

West London Dyke Master Repair Plan

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Sign-off Sheet

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Executive Summary

Introduction

The Upper Thames River Conservation Authority (UTRCA) in partnership with the City of London (City) has undertaken a Master Repair Plan (MRP). This is a strategic document to assist in the overall planning for a period of up to 20 years to address aging infrastructure, flood protection, public use, and integration of other City initiatives. The intent of the Master Repair Plan is to develop the required strategic plan to allow the UTRCA and the City to have a method for determining when a trigger point for repair and/or replacement of a portion of the dyke is required.

The Master Repair Plan is being undertaken in accordance with the Master Planning requirements of the MEA Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011).

The MEA offers four approaches for undertaking a Master Plan and based on our review Municipal Class EA Approach #2 appears to be the most accurate. Approach #2 allows for the preparation of a Master Plan document at the conclusion of Phases 1 and 2 of the Municipal Class EA process where the level of investigation, consultation and documentation are sufficient to fulfill the requirements for Schedule B projects identified within the Master Plan. Accordingly, the final public notice for the Master Plan could become the Notice of Completion for Schedule B projects within it. Any Schedule C projects, however, would have to fulfill Phases 3 and 4 prior to filing an Environmental Study Report (ESR) for public review. The Master Plan would provide the basis for future investigations for the specific Schedule C projects identified within it. While Master Plans are not subject to requests for a Part II Order, members of the public or other stakeholders may submit a request to the Minister for a Part II Order for individual Schedule B projects identified within the Master Plan.

Overview of West London Dyke

The West London Dyke is approximately 2,300 m long and runs along the west bank of the north branch of the Thames River extending north of Oxford Street to the Forks of the Thames River and then along the north bank of the main branch to the west of the Wharncliffe Road Bridge and terminating in Cavendish Park. The West London Dyke is primarily an engineered structure which protects life and property during periods of extreme river flows. In addition to serving a critical control function, the dyke is also an integral component of the City's recreational pathway system and its location at the Forks of the Thames makes it a prominent structure in the downtown area of the City.

History of the West London Dyke

Due to the proximity of early settlements within London to the Thames River, these areas were often subjected to flood events. A catastrophic flood in July 1883 prompted the construction of a formalized dyke system. A flood event in April 1937 overtopped the dyke and resulted in five deaths, the destruction of approximately 1,100 homes and severe damage to roads and bridges. As a result of the flood, the dykes along the river were reconstructed and raised.

Flood control measures implemented subsequent to the formation of the UTRCA after the 1947 flood have resulted in the construction of several dams, flood control channels, floodwall and dyke rehabilitation.

Replacement of a 300 m section of dyke between the Queens Avenue Bridge and Rogers Avenue with a near vertical modular block wall with geogrid reinforcement was completed in 2007. This section was replaced rather than repaired after structural deficiencies were noted in 2006 during the initial stages of a concrete repair program.

Consultation

Residents within the area surrounding the West London Dyke as well as other stakeholders were provided with a Notice of Commencement, which included information on Public Information Centre 1 (PIC 1), Notice of Public Information Centre 2 (PIC 2), Notice of Public Information Centre 3 (PIC 3) and Notice of Completion through Canada Post.

Project Area Description

With regard to engineering review, costing, and trigger point determination, the Master Repair Plan considered the following segments (from upstream to downstream) which were derived based on the physical location and/or physical characteristics of the dyke:

1. Oxford North;
2. St. Patrick's (Oxford Street West – Empress Avenue);
3. Blackfriars (Empress Avenue – Cummings Avenue);
4. Natural Bank (Cummings Avenue – Leslie Street);
5. Labatt Park/Forks (Leslie Street – Dundas Street);
6. Wharncliffe (Dundas Street – Wharncliffe Road North);
7. Cavendish East; and
8. Cavendish West.

These segments however are not intended to represent exact limits for future construction projects. Future works (involving repair or replacement) may involve either work within a segment, or overlapping or portions of segments.

Project Drivers

In order to properly define the long-term planning requirements for the West London Dyke, it is critical that appropriate project drivers (potential reasons to implement or otherwise initiate work) are defined. As part of the Master Repair Plan planning process, a conceptual list of project drivers were developed based on the guiding principles for presentation to interested stakeholders and for subsequent evaluation during selection of the preferred alternative(s). The project drivers identified are as follows:

- Flood Risk Reduction
- Public Safety
- Functional Improvements
- Environmental Considerations
- Funding Opportunities
- Other (Hydrologic Considerations)

Assessment of Environment

- The following provides a general description of each component in reference to the West London Dyke Structure and surrounding area:
- Natural Environment: Element addressing the protection of the natural and physical elements of the environment (i.e., air, water, land, etc.). This includes both natural heritage and environmentally sensitive areas;
- Social/Cultural Environment: Component that addresses the potential effects on the public, including adjacent landowners (residents, businesses), community groups, social elements, historical/archaeological and heritage factors, and development objectives of the City;
- Economic: Component that addresses capital and maintenance costs, potential flood damage impacts, etc.;
- Legal: Factor that considers potential land requirements related to each proposed alternative; and

- Technical: Component that addresses the technical requirements and suitability of each alternative.

Engineering Review

As part of the technical component of the Master Repair Plan, a general engineering evaluation of the West London Dyke was undertaken. The intent of the engineering review was to establish the following:

- The current condition of the West London Dyke through a review of previous investigations and monitoring inspections;
- Information on the geotechnical characteristics of the site through literature review;
- Information related to potential legacy issues relating to environmental impacts based on past project experience and available documentation;
- Potential maintenance and constructability issues associated with the dyke;
- Requirements for approvals and permits;
- General guidelines for future work based on previous criteria established through the Phase 1 Replacement project; and
- Requirements or recommendations related to further engineering studies.

Alternative 4 has been identified as the preferred solution, with the exception of the section from Rogers Avenue to the Queens Avenue Bridge.

