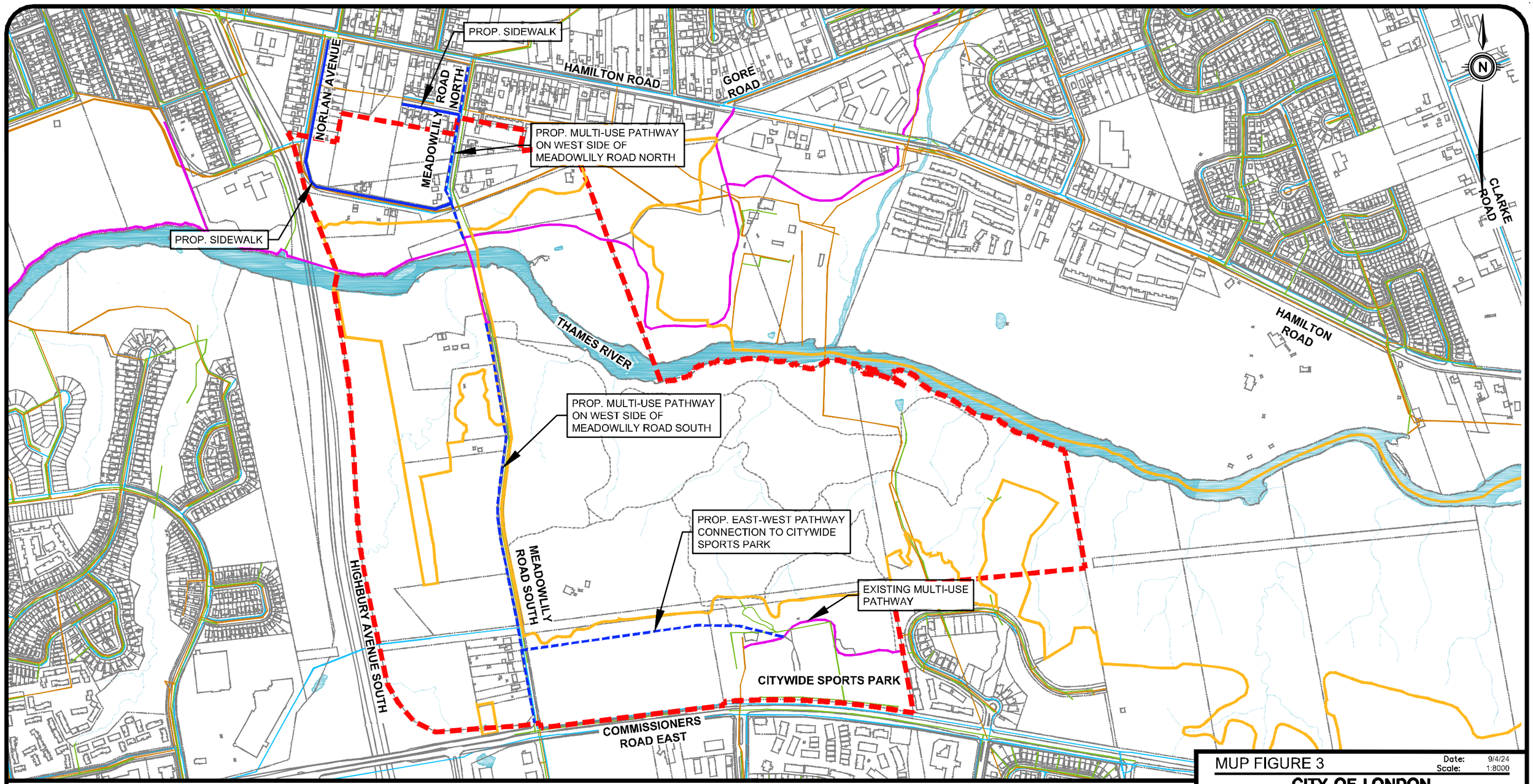

LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING MULTI-USE PATHWAY/TVP
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. MULTI-USE PATHWAY
- PROP. SIDEWALKS
- WATER BODY

MUP FIGURE 3

Date: 9/4/24
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
MULTI-USE PATHWAY ALTERNATIVE 3A

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:03 a.m. — Plotted By: KTaddeo

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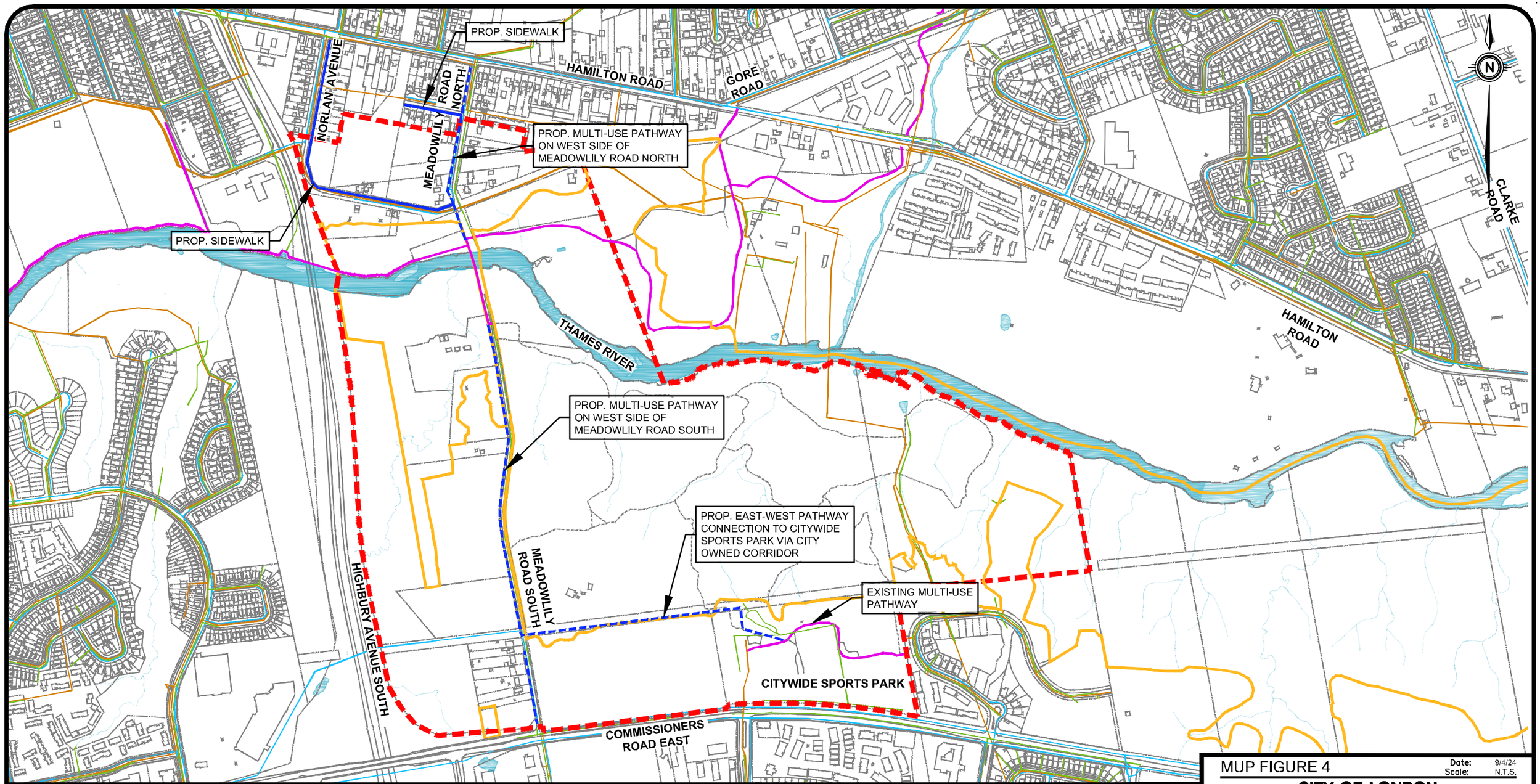

LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING MULTI-USE PATHWAY/TVP
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. MULTI-USE PATHWAY
- PROP. SIDEWALKS
- WATER BODY

MUP FIGURE 4

Date: 9/4/24
Scale: N.T.S.

CITY OF LONDON
MEADOWLILY LAND
MULTI-USE PATHWAY ALTERNATIVE 3B

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:03 a.m. — Plotted By: KTaddeo

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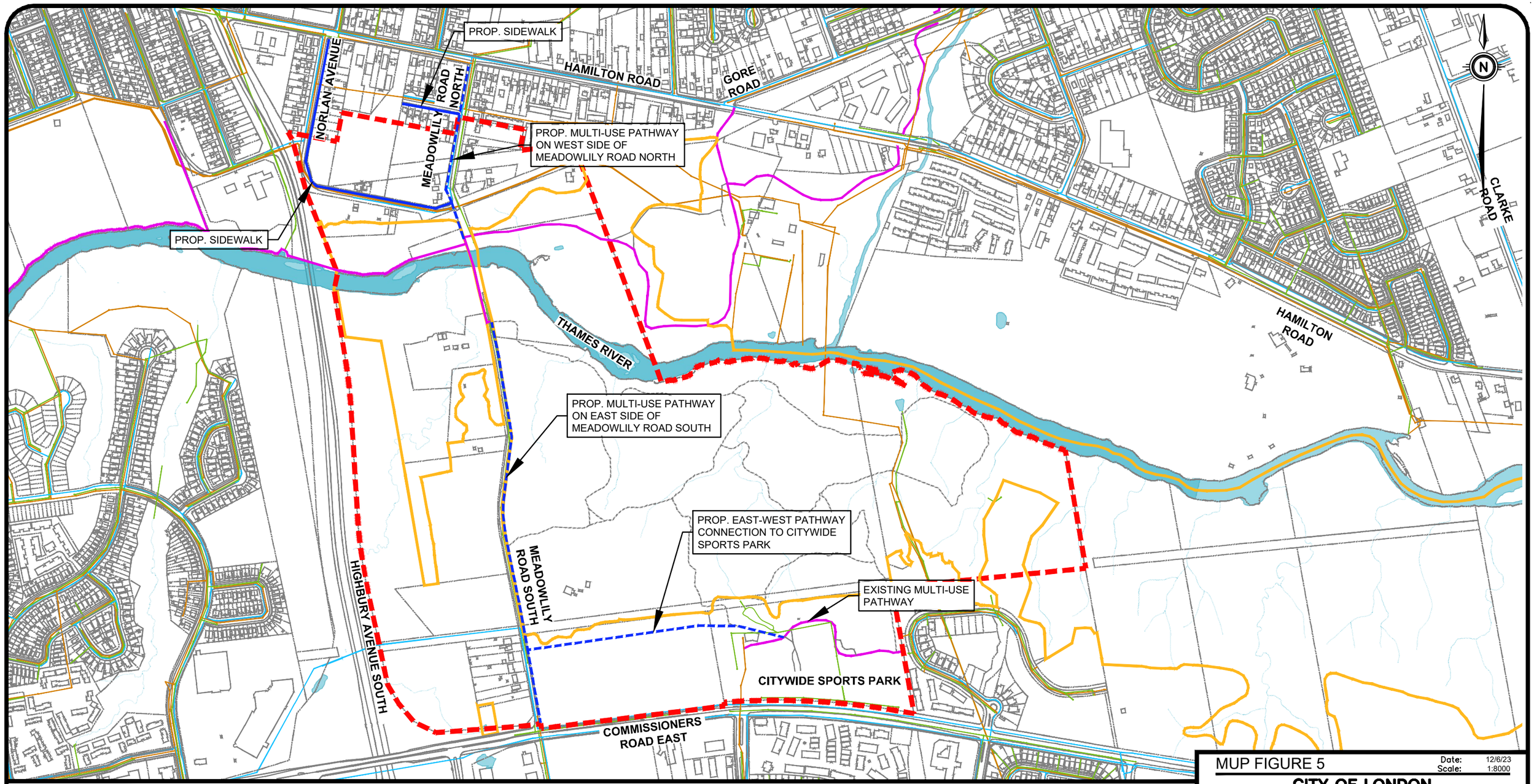

LEGEND:

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- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING MULTI-USE PATHWAY/TVP
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- PROP. MULTI-USE PATHWAY
- PROP. SIDEWALKS
- WATER BODY

MUP FIGURE 5

Date: 12/6/23
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
MULTI-USE PATHWAY ALTERNATIVE 4

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:03 a.m. — Plotted By: KTaddeo

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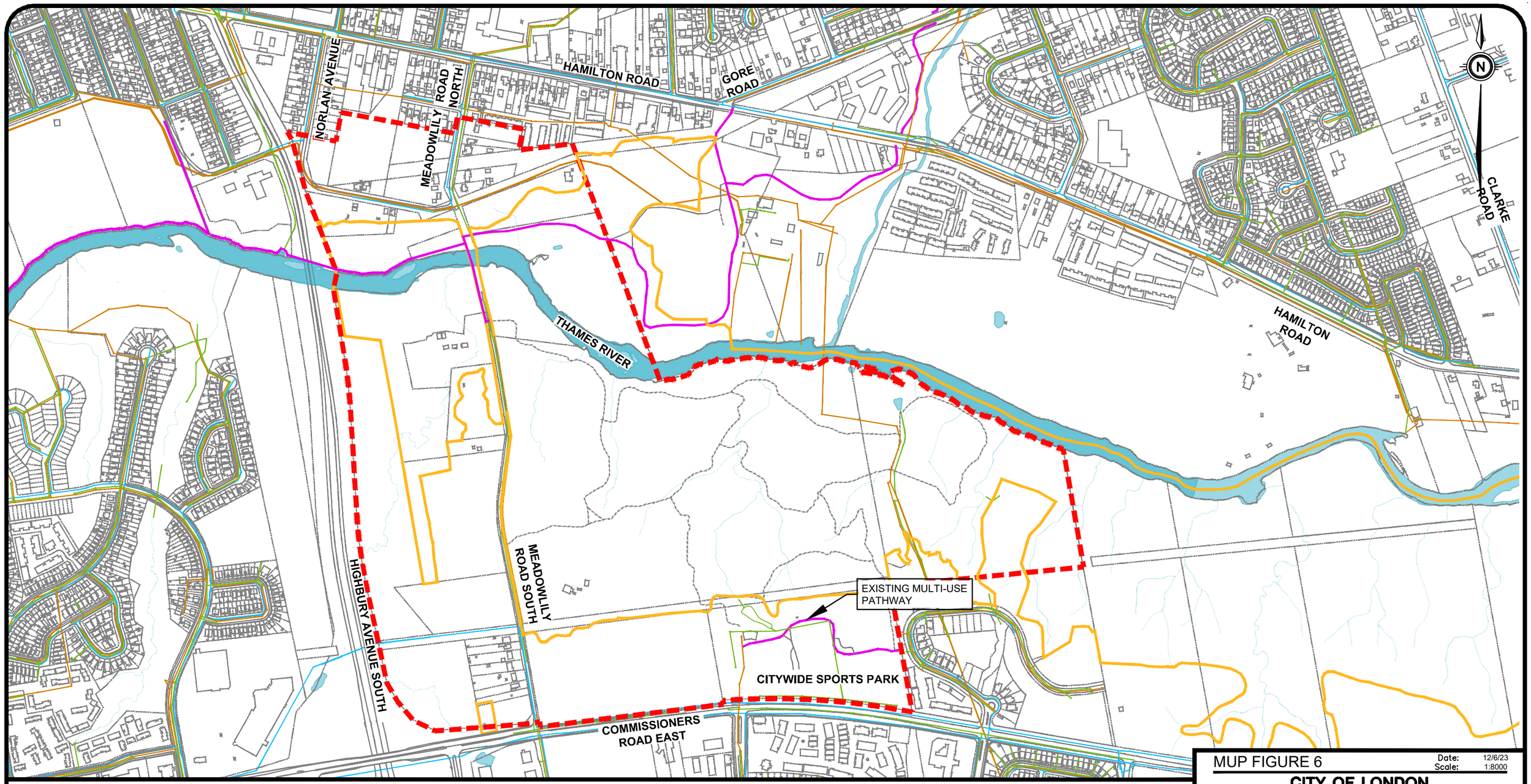