Review of Alternatives

The Master Plan and Class EA planning process recognizes that there are often many alternatives to address a particular issue or problem, and that these alternatives should be considered. Alternative solutions identified as part of the Master Repair Plan are listed as follows:

- **Alternative 1** – Do Nothing;
- **Alternative 2** – Replace with Similar Dyke (Existing Footprint);
- **Alternative 3** – Replace with New Dyke to 100 Year Standard + Freeboard; and
- **Alternative 4** – Replace with New Dyke to 250 Year Standard + Freeboard.

Recommended Implementation Strategy

In general, the prioritization of projects is based on a review of the project drivers. Accordingly, the determination of priority has been based on known existing information as presented in Table E.1, primarily relating to the following:

- Current condition of the dyke;
- Potential to reduce overall flood damages;
- Constructability considerations; and
- Other impacts or considerations.

Table E.1: Project Implementation Schedule

Segment	Section	Type	Preferred Alt.	Estimated Cost	Estimated EA Cost	Implementation Schedule	Priority Ranking
Oxford North	North of south limit of Oxford St. Bridge	Concrete Revetment / Vegetated Berm	Alt. 4	$3.7M / $2.6M[7]	N/A	**10 + Years**	8
St. Patrick	Oxford St. to St. Patrick St.	Concrete Revetment	Alt. 4	$2.8M	N/A	**5 to 10 Years**	4
	St. Patrick St. to Empress Ave.	Concrete Revetment	Alt. 4	$3.0M	N/A	**5 to 10 Years**	5
Blackfriars	Empress Ave. to Blackfriars St.	Concrete Revetment	Alt. 4	$3.3M / $2.2M[7]	$70-$80K	**1 to 5 Years**	2
	Blackfriars St. to Cummings Ave.	Concrete Revetment	Alt. 4	$2.2M	$70-$80K	**1 to 5 Years**	3
Natural Bank	Cummings Ave. to Leslie St.	Concrete Revetment (Naturalized Toe)	Alt. 4	$4.6M	N/A	**10 + Years**	6

Segment	Section	Type	Preferred Alt.	Estimated Cost	Estimated EA Cost	Implementation Schedule	Priority Ranking
Labatt Park/Forks	Leslie St. to Rogers Ave.	Concrete Revetment	Alt. 4	$2.6M	N/A	**1 to 5 Years**	1
	Rogers Ave. to Queens Ave. Bridge	Modular Block Wall with Geogrid	Alt. 1	$250K	N/A	**10 + Years (work completed in 2007/08)**	---
	Queens Ave. extending south to Forks	Natural Bank with Gabions	Alt. 4	$500K	N/A	**10 + Years**	9 (assumed to coincide with Wharncliffe segment work)
Wharncliffe	From Forks to Wharncliffe Rd. Bridge	Natural Bank with Gabions	Alt. 4	$4.3M / $3.3M	N/A	**10 + Years**	9
Cavendish East	Wharncliffe Rd. Bridge extending west	Concrete Revetment	Alt. 4	$2.8M	N/A	**10 + Years**	7
	From termination of concrete revetment extending west to City Works Yard	Natural Bank/Berm	Alt. 4	$2.7M	N/A	**10 + Years**	10
Cavendish West	From City Works Yard extending north, then west along adjacent property limits	Vegetated Berm	Alt. 4	$1.2M	N/A	**10 + Years**	10

Additional Studies

In addition to capital improvements and repairs, additional studies and programs have been recommended. Recommendations have been based on comments received during the consultation process, the evaluation of project drivers, input from both the UTRCA and the City, and the environmental and technical reviews completed for the West London Dyke.

1.0 INTRODUCTION

The Upper Thames River Conservation Authority (UTRCA) in partnership with the City of London (City) has undertaken a Master Repair Plan (MRP). This is a strategic document to assist in the overall planning for a period of up to 20 years. The objectives of this Master Repair Plan are as follows:

- To ensure that key problems and opportunities facing the UTRCA and the City with regard to the dyke are properly identified;
- To update the previous 2007 West London Dyke Flood Control Structure Master Plan in accordance with the Municipal Engineers Association (MEA) Municipal Class Environmental Assessment (June 2000, revised 2007 and 2011) process;
- To provide an overview of the existing condition of the dyke, level of flood protection currently provided, and present constraints (regulatory, land, transportation);
- To integrate other City initiatives pertaining to the dyke area;
- To provide general recommendations and design guidelines relating to various components of the West London Dyke and adjacent pathway system, such as wall structure, activity / use areas, natural environment, heritage features and interpretation, safety, access, etc. are properly identified; and
- The Master Repair Plan results in the implementation of the required projects on a cost effective, sustainable, and timely basis.

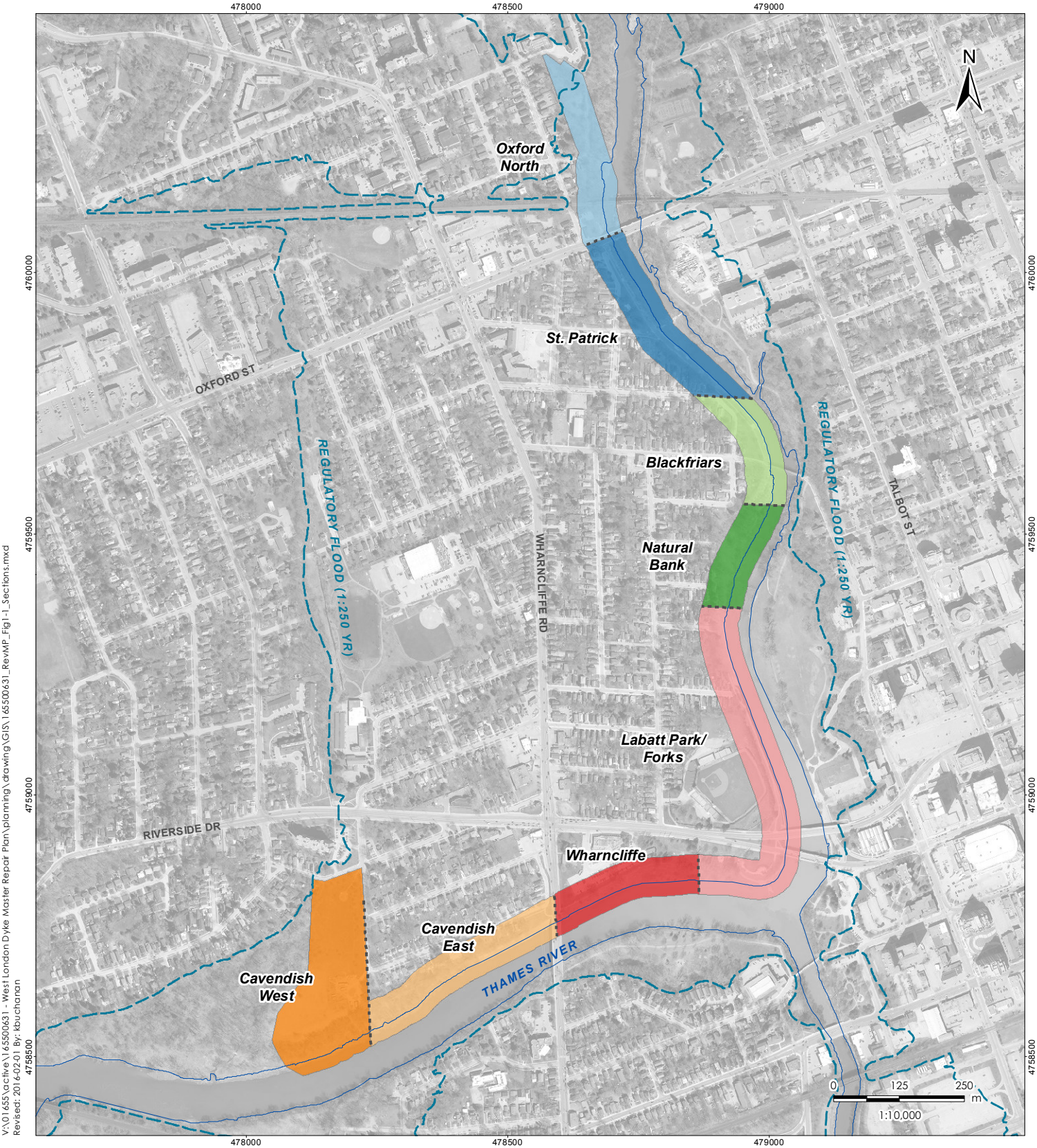
This Master Repair Plan sets out design recommendations, which will guide detailed design development for the various phases of the West London Dyke and Thames Valley Parkway upgrade and replacement. Preparation of the Master Repair Plan was undertaken after careful examination of existing conditions and findings gathered through the consultation process and review of other City initiatives.

1.1 STUDY OVERVIEW

The Master Repair Plan provides a summary of existing conditions for the West London Dyke Flood Control Structure. Figure 1.1 illustrates a general overview of the study area. Subsequent figures within the Master Repair Plan will provide further detail of the study area. The study area is defined as the geographical area that could potentially be affected by any of the alternatives presented and was determined on the basis of the expected range of effects associated with the Master Repair Plan for the existing West London Dyke. Repair and replacement needs are identified and alternatives are developed to address these needs. Key steps taken in the development of this Master Repair Plan include the following:

- On-site field visits and photo documentation to gain an in-depth appreciation of the dyke and pathway system, existing conditions, and to identify opportunities and constraints;
- Public consultation via Public Information Centres (PICs) with notification given through:
    - Mail out (Canada Post) to surrounding residents as shown in Figure 1.2, and
    - Newspaper advertisement in the London Free Press or the Londoner.
- Agency consultation;
- Aboriginal consultation;
- Technical review consisting of:
    - Planning / environmental review,
    - Hydraulic review,
    - Engineering review,
    - Costing (planning, design, implementation and maintenance), and
    - Trigger point determination.
- Preparation of preliminary design concepts for discussion purposes;
- Preparation of the draft Master Repair Plan;
- Circulation of the draft Master Repair Plan for comments; and
- Finalized Master Repair Plan document.

Through regular Project Team meetings between the City, UTRCA, and Stantec, modifications or revisions may have been made to the scope of work required as guided by the terms of reference for this project.



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Revised: 2016-02-01 By: kbuchanan

February 2016
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Stantec

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2009-2015.