LEGEND:

- EA STUDY AREA
- ESA BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPERTY LINE
- EXISTING HIKING TRAIL
- EXISTING MULTI-USE PATHWAY/TVP
- EXISTING SIDEWALK
- EXISTING ROAD EDGES
- EXISTING WATER COURSE
- WATER BODY

MUP FIGURE 6

Date: 12/6/23
Scale: 1:8000

CITY OF LONDON
MEADOWLILY LAND
MULTI-USE PATHWAY ALTERNATIVE 5

MTE
Engineers, Scientists, Surveyors

London CANADA

December 6, 2023 — 10:03 a.m. — Plotted By: KTaddeo

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5.0 COMMUNITY GROUP AND INDIGENOUS COMMUNITY INVOLVEMENT

5.1 Notice of Project Commencement

From the outset of this project, public involvement was recognized as being important to the overall success of the project. A formal "Notice of Study Commencement" was published on the City of London's Official Website to advise the public of the Class EA process and provide notification that the EA study for the Meadowlily Road Area was to proceed. Notices of commencement were mailed to residences within the Meadowlily Road Area catchment area and non-resident property owners on May 2, 2022. In addition, Indigenous Communities with traditional land use or interests within the Study Area were sent Notices of Study Commencement on May 2, 2022 by MTE on behalf of the City of London.

Copies of all notice(s) as they appeared on the City of London Official Website or as they were delivered / posted are included in **Appendix A3.**

5.2 Public Information Centre

A Letter of Invitation to the in-person Public Information Centre (PIC) was sent to all community groups, Indigenous Communities, and residents on November 15th, 2022, to invite public comment on the identification of a sanitary sewage servicing solution and recreational pathway linkage for the study area (refer to **Appendix A3** for copies of all notices). In addition, the Notice of PIC was published on the City of London's Website.

The PIC was hosted in-person at Pond Mills London Public Library on December 8, 2022. In addition, the PIC presentation slides were uploaded to the City of London's Website. The presentation featured the study area, the purpose, problem statement, planning and design process, evaluation criteria, identified alternatives, evaluation results, preferred solution for the SPS and recreational pathway linkage and next steps. The PIC presentation is included in **Appendix D**. Visitors to the PIC were prompted to provide comments through the website, via email or through a physical form.

Drawings detailing the various alternatives were included in the presentation and the project team presented the alternative design concepts with an explanation of the pros and cons of each alternative. Comments providing feedback were submitted to the project team via physical forms or emails. Written responses and emails received from the community groups of the Meadowlily Road Area and surrounding area are included in **Appendix A2.**

5.3 Agency Correspondence

Appendix A2 includes a log of all communications conducted with various community groups for this project, as well as copies of communications (emails, letters, etc.).

5.3.1 Upper Thames River Conservation Authority (UTRCA)

UTRCA was provided notifications of Notice of Commencement and PIC during the project.

5.3.2 Ministry of Environment, Conservation and Parks (MECP)

The MECP was provided notifications of Notice of Commencement and PIC via email by the City of London.

5.3.3 City of London

MTE and the City communicated from the onset of the project through multiple meetings, workshops, and email correspondence to encourage feedback, advance key decision points and clarify uncertainties throughout the project. Throughout the duration of the project, City staff correspondence was collected, organized and responded to accordingly.

The Meadowlily Road Area Schedule "B" Municipal Class Environmental Assessment Project File Report will be submitted to the City of London Council for acceptance.

5.4 Indigenous Communities

Indigenous Communities were provided with notifications of Notice of Commencement and the PIC during the project.

The City met with Fallon Burch from Chippewas of the Thames First Nation on January 30th, 2023 via Microsoft Teams to discuss the project. A copy of TMHC's report was requested, in which Fallon Burch from Chippewas of the Thames First Nation replied with the response in **Appendix A3** on February 28th, 2023, confirming that they had no comments or concerns.

5.5 Notice of Study Completion

Upon Council acceptance, a Notification of Study Completion will be advertised and filed with the MECP. The Notice of Study Completion will also be emailed to the community groups. This Project File Report will be available for public viewing for the mandatory 30-day review period.

6.0 EVALUATION OF ALTERNATIVES & PREFERRED ALTERNATIVE

The SPS and recreational pathway alternatives were evaluated by the project team considering input from the community groups and general public. Separate evaluation matrices (refer to **Appendix E**) were developed to evaluate the SPS and pathway alternatives individually. The SPS evaluation matrix scored each option according to the following criteria: Natural Environment; Social Environment; Heritage/Cultural Impacts; City Operations; Technical; Servicing Potential and Cost. The recreational pathway evaluation matrix scored each option according to the following criteria: Natural Environment; Social Environment; Heritage/Cultural Impacts; Disruption of Existing Land Uses; Technical/City Standards; Cost; and Climate Change.

Each of the alternatives were given a score between 0 and 5 for each of these criteria. The scores were added per criteria and weighted. The score description and weighting of each criterion is shown below in **Table 5, 6**, and **7**. Afterwards the weighted scores for each criterion were totaled to determine the "***Preferred Alternative***" (i.e., the alternative receiving the highest score). Quantitative and qualitative evaluation results can be found in **Appendix E.**

Table 5: Alternative Evaluation Scoring Descriptions

Scoring	Description
0	Nearly Infeasible. Very high risk.
1	Undesirable. High risk.
2	Multiple mitigation measures required. Several risks.

Scoring	Description
3	Some mitigation measures required. Some risks.
4	Feasible. Lower risk.
5	Feasible and desirable. Lowest risk.

Table 6: Criteria Weighting for SPS Alternatives

Criteria	Weight
Natural Environment	0.20 (20%)
Social Environment	0.20 (20%)
Heritage/Cultural Impacts	0.15 (15%)
City Operations	0.10 (10%)
Technical	0.10 (10%)
Servicing Potential	0.05 (5%)
Cost	0.20 (20%)

Table 7: Criteria Weighting for Pathway Alternatives

Criteria	Weight
Natural Environment	0.20 (20%)
Social Environment	0.20 (20%)
Heritage/Cultural Impacts	0.15 (15%)
Disruption to Existing Land Uses	0.10 (10%)
Technical/City Standards	0.05 (5%)
Cost	0.20 (20%)
Climate Change	0.10 (10%)

6.1 Sanitary Servicing

The preferred SPS Alternative was determined to be Alternative 3B (SPS on Meadowlily Road South only (Sanitary Forcemain Connection to MH S20)). Refer to Sanitary Servicing Alternative 3B (**Figure 6** in **Section 4.0**) for a depiction of the preferred SPS alternative. The exact sanitary forcemain alignment travelling east-west through the Meadowlily Road South property will be determined through the respective property's site plan. The proposed location of the SPS is within the south-east corner of MA 65. Approximately 30 m by 30 m area is expected to be required for the SPS infrastructure.

It is noted that the City and MTE met with local developers following the PIC to discuss and review the alignment of the forcemain. Developers requested that the forcemain alignment be parallel to Commissioners Road East, instead of through 168 Meadowlily Road, which is privately owned. MTE completed the assessment of this additional alternative following the

established Class EA criteria and concluded that following the alignment of Sanitary Servicing Alternative 3B was still the recommended alternative. The City is currently in discussions with the owners of 168 Meadowlily Road to establish the forcemain alignment and will be confirmed with the owner of 168 Meadowlily Road through a future development application.

During the Class EA assessment, Sanitary Servicing Alternative 3B had the highest score for the following reasons:

- Minimum impact to the natural, social environment, as well as heritage and cultural impacts.
- Does not require crossing of the Thames River, which minimizes capital and operations costs.
- Does not require upgrades to the existing Meadowlily Bridge to compensate for additional loads due to suspending a sanitary conveyance system.

The summary of the evaluation can be found in **Table 8** below.

Table 8: Evaluation Summary of Design Alternatives

	Alternative Solutions						
	1	2	3A	3B	3C	4	5
Evaluation Criteria	SPS on Meadowlily Rd N - Siphon/Gravity Sewer Across River to Service Meadowlily Rd S	SPS on Meadowlily Rd S - Siphon/Gravity Sewer Across River to Service Meadowlily Rd N	SPS on Meadowlily Rd S - Only Services Meadowlily Rd S (Sanitary Forcemain Connection to CAP 5)	SPS on Meadowlily Rd S - Only Services Meadowlily Rd S (Sanitary Forcemain Connection to MHS20)	SPS on Meadowlily Rd S - Only Services Meadowlily Rd S (Sanitary Forcemain Connection to MHS20 via City-Owned Corridor)	SPS on Meadowlily Rd S – Sanitary Forcemain Across River - Only Services Meadowlily Rd S	Do Nothing
Natural Environment	◔	◔	◕	◑	○	◑	●
Social Environment	○	○	◕	◕	◑	◔	◑
Heritage/Culture Impacts	◔	◔	◕	◑	○	◑	●
City Operations	◔	◔	◑	◕	●	◑	◑
Technical	◑	◔	◕	◕	◕	◑	○
Servicing Potential	●	●	◑	◕	◕	◕	○
Costs	○	○	◑	◕	◕	◑	◔
Preferred	☒ 6	☒ 7	☒ 2	☑ 1	☒ 5	☒ 4	☒ 3

○ Nearly infeasible. Very high risk
◔ Undesirable. High risk
◑ Several mitigation measures. Several risks
◕ Feasible. Some mitigation measures. Some risks.
● Feasible and desirable. Lowest risk

To achieve the final preferred alternative, the advantages and disadvantages of each alternative were explored. The following tables summarize the advantages and disadvantages of each alternative and were presented to the public at the PIC. It is noted that the preferred alternative (Alternative 3B) will service the properties south of the Thames River.

6.1.1 Sanitary Servicing Alternative 1

SPS on Meadowlily Road North, with Siphon Under River or Gravity Sewer Suspended to Meadowlily Bridge to Convey Wastewater from Meadowlily Road South to North.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Sanitary forcemain and gravity sewer avoids Meadowlily ESA.	Road reconstruction on Meadowlily Road North and South required to install new sanitary servicing, water servicing, storm water servicing and other utilities.
Social Environment	Existing un-serviced land would be able to obtain municipal servicing. Opportunity for existing properties currently being serviced privately, to be serviced by the City.	Road reconstruction is required to install new sanitary servicing, water servicing, storm water servicing and other utilities. Potential aesthetic impact of a sanitary pumping station along Meadowlily Road North.
Heritage/Cultural Impacts	Location of pumping station is not within archaeological sensitivity areas of concern (i.e., Meadowlily Woods ESA).	Sanitary pumping station in close proximity to the Mills Ruins and may require some vibration monitoring during construction. River crossing through suspension of a gravity sewer to the existing bridge will require an individual heritage impact assessment and mitigations for the bridge. Road work near designated and archaeological sensitive areas along right of way.
City Operations	Only requires the operation of one sanitary pumping station to service Meadowlily Road North and South.	Additional maintenance of conveyance infrastructure under river or suspended to bridge.
Technical	Lower head requirements needed by the pumps.	If a siphon is selected, directional drilling under the river will require additional on-site investigations, and construction measures.
Servicing Potential	Provides municipal sanitary servicing to most properties within the Study Area.	Use capacity of Feren Avenue gravity sewer, which may impact development upstream and downstream of gravity sewer.

Evaluation Criteria	Advantages	Disadvantages
Costs	Only requires the capital cost of one pumping station and maintenance and operations cost for a single SPS.	Cost of directional drilling under river or suspending gravity sewer to existing bridge. May require structural upgrades to existing bridge to support additional load.

6.1.2 Sanitary Servicing Alternative 2

Description: SPS on Meadowlily Road South, with Siphon Under River or Gravity Sewer Suspended to Existing Bridge to Convey Wastewater from Meadowlily Road North to South.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Sanitary forcemain and gravity sewer avoids Meadowlily ESA.	Road reconstruction is required to install new sanitary servicing, water servicing, storm water servicing and other utilities.
Social Environment	Existing un-serviced land would be able to obtain municipal servicing. Opportunity for existing properties currently being serviced privately, to be serviced by the City.	Road reconstruction is required to install new sanitary servicing, water servicing, storm water servicing and other utilities. Potential aesthetic impact of a sanitary pumping station along Meadowlily Road South.
Heritage/Cultural Impacts	Location of pumping station is not within archaeological sensitivity areas of concern (i.e., Meadowlily Woods ESA).	River crossing through suspending a gravity sewer to the existing bridge will require an individual heritage impact assessment and mitigations for the bridge. Road work near designated and archaeological sensitive areas along right of way.
City Operations	Only requires the operation of one sanitary pumping station to service Meadowlily Road North and South.	Additional maintenance of conveyance infrastructure under river or suspended to bridge.
Technical	Requires a single sanitary pumping station.	If a siphon is selected, directional drilling under the river will require

Evaluation Criteria	Advantages	Disadvantages
		additional on-site investigations, and construction measures.
Servicing Potential	Provides municipal sanitary servicing to most properties within the Study Area.	May impact future development along Commissioners Road East due to capacity of existing gravity sewer.
Costs	Avoids requirement of a second sanitary pumping station.	Cost of directional drilling under river, or strapping gravity sewer to existing bridge. May require structural upgrades to existing bridge to support additional load.

6.1.3 Sanitary Servicing Alternative 3A

Description: SPS on Meadowlily Road South only (Sanitary Forcemain Connection to CAP 5).

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Minimizes road reconstruction in Meadowlily Road North. Avoids Meadowlily Woods ESA.	Road reconstruction on Meadowlily Road South required to install new sanitary servicing, water servicing, storm water servicing and other utilities.
Social Environment	Minimizes road reconstruction in Meadowlily Road North.	Road reconstruction is required to install new sanitary servicing, water servicing, storm water servicing and other utilities. Aesthetic impact of a sanitary pumping station along Meadowlily Road South.
Heritage/Cultural Impacts	Does not require a river crossing (either through bridge or under river), which are existing conditions that introduce cultural heritage considerations. Location of sanitary pumping station and sanitary forcemain are not within archaeological	Close proximity to recognized Cultural Heritage areas. Proposed infrastructure will need to be compatible with existing landscape conditions of the area. Road work near designated and archaeological sensitive areas along right of way.

Evaluation Criteria	Advantages	Disadvantages
	sensitivity areas of concern (i.e., Meadowlily Woods ESA).	
City Operations	No maintenance costs associated with sanitary conveyance crossing under the river or suspended to bridge. Only requires the operation of one sanitary pumping station.	Sanitary forcemain requires access through Citywide Sports Park.
Technical	Does not require additional river crossings.	Requires coordination of connection to sanitary sewer through Citywide sports park. Some capacity constraints within the Meadowlark Ridge Subdivision sanitary conveyance system, which could limit development allocation (i.e., population density) in some properties.
Servicing Potential	Allows for servicing of planned development along Meadowlily Road South.	Most of Meadowlily Road South can be serviced. May impact future development along Commissioners Road East due to capacity of existing gravity sewer.
Costs	Avoids upgrades to existing bridge to compensate for additional loads.	Costs associated with property acquisition requirements. Costs associated for potential future upgrades required for the Meadowlark Ridge sanitary conveyance system.

6.1.4 Sanitary Servicing Alternative 3B

Description: SPS on Meadowlily Road South only (Sanitary Forcemain Connection to MH S20).

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Minimizes road reconstruction in Meadowlily Road North.	Road reconstruction on Meadowlily Road South required to install new sanitary servicing, water servicing, storm water servicing and other utilities. Sanitary forcemain installed via horizontal directional drilling through ESA north of Meadowlark Ridge.
Social Environment	Minimizes road reconstruction in Meadowlily Road North.	Road reconstruction is required to install new sanitary servicing, water servicing, storm water servicing and other utilities. Aesthetic impact of a sanitary pumping station along Meadowlily Road South.
Heritage/Cultural Impacts	Does not require a river crossing (either through bridge or under river), which are existing conditions that introduce cultural heritage considerations. Location of sanitary pumping station is not within archaeological sensitivity areas of concern (i.e., Meadowlily Woods ESA).	Close proximity to recognized Cultural Heritage areas. Proposed infrastructure will need to be compatible with existing landscape conditions of the area. Sanitary forcemain installed and connected behind Meadowlark Ridge via horizontal directional drilling through part of ESA, which may require additional archaeological investigations.
City Operations	No maintenance costs associated with sanitary conveyance crossing under the river or suspended to bridge. Only requires the operation of one sanitary pumping station.	Sanitary forcemain requires access partially through Citywide Sports Park.
Technical	Does not require additional river crossings. Sufficient capacity in sanitary sewer downstream of Meadowlark Ridge.	Requires coordination of connection to sanitary sewer behind Meadowlark Ridge.