Client/Project

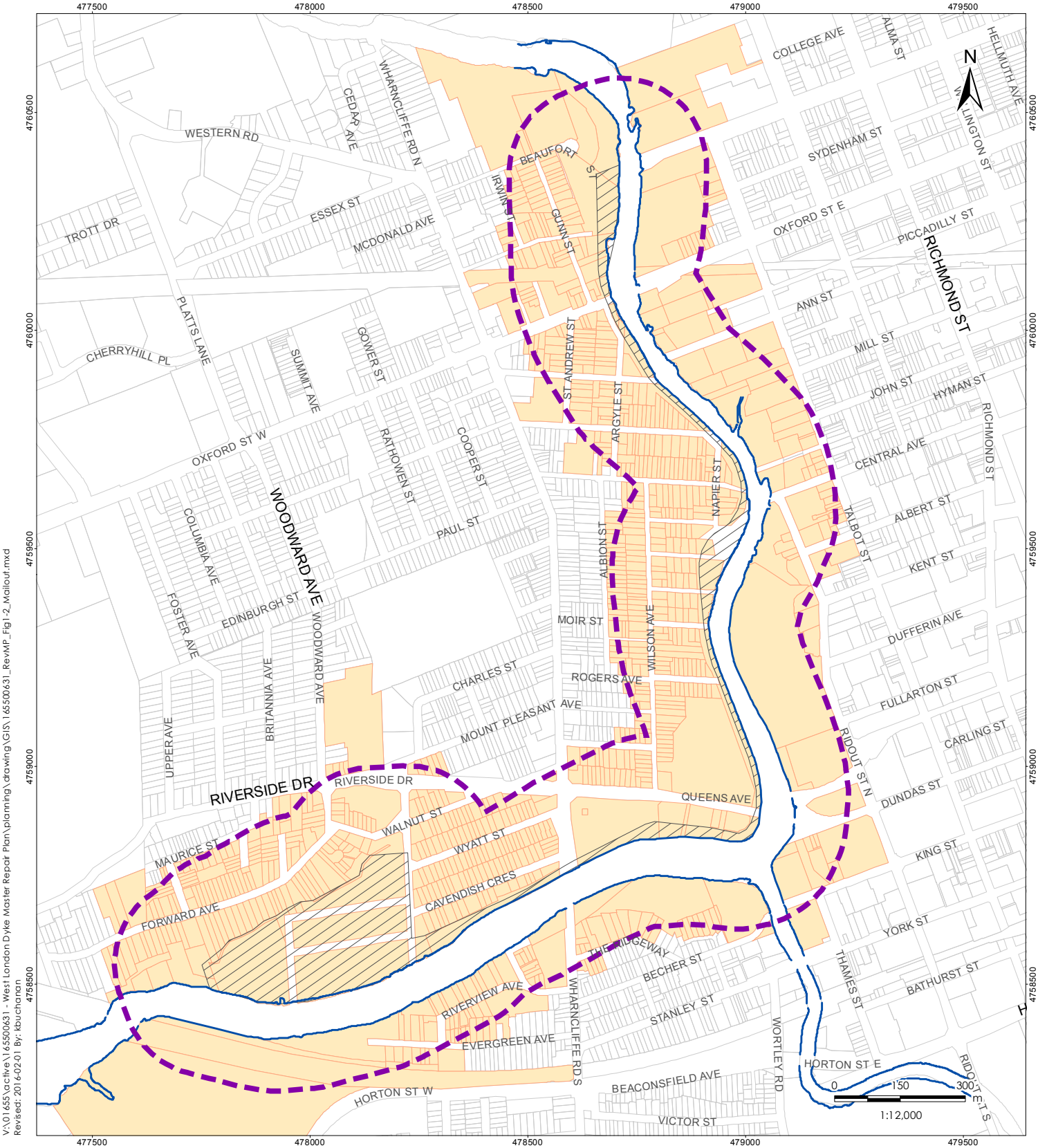
Upper Thames River Conservation Authority & City of London
West London Dyke Master Repair Plan

Figure No.

1.1

Title

Study Area



Stantec

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2009-2015.

Legend

- 200 Metre Notification Area
- Notification Parcel
- Parcel

Mail-Out Summary

Dyke Side Bank - 780 Parcels
Opposite Bank - 186 Parcels
Total - 966 Parcels

Client/Project

Upper Thames River Conservation Authority & City of London
West London Dyke Master Repair Plan

Figure No.

1.2

Title

Location of Notification Mail-Out

1.2 STUDY SCHEDULE

The Master Repair Plan was initiated in April 2010. The study was placed on hold in early 2013 pending updates to flood elevation information. Three Public Information Centres (PICs) were held throughout the duration of the study to obtain feedback and comments from the public, agencies and First Nation communities.

1.3 PROBLEM IDENTIFICATION

The UTRCA and the City of London are undertaking a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. The intent of the Master Repair Plan is to develop the required strategic plan to allow the UTRCA and the City to have a method for determining when a trigger point for repair and/or replacement of a portion of the dyke is required. Based on information known, conceptual designs will be presented; however, they will be subject to more detailed investigation prior to implementation.

1.4 INTENT OF REPORT

The intent of the Master Repair Plan is to address public, agency, and First Nation community requirements and concerns and to ensure all possible alternatives and opportunities are fairly assessed and reviewed in a public forum before being finalized and carried forward for implementation.

As shown in Figure 1.3, the objective of this report is not necessarily to detail when a specific municipal infrastructure project will be implemented but rather to review on behalf of the UTRCA and the City the following:

- Project drivers, or in other words, the reasons for the need to initiate a project (such as to enhance flood protection measures, repair or replace failing sections, integration of additional pathways, etc.); and

- Identifying the solutions that are possible and defining a preferred solution for a project.

This process is undertaken through the MEA Municipal Class Environmental Assessment (EA) process. With this information, the UTRCA and the City have the ability to identify what would constitute a "trigger point" to implement the project. A "trigger point" is reached when the need for the project (i.e., project drivers) is greater than the cost to implement it.