Evaluation Criteria	Advantages	Disadvantages
Servicing Potential	Allows for servicing of all planned development along Meadowlily Road South.	Only Meadowlily Road South can be serviced. May impact future development along Commissioners Road East due to capacity of existing gravity sewer.
Costs	Avoids upgrades to existing bridge to compensate for additional loads.	Costs associated with property acquisition requirements.

6.1.5 Sanitary Servicing Alternative 3C

Description: SPS on Meadowlily Road South only (Sanitary Forcemain Connection to MH S20 via City-Owned Corridor).

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Minimizes road reconstruction in Meadowlily Road North.	Road reconstruction on Meadowlily Road South required to install new sanitary servicing, water servicing, storm water servicing and other utilities. Sanitary forcemain east-west connection to Meadowlark Ridge is installed through ESA via City-Owned corridor.
Social Environment	Minimizes road reconstruction in Meadowlily Road North. • Reduces property impact by utilizing City owned corridor	Road reconstruction is required to install new sanitary servicing, water servicing, storm water servicing and other utilities. Aesthetic impact of a sanitary pumping station along Meadowlily Road South.
Heritage/Cultural Impacts	Does not require a river crossing (either through bridge or under river), which are existing conditions that introduce cultural heritage considerations. Location of sanitary pumping station is not within archaeological sensitivity areas of concern (i.e., Meadowlily Woods ESA).	Sanitary forcemain east-west connection near recognized Cultural Heritage areas. Proposed infrastructure will need to be compatible with existing landscape conditions of the area. Sanitary forcemain east-west connection installed through ESA, which requires additional archaeological investigations.

Evaluation Criteria	Advantages	Disadvantages
City Operations	No maintenance costs associated with sanitary conveyance crossing under the river or suspended to bridge. Only requires the operation of one sanitary pumping station. Sanitary forcemain east-west connection is within City-Owned corridor.	
Technical	Does not require additional river crossings. Sufficient capacity in sanitary sewer downstream of Meadowlark Ridge.	Requires coordination of connection to sanitary sewer behind Meadowlark Ridge.
Servicing Potential	Allows for servicing of all planned development along Meadowlily Road South.	Only Meadowlily Road South can be serviced. May impact future development along Commissioners Road East due to capacity of existing gravity sewer.
Costs	Avoids upgrades to existing bridge to compensate for additional loads. Avoids property acquisition for sanitary forcemain east-west connection. Reduces land acquisition cost	Costs associated with environmental protection measures, cultural and archaeological requirements.

6.1.6 Sanitary Servicing Alternative 4

Description: SPS on Meadowlily Road South, with Sanitary Forcemain Suspended to Existing Bridge to Convey Wastewater from Meadowlily Road South to North.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Avoids Meadowlily Woods ESA.	Road reconstruction is required to install new sanitary servicing, water servicing, storm water servicing and other utilities.
Social Environment	Future developments can be serviced.	Road reconstruction is required to install new sanitary servicing,

Evaluation Criteria	Advantages	Disadvantages
	Opportunity for existing properties currently being serviced privately, to be serviced by the City.	water servicing, storm water servicing and other utilities. Aesthetic impact of a sanitary pumping station along Meadowlily Road.
Heritage/Cultural Impacts	Location of sanitary pumping station is not within archaeological sensitivity areas of concern (i.e., Meadowlily Woods ESA).	River crossing through strapping a sanitary forcemain to the existing bridge will require an individual heritage impact assessment and mitigations for the bridge. Close proximity to recognized Cultural Heritage areas. Proposed infrastructure will need to be compatible with existing landscape conditions of the area.
City Operations	Only requires the operation of one sanitary pumping station.	Additional maintenance of conveyance infrastructure suspended to bridge.
Technical	Requires smaller sanitary conveyance system on river crossing (i.e., sanitary forcemain).	Assess feasibility of sanitary forcemain suspended to existing bridge.
Servicing Potential	Allows for servicing of planned development along Meadowlily Road South.	Does not service Meadowlily Road North.
Costs	Minimizes costs as no directional drilling under river is required.	May require bridge structural reinforcement to allow for the sanitary forcemain install. Costs associated with property acquisition requirements.

6.1.7 Sanitary Servicing Alternative 5

Description: Do Nothing

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Least impact to terrestrial and aquatic environment.	

Evaluation Criteria	Advantages	Disadvantages
Social Environment	Low impact to construction and community aesthetic.	Lost opportunity for communal sanitary service for new and existing developments.
Heritage/Cultural Impacts	Low impact to heritage features outside of City's right of way.	
City Operations		Additional individual measures required for sanitary servicing for new developments (i.e. holding tanks).
Technical		Non-consolidated solution for proposed and future developments.
Servicing Potential		Existing and developable lands not being serviced by a communal sanitary system.
Costs	No initial capital cost impacts.	Future capital, operational, and maintenance cost risks if new developments/properties require sanitary servicing.

6.2 Multi-Use Pathway

The preferred Pathway Linkage Alternative was determined to be option 3A (Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Pathway Connection to Citywide Sports Park). Refer to Multi-Use Pathway Alternative 3A (**Figure 12** in **Section 4.0**) for a depiction of the preferred pathway alternative. The exact recreational pathway alignment travelling east-west through the 168 Meadowlily Road South property will be determined during the respective property's site plan. The evaluation of the multi-use path alternatives can be found in **Table 9** below.

During the Class EA assessment, Multi-Use Pathway Alternative 3A had the highest score for the following reasons:

- Overall reduction in project impacts and improved efficiency when MUP Alternative 3A is combined with Sanitary Servicing alternative 2 or 3.
- Road reconstruction on Meadowlily Road South is required to install new sanitary servicing, water servicing, storm water servicing and other utilities.
- Multi-Use Pathway will be implemented concurrently with road reconstruction, generally within the existing Right-of-Way to minimize impacts.

Table 9: Evaluation Summary of Multi-Use Path Alternative

Evaluation Criteria	Alternative Solutions					
	1	2	3A	3B	4	5
	MUP on West Side of Meadowlily Rd N and S with East-West Connection to Citywide Sports Park on North Side of Commissioners Road East	MUP on West Side of Meadowlily Rd N and East Side of Meadowlily Rd S with East-West Connection to Citywide Sports Park on North Side of Commissioners Road East	MUP on West Side of Meadowlily Rd N and S with East-West Connection to Citywide Sports Park	MUP on West Side of Meadowlily Rd N and S with East-West Connection to Citywide Sports Park via City-Owned Corridor	MUP on West Side of Meadowlily Rd N and East Side of Meadowlily Rd S with East-West Connection to Citywide Sports Park	Do Nothing
Natural Environment	◕	◕	◑	○	◑	●
Social Environment	◕	◔	◕	◑	◔	○
Heritage/Culture Impacts	◕	◕	◕	○	◕	●
Disruption to Existing Land Uses	◔	◔	◑	◕	◑	◔
Technical/City Standards	◑	◑	◕	◕	◕	◑
Costs	◑	◑	◕	◕	◕	◕
Climate Change	●	●	●	●	●	○
Preferred	☒ 2	☒ 4	☑ 1	☒ 5	☒ 3	☒ 6

○ Nearly infeasible. Very high risk
◔ Undesirable. High risk
◑ Several mitigation measures. Several risks
◕ Feasible. Some mitigation measures. Some risks.
● Feasible and desirable. Lowest risk

6.2.1 *Multi-Use Path Alternative 1*

Description: Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Connection to Citywide Sports Park on North Side of Commissioners Rd. E.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Avoids impact to Meadowlily ESA as pathway is generally within existing right of way.	
Social Environment	A community Multi-use Pathway that provides accessible and equitable connections. Provides direct access to Commissioners Road East, new developments and TVP. Meets AODA standards to provide safe transportation for vulnerable populations.	Connection requires crossing of Meadowlily Road South on Commissioner Road East intersection.

Evaluation Criteria	Advantages	Disadvantages
Heritage/Cultural Impacts	Separation from the archaeological sensitivity areas (i.e., Meadowlily Woods ESA) Easier to tie into existing conditions of the area, including existing infrastructure along Commissioners Road East and Meadowlily Road South.	
Disruption to Existing Land Uses	Minimizes disruption to Meadowlily ESA. Integrating the pathway now minimizes potential future disruption.	Potential for minor grading impacts to some private properties. Potential relocation of some hydro-poles.
Technical/ City Standards	Follows typical City Standards. Facility for walking aligns with London Plan and Complete Streets.	
Costs	Potential cost saving if pathway implemented concurrently with road reconstruction.	Costs for land acquisition for pathway in Commissioners Road East right of way. Cost to relocate streetlights on north side of Commissioners Road East.
Climate Change	Decrease in greenhouse emissions (i.e., promote biking for commuters).	

6.2.2 Multi-Use Path Alternative 2

Description: Multi-Use Pathway on West Side of Meadowlily Road North and East Side of Meadowlily Road South, with an East-West Connection to Citywide Sports Park on North Side of Commissioners Rd. E.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Avoids impact to Meadowlily ESA as pathway is generally within existing right of way.	
Social Environment	A community Multi-use Pathway that provides accessible and equitable connections.	

Evaluation Criteria	Advantages	Disadvantages
	Provides direct access to Commissioners Road East, new developments and TVP. Meets AODA standards to provide safe transportation for vulnerable populations.	
Heritage/Cultural Impacts	Uses existing infrastructure along Commissioners Road East.	
Disruption to Existing Land Uses	Integrating the pathway now minimizes potential future disruption.	Potential for minor grading impacts to some private properties. Potential relocation of some hydro-poles.
Technical/ City Standards	Follows typical City Standards. Facility for walking aligns with London Plan and Complete Streets.	
Costs	Potential cost saving if pathway implemented concurrently with road reconstruction.	Costs for land acquisition for pathway in Commissioners Road East right of way. Cost to relocate streetlights on north side of Commissioners Road East.
Climate Change	Decrease in greenhouse emissions (i.e., promote biking for commuters).	

6.2.3 Multi-Use Path Alternative 3A

Description: Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Pathway Connection to Citywide Sports Park.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Avoids impact to Meadowlily ESA as pathway is generally within existing right of way.	
Social Environment	A community Multi-use Pathway that provides accessible and equitable connections.	Would require a mid block crossing on Meadowlily Road South.

Evaluation Criteria	Advantages	Disadvantages
	Provides direct access to the Citywide Sports Park, new developments and TVP. Meets AODA standards to provide safe transportation for vulnerable populations.	
Heritage/Cultural Impacts	Separation from the archaeological sensitivity areas (i.e., Meadowlily Woods ESA). Easier to tie into existing conditions and landscape of the area, including existing infrastructure along Meadowlily Road South.	
Disruption to Existing Land Uses	Minimizes disruption to Meadowlily ESA. Integrating the pathway now minimizes potential future disruption.	Potential for minor grading impacts to some private properties. Potential relocation of some hydro-poles.
Technical/ City Standards	Follows typical City Standards. Facility for walking aligns with London Plan and Complete Streets.	
Costs	Potential cost savings if pathway implemented concurrently with road reconstruction, and east-west sanitary forcemain connection to City Wide Sports Park.	Requires property acquisition for east – west pathway connection, could be combined with east-west sanitary forcemain connection to City Wide Sports Park.
Climate Change	Decrease in greenhouse emissions (i.e., promote biking for commuters).	

6.2.4 Multi-Use Path Alternative 3B

Description: Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Pathway Connection to Citywide Sports Park via City-Owned Corridor.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment		High impact to Meadowlily environment as pathway is within ESA boundary for east-west connection.

Evaluation Criteria	Advantages	Disadvantages
Social Environment	A community Multi-use Pathway that provides accessible and equitable connections. Provides direct access to the Citywide Sports Park, new developments and TVP. Meets AODA standards to provide safe transportation for vulnerable populations.	Would require a mid block crossing on Meadowlily Road South. Potential impact to existing trails and users within ESA during construction.
Heritage/Cultural Impacts	Easier to tie into existing conditions and landscape of the area, including existing infrastructure along Meadowlily Road South.	Impact to cultural heritage and archaeological sensitivity areas (i.e., Meadowlily Woods ESA).
Disruption to Existing Land Uses	Integrating the pathway now minimizes potential future disruption. Minimizes impact to private property for east-west connection via City-Owned corridor.	Potential for minor grading impacts to some private properties. Potential relocation of some hydro-poles.
Technical/ City Standards	Follows typical City Standards. Facility for walking aligns with London Plan and Complete Streets.	
Costs	Potential cost savings if pathway implemented concurrently with road reconstruction, and east-west sanitary forcemain connection to City Wide Sports Park via City-Owned corridor. Reduced land acquisition costs	Costs associated with environmental protection measures, cultural and archaeological requirements.
Climate Change	Decrease in greenhouse emissions (i.e., promote biking for commuters).	

6.2.5 *Multi-Use Path Alternative 4*

Description: Multi-Use Pathway on West Side of Meadowlily Road North and East Side of Meadowlily Road South, with an East-West Pathway Connection to Citywide Sports Park.

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Avoids impact to Meadowlily ESA as pathway is generally within existing right of way.	
Social Environment	A community Multi-use Pathway that provides accessible and equitable connections. Provides direct access to the Citywide Sports Park, new developments and TVP. Meets AODA standards to provide safe transportation for vulnerable populations.	Property impact resulting in property acquisition
Heritage/Cultural Impacts	Outside ESA boundary.	
Disruption to Existing Land Uses	Integrating the pathway now minimizes potential future disruption.	Potential for minor grading impacts to some private properties. Potential relocation of some hydro-poles.
Technical/ City Standards	Follows typical City Standards. Facility for walking aligns with London Plan and Complete Streets.	
Costs	Potential cost savings if pathway implemented concurrently with road reconstruction, and east-west sanitary forcemain connection to City Wide Sports Park.	Requires property acquisition for east – west pathway connection, could be combined with east-west sanitary forcemain connection to City Wide Sports Park.
Climate Change	Decrease in greenhouse emissions (i.e., promote biking for commuters).	

6.2.6 *Multi-Use Path Alternative 5*

Description: Do Nothing

Evaluation Criteria	Advantages	Disadvantages
Natural Environment	Lowest risk of environmental impacts.	
Social Environment	Retains rural feel of Meadowlily Road.	Does not provide the community a connection to the TVP, existing dwellings or proposed developments. Will not meet AODA or provide safe active transportation for vulnerable populations.
Heritage/Cultural Impacts	No heritage/cultural impacts.	
Disruption to Existing Land Uses	No disruption to existing land uses.	Potential future disruption to land uses if pathway is delayed instead of integrated with servicing construction in right of way.
Technical/ City Standards	No impact to property acquisitions, existing hydro-pole relocations, or grading.	Does not meet City Standards for multi-use pathway requirements.
Costs	No initial capital costs.	Potential impact if pathway connection occurs in the future, missing out of the opportunity to implement as part of servicing work in the right of way.
Climate Change		Does not decrease greenhouse gas emissions (i.e. promote active transportation).

A request to adjust the routing of the pathway to the east of Meadowlily Road South near the existing residential dwellings was submitted by the public during the PIC, which was considered by the Project Team. However, upon review of the requested alignment change following the evaluation matrix, this request did not align with the overall strategy to minimize crossing of Meadowlily Road South due to safety concerns and allow the public to easily access the MUP from the new developments on the west side of the Meadowlily Road South. As such, the preferred alternative remains as defined in Alternative 3A, a “Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Pathway Connection to Citywide Sports Park”.