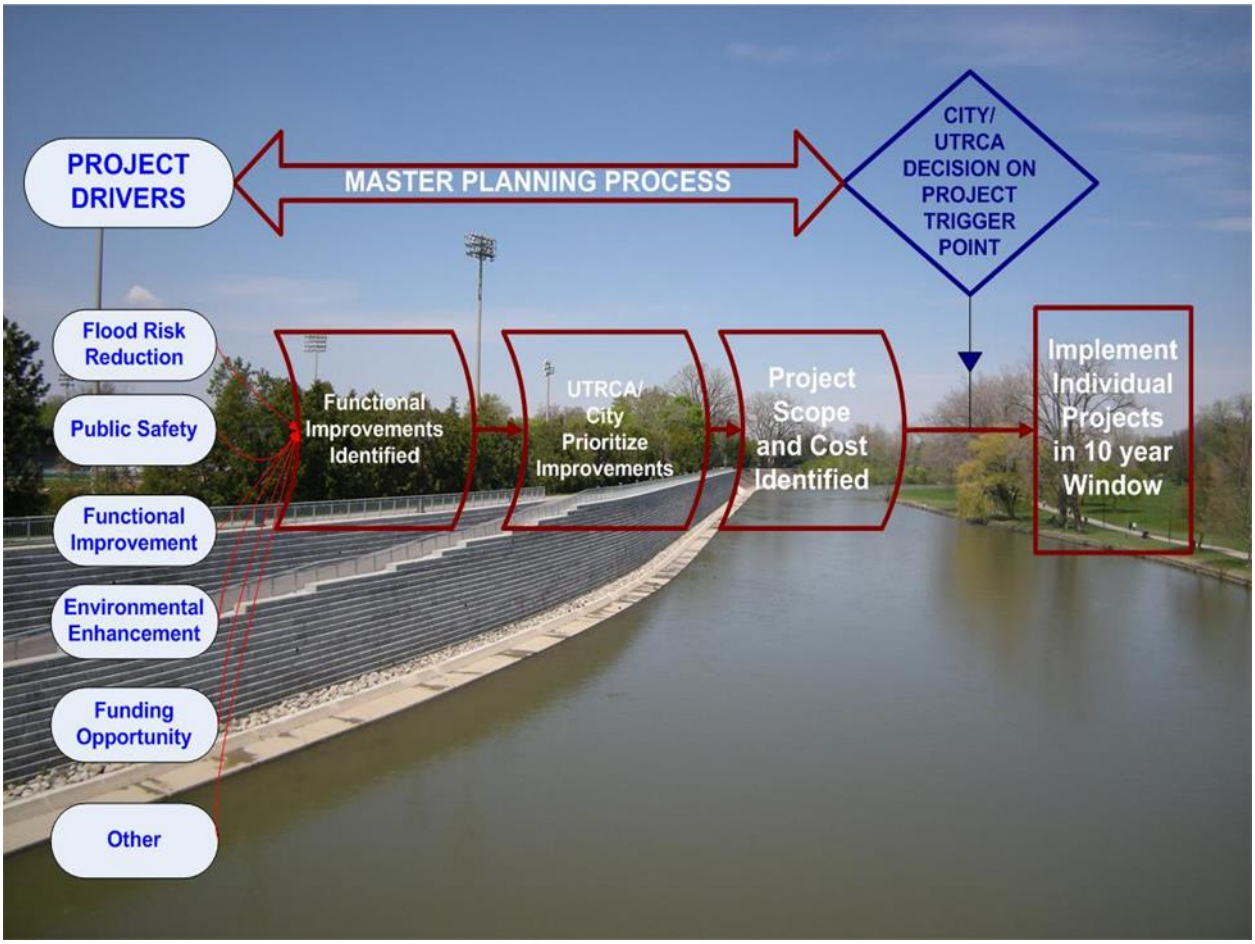


Figure 1.3: Intent of Project

1.5 BACKGOUND

The West London Dyke is approximately 2,300 m long and runs along the west bank of the north branch of the Thames River extending north of Oxford Street to the Forks of the Thames River and then along the north bank of the main branch to west of the Wharncliffe Road North Bridge and terminating in Cavendish Park. The City owns the dyke structure and undertakes minor maintenance activities. Through an agreement with the Upper Thames River Conservation Authority, the UTRCA undertakes major maintenance activities.

The West London Dyke is primarily an engineered structure, which protects life and property during periods of extreme river flows. In addition to serving a critical control function, the dyke is also an integral component of the City's recreational pathway system and its location at the Forks of the Thames makes it a prominent structure in the downtown area of the City.

Construction of the West London Dyke began in the 1880s, with extensions, reinforcements and height increases occurring at least twice by the early 1900s. Sections of the dyke were raised

after the 1937 flood and before another major flood in 1947. Select repairs to the concrete revetment component of the dyke were completed in the 1980s and consisted generally of grouting beneath revetment panels, and toe repairs and support.



Figure 1.4: Construction of the Dyke

In 2004, a 'condition assessment' of London's flood control structures identified a need for repairs to sections of the dyke, with the highest priority being in the area north of Queens Avenue. However, in 2005, while undertaking the initial stages of the concrete repair program for the West London Dyke between the Queens Avenue Bridge and Rogers Avenue, it was determined that this section needed to be replaced rather than repaired due to structural deficiencies. A preliminary design process was then undertaken to determine the type of replacement structure best suited to the technical and regulatory requirements for this section of the dyke. At that time, the dyke structure in the area of interest only protected against the 1:100 year flood event; however, preference for Special Policy Area designation required that the flood control structure protect against the 1:250 year flood event. As preliminary review indicated that the new structure was to be constructed and located within the existing footprint, the project was identified as a Schedule A (pre-approved) project. However, the City and UTRCA decided to proceed with a public information process given the high visibility of the structure, potential short term impacts to pathway use, and historical significance.

Public input was solicited at a Public Information Centre meeting held on May 25, 2006 which included an introduction to the history of the dyke and background information on how the design alternatives had been arrived at. At that meeting, a design option review, which outlined how each design alternative ranked within several categories, was also conveyed to the public. Public input from that meeting was incorporated into the final preliminary design report titled *West London Dyke Preliminary Design Report (Stantec Consulting Ltd., 2006)*. After consideration and evaluation of various alternatives, it was determined that a near-vertical, pre-cast reinforced earth system was the preferred alternative for Phase 1 of the replacement as it best met requirements relating to pathway integration, aesthetics, ability to provide required flood protection and constructability due to existing site constraints.