7.0 IMPACTS AND MITIGATION MEASURES

7.1 Key Impacts and Mitigation

The following table is a summary of the key impacts and mitigation measures that must be considered as part of the detailed design phase and throughout construction.

Engineering and/or Environmental Feature	Potential Benefits and Cumulative Impact	Avoidance and Mitigation
Pedestrian and Cyclist Safety	Currently there are no sidewalks or bike lanes. The introduction of a multi-use path will provide a safe pathway for all users.	Pedestrian crossings will be included so people can get across the road to the multi-use path safely.
Accessibility - AODA Requirements	The design will meet all AODA standards, specifically at all crossings.	All signals, tactile plates, etc. will be finalized during the detailed design phase and must meet AODA standards at time of design.
Utility Relocations	Some hydro relocations are expected. As the detailed design progresses, more utility relocations may be identified.	Utility providers have been engaged in the preliminary design and have begun capital planning. They will need to be re-engaged in the detailed design phase and play a more active role in planning improvements and relocations.
City Underground Infrastructure	Watermain, storm sewer, and sanitary sewer will all be included. They are preliminarily sized to accommodate the expected growth within the catchment areas. Individual services will be replaced to property line.	During detailed design, modelling will confirm size of watermain required to service growth. Sanitary and storm sewer sizing will be confirmed during the detailed design phase.
Excess Soils	Excess soil regulations may change by the time the detailed design phase is complete. Presence of contaminated or unsuitable fill could result in significant increase in construction costs.	Geotechnical investigation and assessment of potential environment concerns will need to be completed during detailed design.
On-Street Parking	Detailed design should consider the feasibility of on-street parking. Currently, many vehicles park along Meadowlily	Any widening to allow on-street parking will intrude into the ESA, however given that Meadowlily Road is not a

Engineering and/or Environmental Feature	Potential Benefits and Cumulative Impact	Avoidance and Mitigation
	Road to access the trail network.	through street, provisions for parking could be introduced. In addition, there is an existing parking lot and direct access to the ESA available at the Citywide Sports Park, should it be required by residents.
Access During Construction	Staging will need to be determined, and whether pedestrian access across bridge will be allowed during construction. Trails are highly used during summer months.	Delineated areas for pedestrians and cyclists accessing trails will need to be marked and signed during construction
Cultural Heritage Resources	Cultural heritage resources have been identified within the study area.	Plans for adding the multi-use path fall within the City's right of way, and should not impact any of the resources found. Parts of the Meadowlily Road South corridor consisting of both the road Right-of-Way (ROW) and a buffer (as represented in the CHRECPIA) on either side were identified as a potential cultural heritage landscape (CHL-02) in the CHRECPIA. A Heritage Impact Assessment (HIA) for road construction (as well as for the multi-use pathway) would be required to assess any impacts to this Cultural Heritage Landscapes (CHL's) preliminary heritage attributes listed below: • Proximity to and physical and historical linkages with the mature rural character of the Meadowlily Road Area including: ○ Meadowlily Road's historic meandering nature along mature tree lines;

Engineering and/or Environmental Feature	Potential Benefits and Cumulative Impact	Avoidance and Mitigation
		• Natural or naturalized setting including forests and meadows; • Historic rural residential properties on large lots; and • Gated laneways and building setbacks from the road interface. Impacts to the Park Farm property likely requiring an HIA were also anticipated but would be confirmed at Detailed Design. Refer to Cultural Heritage Report (**Appendix B3 – Section 10.2**) for further details regarding the impacts and mitigation measures recommended.
Archaeological Assessment	The Stage 1 background research and field inspection confirmed that portions of the study area no longer contain archaeological potential as a result of deep and extensive land alterations, steep slopes, low and permanently wet areas, and previous assessments for which no further assessment was recommended. However, the majority of the study area continues to hold archaeological potential and requires additional assessment.	A Stage II Archaeological Investigation is recommended as part of the detailed design phase.
Natural Environment	Environmentally Sensitive Area (ESA) adjacent to Meadowlily Road will be protected. Design will avoid any disturbance of ESA, and construction will limit any intrusion into ESA. Oil Grit Separators (OGS) and Low Impact Development strategies will be implemented to reduce the impact of	Construction fencing will be placed to limit intrusion. Sizing and location of Low Impact Development features and OGSs will also be determined in the detailed design phase. Refinement of stormwater management water quality,

Engineering and/or Environmental Feature	Potential Benefits and Cumulative Impact	Avoidance and Mitigation
	stormwater runoff on receiving waterbodies.	quantity, erosion protection, and infiltration targets/strategy will be reviewed and completed during detailed design.
Climate Change	Decrease in greenhouse emissions (i.e., promote biking for commuters).	Currently there are no sidewalks or bike lanes support more active transportation. The introduction of a multi-use path will provide a safe pathway to promote more active transportation.

7.2 Climate Change

A key focus of this Study has been the impact of climate change and consideration of how the Alternative Solutions and Design Concepts, specifically related to the multi-use path are influenced by, and can influence, climate change. The City has actively implemented its Cycling Master Plan (2016), building an integrated trail network throughout the City, providing safe networks for pedestrians and cyclists. The City has also recently implemented it's Climate Emergency Action Plan (2022), which has set a goal net-zero emissions by 2050, and identifies ways for emission reduction within the community. The City's objective is to lower its emissions, while also increasing its means of absorbing the emissions that still exist, creating a net-zero environment.

The City's approach to addressing climate change is two-fold: reduce the amount of emissions and enhance its ability to absorb and offset emissions. As part of reducing emissions, the City will be implementing ways to increase transit ridership, increase active transportation and promote electric vehicles.

Through the Class EA, design concepts have been developed to support the City's plans for addressing climate change. Introduction of the multi-use path and providing better connectivity for cyclists and pedestrians will encourage more active transportation.

7.2.1 Air Quality

Industry best practice will be employed during construction and construction documents will use the City's Environmental Sustainability Strategy as a baseline to ensure they are minimized. Some examples of this are:

- Ensuring all motorized equipment is in good condition, properly and regularly maintained, and compliant with applicable federal and provincial regulations.
- Ensuring all equipment is well maintained and operated in accordance with the manufacturer's specification.
- Locating stationary equipment as far away from sensitive receptors as practical.
- Adhering to the City's idling policy and minimizing idling time.

Implementing a Dust Management Plan for the full duration of construction activities – with the use of non-chloride dust suppressants.

8.0 PERMITS APPROVALS AND NEXT STEPS

8.1 Approvals

During the detailed design phase of the project, there will be a number of submissions that will need to be made regarding various elements of the project:

Feature	Approval Details	Timing
Storm Sewers	Storm sewer design, including OGS units and any Low Impact Development features will require CLI-ECA submission to the MECP.	90% Detailed Design
Sanitary Sewers	Sanitary sewer design will require CLI-ECA submission to the MECP. Form 1 submission to the City.	90% Detailed Design
Watermain	Watermain design and updates to existing system will require a Form 1 submission to the City.	100% Detailed Design
SPS	SPS design will require CLI-ECA submission to the MECP. OBC, and site plan approval are expected to be required. Form 2 submission to the City.	100% Detailed Design
Upper Thames River Conservation Authority (UTRCA)	The Study Area lies just south of the Upper Thames River, and nearly all the stormwater within the study area flows overland to the river. The UTRCA will be a key community group in detailed design, and they should be circulated on all design submissions.	60% and 90% Detailed Design
Stormwater Management	Functional Stormwater Management report will be required during detailed design of the sanitary pumping station and MUP. Report to be submitted to the City and UTRCA.	60% design

For any changes to the heritage designated Park Farm property. The following approvals/reviews are required:

- Ministry of Citizenship and Multiculturalism (both archaeological and heritage reports);
- City of London:
    - Heritage Impact Assessments; and
    - Heritage Alteration Permit (Park Farm/Meadowlily ESA) – if directly impacted.

8.2 Future Phases

A 30-day public and agency review period will follow the submission of this report. At the conclusion of this period, the detailed design phase of the project may continue.

The drawings and documents must incorporate all the environmental and mitigation measures identified in this report to avoid and mitigate adverse impacts. These mitigation measures will be expanded upon where necessary during detailed design. The City should maintain ongoing coordination with community groups, the public, utilities and emergency services throughout the design and construction phases.

8.3 Construction Staging

As the project transitions from the Class EA phase to the detailed design phase, there will be much more focus on the construction staging and timing of construction. During the detailed design phase, the City will need to coordinate with local developers to determine the timing and access required to complete the forcemain and multi-use path through privately owned lands. Coordination with developers for the installation of required infrastructure will be required as part of detailed design and construction.

As both the selected alternatives for the sanitary servicing and multi-use pathway will be in the front of the Park Farm (located at 120 Meadowlily Road South) stone entrance pillars and involve road reconstruction adjacent to this entrance, an appropriate construction staging area should be reviewed to ensure adequate distance for construction assembly from the built heritage resources as well as other natural rural character landscape features along Meadowlily Road South. For further details, refer to the archaeological assessment report in **Appendix B2**, and cultural heritage assessment in **Appendix B3**.

8.4 Noise and Vibration

Noise will also be a factor during construction. As previously stated, it is likely that the active work zones will be completely shut down to through traffic, which will reduce the overall construction duration. Continued discussion with City staff, community groups, and developers will be important to determine the optimal timing windows for construction.

The City will need to determine during detailed design whether vibration monitoring is required. At this time, it seems unlikely that it will be required, given that there are few homes along Meadowlily Road, and are not particularly close to the road.

Vibration impacts to nearby cultural heritage resources, most notably the Park Farm and its stone entrance pillars, are possible as a result of road reconstruction and sanitary servicing construction activities. As a result, a vibration assessment should be performed by a qualified professional for specified activities where vibration impacts may occur. This assessment should inform the need for potential vibration monitoring during construction activities. An appropriate buffer should be established by a qualified professional as part of that monitoring program. For further details, refer to the archaeological assessment report in **Appendix B2**, and cultural heritage assessment in **Appendix B3**.

8.5 Excess Soils

Excess soil regulations must be followed through design and construction. Presence of contaminated or unsuitable fill could result in significant increase in construction costs and should be established early in the detailed design process. Geotechnical investigation and assessment of potential environment concerns will need to be completed during detailed design.

Activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the ministry's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014) and "Rules for Soil Management and Excess Soil Quality Standards" (2022).

8.6 Information Gathering Form

An Information Gathering Form (IGF) focuses on species and habitats protected under the Endangered Species Act, 2007 (ESA, 2007) that have the potential to occur in the area of the proposed activity works. The IGF includes an assessment of species presence, habitat function, potential impacts, and recommended mitigation measures based on the results of field investigations, SAR screening review, species habitat preferences, and their ecology. The purpose of the IGF is to document the information that proponents require to determine whether or not a proposed activity is likely to contravene subsections 9(1) or 10(1) of the ESA, 2007 and whether consultation with Ministry of Environment, Conservation and Parks (MECP) is required.

In this case, there is potentially suitable habitat present within the area of the proposed activity for Species at Risk (SAR). This includes threatened and endangered bird species as well as endangered bat species.

Previous studies were completed by Natural Resources Solutions Inc. (NRSI) in 2013 as part of the "Meadowlily Woods Environmentally Significant Area Conservation Master Plan – Phase 1 (2019)" to assess the presence of breeding bird species within the Subject Lands. These studies would have determined the presence/absence of the protected bird species within the area at the time; however, site conditions may have changed since the 2013 NRSI investigations and additional species have been classified under the ESA, 2007. As such, updated studies would need to be completed to assess the current potential for adverse impacts on protected species and habitats as a result of the proposed project.

Once the proposed new impact area becomes known during design, and upon completion of updated surveys, the IGF can be prepared. If there is potential for impacts to species or habitats protected under the ESA, 2007, the IGF will be submitted to MECP to initiate the consultation process and confirm whether formal authorization or agreement from MECP is required.

8.7 Preliminary Servicing Study

In addition to this Project File Report, the consultant will prepare a preliminary servicing study, which will lay out plans for how the study area will be serviced with regards to water, sanitary and storm infrastructure. MTE will prepare plans that includes preliminary design of the stormwater drainage, sanitary sewer sizing, watermain sizing, including alignments for all infrastructure.

Prior to completing the servicing study, City staff will have an opportunity to review and provide comments. Coordination with all relevant departments and developers will be crucial to preparing servicing plans that meet the needs of all community groups. The decisions that are made during the servicing study will influence future preliminary and detailed designs for Meadowlily Road. A refined cost estimate for the construction of a new municipal sanitary pumping station will be included under the subsequent Preliminary Servicing Study.

8.8 Pumping Station and Forcemain Construction Cost Estimate

Based on the assessment completed through the study, the preliminary construction cost is estimated to be the $5,500,000 to $6,000,000 range (with forcemain construction), based on 2025 costs. The table below provide a breakdown of estimated costs.

Table 10: Preliminary Cost Estimate

Component	Estimated Cost (Range)
Sanitary Pumping Station	$3,500,000 to $4,000,000
Forcemain	$2,000,000
Total	**$5,500,000 to $6,000,000**

Notes:

- Estimated cost based on 2025 rates.
- Forcemain installation completed via trenchless method through ESA at manhole discharge location.
- Forcemain assumed to be completed during road reconstruction work.
- Cost estimate assumes sanitary pumping station and forcemain construction during 168 Meadowlily Road development.
- No contingency included in cost estimate.

Preliminary cost estimates are based on recent projects within southeastern Ontario completed by MTE with similar scope and scale. These include sanitary pump station projects with a capacity of 30 L/s and scope that includes electrical upgrades, stand-by generators, pumps, etc.

It is noted that the preliminary cost estimate is based on proposed infrastructure only. Construction costs associated with items such as dewatering, and excess soil management have not been included in the preliminary cost estimate, as hydrogeological and geotechnical investigations have not been completed to date.

9.0 SUMMARY AND RECOMMENDATIONS

As part of the Class EA process, a number of Alternative Designs for Meadowlily Road were evaluated. Following a Schedule B Class EA process, a Preferred Alternative was selected for the location and servicing strategy for the Sanitary Pumping Station, as well as the for the multi-use path.

Sanitary Pumping Station

- A new municipal sanitary pumping station be constructed on the west side of Meadowlily Road South, outside the existing City right of way, and outside the ESA (Alternative 3B - SPS on Meadowlily Road South only [Sanitary Forcemain Connection to MH S20 [Manhole Referenced in Meadowlark Subdivision Site Plan]). The municipal sanitary pumping station will be located on private property. The City will need to review property acquisition with the owner in the future.
- New gravity sewers be installed to convey wastewater to the new municipal sanitary pumping station.
- A new forcemain be installed to discharge wastewater to the manhole located north of the Meadowlark Ridge subdivision. Forcemain alignment to coincide with preferred MUP alignment.
- A preliminary design of the Preferred Alternative be completed, taking into account the foregoing recommendations; and
- The City of London solicit an engineering consulting firm to undertake the detailed design of the Preferred Alternative.

Multi-Use Pathway

- A new MUP be constructed on the west side of Meadowlily Road North and South, with the Meadowlily Bridge connecting Meadowlily Road North to South (Alternative 3A - Multi-Use Pathway on West Side of Meadowlily Road North and South, with an East-West Pathway Connection to Citywide Sports Park).
- Construct an East-West Connection MUP from Meadowlily Road South to the Citywide Sports Park. MUP alignment to coincide with preferred sanitary forcemain alignment.
- Parts of the Meadowlily Road South corridor consisting of both the road Right-of-Way (ROW) and a buffer were identified as a potential cultural heritage landscape. A Heritage Impact Assessment (HIA) for road construction (as well as for the MUP) would be required to assess any impacts to this Cultural Heritage Landscapes (CHL's).
- A preliminary design of the Preferred Alternative be completed, taking into account the foregoing recommendations; and
- The City of London solicit an engineering consulting firm to develop the detailed design of the Preferred Alternative.

The alternatives selected meet the servicing needs of the City, developers and community groups, and the multi-use path provides the connectivity and addresses the active transportation needs within the Meadowlily Community. The pathway linkage will close the gap in the City's recreational pathway system within the Right of Ways that meets all City design standards for the Thames Valley Parkway, multi-use pathway.

All of which is respectfully submitted,

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