In addition to the functional flood protection requirements, a number of other major design considerations were addressed in the preliminary design report including the need to minimize impacts on the environment, maintain / enhance recreational use of the dyke, and consider aesthetics given the high visibility of the structure and its proximity to the downtown core. Based on these considerations, the City and UTRCA undertook a Design Charrette in order to solicit additional input from key stakeholders relating to the proposed replacement project. Results from the Design Charrette formed the basis of the *2007 West London Dyke Flood Control Structure Master Plan (Stantec Consulting Ltd., 2007)* which was intended to provide long-term design options for the Thames Valley Pathway system, and guiding principles relating to aesthetic and amenity considerations for future replacement works with emphasis on the identified 300 m section of dyke. A copy of the *2007 Master Plan* is included in Appendix 1.1 and the findings and recommendations from this process have been incorporated into this current Master Repair Plan.



Figure 1.5: Phase 1 Pre-Construction



Figure 1.6: Phase 1 Construction

Replacement of the 300 m of dyke between the Queens Avenue Bridge and Rogers Avenue with a near vertical modular block wall with geogrid reinforcement was completed in 2007 as part of the *Phase 1 West London Dyke Replacement* project. As part of this project, a transitional pathway was constructed from the top of the new dyke and terminated in order to allow for the future construction of a pedestrian pathway beneath the Queens Avenue and Dundas Street bridges.



Figure 1.7: Phase 1 Post-Construction

Since 2004, subsequent reviews of the remaining section of concrete revetment

have been undertaken in 2006, 2010, 2011, 2012, 2013, and 2014 in order to compare conditions to previous baseline findings. Results from the 2014 assessment have been referenced in this Master Repair Plan in relation to the engineering review of the original concrete structure.

In 2009, the City of London and UTRCA approved construction of the *Pathway Extension Under the Queens Avenue and Dundas Street Bridges Adjacent to the Thames River (Phase 2)* which completed the pedestrian pathway link from the termination of the Phase 1 structure to areas south of the Dundas Street Bridge. As part of this project, additional dyke replacement was completed along this segment.



Figure 1.8: Phase 2 Pathway Extension

To date, approximately $4.7M (2010 dollars) has been spent on Phase 1 and 2 dyke replacement and pathway enhancement / extension. Funding for these projects was partially procured from both the provincial and municipal governments.

Although the previous investigations revealed the need to replace the section of dyke from the Queens Avenue Bridge to Rogers Avenue, it is anticipated that over a period of years, additional sections will also need to be replaced or areas enhanced for additional flood protection or to integrate other City initiatives. Accordingly, the City and UTRCA recognized the need to prepare a comprehensive long term plan for the West London Dyke. Approval was given by the City and UTRCA for Stantec to prepare a Master Repair Plan in order to build upon the previous recommended design enhancements for the dyke and pathway system identified in the *2007 Master Plan*, with additional emphasis on the engineering and hydraulic review of the existing structure and identification of short and long term maintenance and capital projects.

1.6 HISTORIC FLOOD EVENTS

According to a review of available records, the small settlements of London West and Kensington had developed along the banks of the Thames River by the late 1800s due to reliance on the surrounding water-powered mills. Due to the proximity to the river, these communities experienced several flood events including the catastrophic July 1883 flood that killed 17 people. In response to the tragedy and recognizing the desire and need to remain close to the river,



Figure 1.9: 1937 Flood (West London Area)

construction commenced on a formalized dyke system. The worst flood ever recorded along the Thames River occurred in April of 1937, and overtopped the dyke. The flood resulted in five deaths, the destruction of approximately 1,100 homes, and severe damage to roads and bridges. Total damage was estimated at $3 million (1937 dollars). As a result of the flood, the dykes along the river were reconstructed and raised.



Figure 1.10: 1947 Flood



Figure 1.11: 1947 Flood (near Labatt Park)

Following a less severe flood in 1947, the UTRCA was formed in order to respond to citizens' concerns about flood control and undertook a program of flood control measures which up to 1990 resulted in the construction of several dams, flood control channels, floodwall, and dyke rehabilitation, including the West London Dyke and development of flood forecasting measures. Since that time, there have been additional floods in March 1977, September 1986, September 1997, July 2000, April and December of 2008; however, no breaching of the dykes have occurred.

Past flooding has generally been associated with spring snowmelt upstream of the dyke, causing high water levels and localized flooding along the banks of the Thames River and its tributaries. However, studies on the impact of climate change suggest the potential for increased flooding through all seasons with the potential for more intensified flooding in the Upper Thames River Basin with trending to more frequent and severe summer flooding (Simonovic, 2009).



Figure 1.12: 2000 Flood (Forks of the Thames)



Figure 1.13: 2008 Flood (North Branch)



Figure 1.14: 2008 Flood (Forks of the Thames)



Figure 1.15: 2008 Flood (Main Branch)

1.7 PROVINCIAL DESIGNATIONS

There are approximately 1,100 structures located behind the West London Dyke that are within the Regulatory Flood Line. The current City of London Official Plan indicates these areas as Potential Special Policy Areas, which reflects the City's application to the Province to receive a Special Policy Area (SPA) designation. If granted, this designation would allow for relaxation of flood plain policies, therefore permitting limited development and redevelopment to continue.

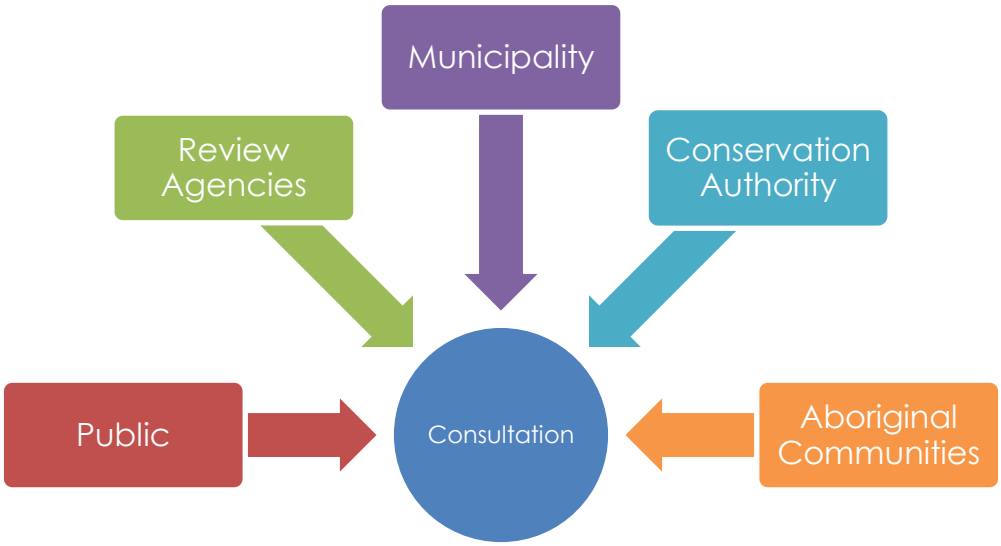
Provincial policy indicates that, in order to achieve SPA designation, the area must be protected by a dyke system with elevations set at or above the Regulatory Flood Level. However, in some instances this policy has been relaxed where it is impractical to provide this level of protection.

To date, the SPA application has not been actively pursued by the City. Further information relating to the current protection offered by the dyke system is provided in subsequent sections of this Master Repair Plan.

2.0 CONSULTATION

2.1 OVERVIEW

The consultation process is an integral component of the Municipal Class EA process. Effective communication with Aboriginal communities, agencies, stakeholders and the general public can reduce or avoid controversy that ultimately leads to project delays and general discontent of project stakeholders. This section details the consultation process followed for the Master Repair Plan.



2.2 CLASS ENVIRONMENTAL ASSESSMENT

As the West London Dyke is majority owned by the City of London, it was determined that the Ontario Environmental Assessment Act should apply. Therefore this is considered the appropriate process for this project and our work scope reflects this process. While the West London Dyke is almost entirely owned by the City, the UTRCA does own small parcels through flood plain purchases in partnership with the City and whose lands are managed by the City under agreement with UTRCA.

A Class Environmental Assessment is a planning document which sets out the process that a proponent must follow in order to meet the requirements of the Environmental Assessment Act for a class or category. Projects are divided into schedules based on the type of projects and activities. Schedules are categorized as A, A+, B, and C with reference to the magnitude of their anticipated environmental impact.

All municipalities in Ontario, including the City of London, are subject to the provisions of the Environmental Assessment Act and its requirements to prepare an Environmental Assessment for

applicable public works projects. The Ontario Municipal Engineers Association Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011) document provides municipalities with a five-phase planning procedure approved under the Environmental Assessment Act to plan and undertake all municipal sewage, water, stormwater and transportation projects that occur frequently, are usually limited in scale and have a predictable range of environmental impacts and applicable mitigation measures.

2.2.1 Schedule A

Schedule A projects are limited in scale, have minimal adverse environmental impacts and include the majority of municipal sanitary, stormwater and water operations, and maintenance activities. These projects are pre-approved and therefore may proceed to implementation without going through the full planning process.

Schedule A projects typically include normal or emergency operation maintenance activities where the environmental effects of these activities are minimal. Examples of Schedule A projects include watermain and sewer extensions where all such facilities are located within the municipal road allowance or an existing utility corridor. As such, these projects are pre-approved and subsequently do not require any further planning and public consultation.

2.2.2 Schedule A+

Schedule A+ projects were introduced as part of the 2007 amendments to the Municipal Class EA document. This schedule was introduced to ensure that some type of public notification would occur for pre-approved projects. Although the public is to be notified, no formal public consultation process is required. The public has the right to comment to municipal staff in their area; however, considering that the projects are pre-approved there is no appeal process to the Minister of the Environment on these projects.

2.2.3 Schedule B

Schedule B projects are those which have a potential for adverse environmental impacts. A screening process must be undertaken which includes consultation with Aboriginal communities, directly affected public and relevant review agencies. Projects generally include improvements and minor expansions to existing facilities. The project process must be filed and all documentation prepared for public and agency review.

Schedule B projects require that Phase 1 and 2 of the Class EA planning process be followed and a Project File be prepared and submitted for review. If there are no outstanding concerns raised by the public, review agencies or First Nation communities then the proponent may proceed to project implementation (Phase 5). If however, the screening process raises a concern that cannot be resolved, then the Part II Order procedure (formerly referred to as a "bump-up") may be invoked. Alternatively, the proponent may voluntarily elect to complete the project as a Schedule C undertaking.

2.2.4 Schedule C

Schedule C projects have the potential for significant environmental impacts and must follow the full planning and documentation procedures specified in the Class EA document (Phase 1 to 4). An Environmental Study Report (ESR) must be prepared and filed for review by the public, review agencies and First Nation communities. If concerns are raised that cannot be resolved, then the Part II Order procedure may be invoked. Projects generally include the construction of new facilities and major expansions to existing facilities.

2.3 PLANNING PROCESS

Figure 2.1 illustrates the process followed in the planning and design of projects covered by a Municipal Class EA. The figure incorporates steps considered essential for compliance with the requirements of the Environmental Assessment Act that are summarized subsequently.

Phase 1 Identification of problem (deficiency) or opportunity;

Phase 2 Identification of alternative solutions to address the problem or opportunity. Public, review agency and First Nation community contact is mandatory during this phase and input received along with information on the existing environment is used to establish the preferred solution. It is at this point that the appropriate Schedule (B or C) is chosen for the undertaking. If Schedule B is chosen, the process and decisions are then documented in a Project File. Schedule C projects proceed through the following phases;

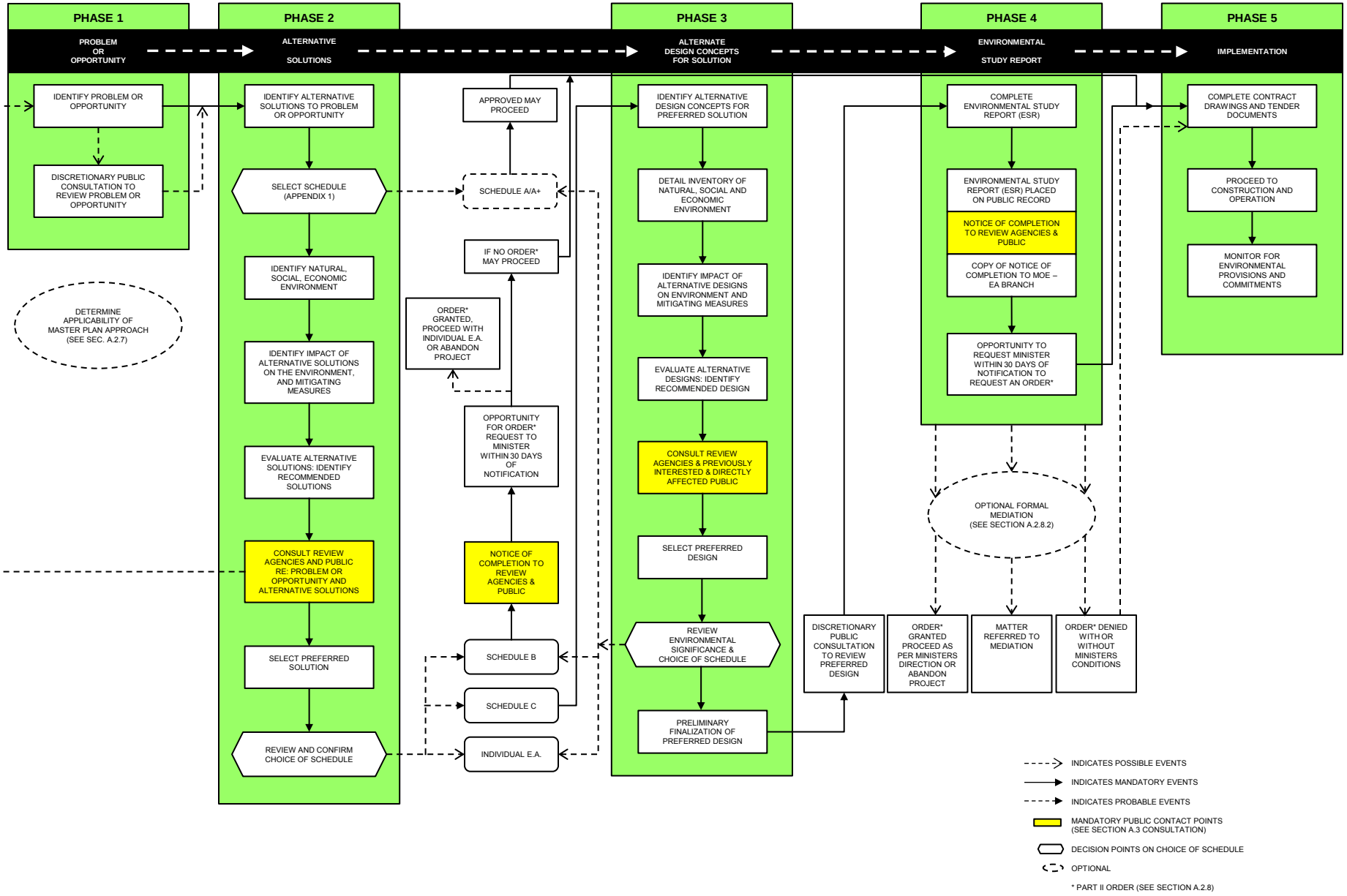
Phase 3 Examination of alternative methods of implementing the preferred solution established in Phase 2. This decision is based on the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects;

Phase 4 Preparation of an Environmental Study Report summarizing the rationale, planning, design and consultation process of the project through Phases 1-3. The ESR is then to be made available to agencies and the public for review; and

Phase 5 Completion of contract drawings and documents. Construction and operation to proceed. Construction to be monitored for adherence to environmental provisions and commitments. Monitoring during operation may be necessary if there are special conditions.

The MEA Class EA document also serves as a public statement of the decision making process followed by municipalities for the planning and implementation of necessary infrastructure.

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS



The complexity of each project is based on the level of investigation, environmental effects, technical considerations and agency, Aboriginal communities, and public input, which may affect the selection of the project schedule. It is the responsibility of the proponent to determine and/or customize the planning process to meet the projects consultation and technical needs based on the complexity of the issues.

The Class EA process is a decision making process to promote good environmental assessment planning, with key features being:

- Early consultation;
- Consideration of a reasonable range of alternatives;
- Assessment of environmental effects;
- Systematic evaluation of alternatives; and
- Clear documentation and traceable decision making.

2.4 MASTER PLAN APPROACH

The Master Repair Plan is being undertaken in accordance with the Master Planning requirements of the MEA Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011).

The MEA offers four approaches for undertaking a Master Plan and based on our review Municipal Class EA Approach #2 appears to be the most accurate. Approach #2 allows for the preparation of a Master Plan document at the conclusion of Phases 1 and 2 of the Municipal Class EA process where the level of investigation, consultation and documentation are sufficient to fulfill the requirements for Schedule B projects identified within the Master Plan. Accordingly, the final public notice for the Master Plan could become the Notice of Completion for Schedule B projects within it. Any Schedule C projects, however, would have to fulfill Phases 3 and 4 prior to filing an Environmental Study Report (ESR) for public review. The Master Plan would provide the basis for future investigations for the specific Schedule C projects identified within it. While Master Plans are not subject to requests for a Part II Order, members of the public or other stakeholders may submit a request to the Minister for a Part II Order for individual Schedule B projects identified within the Master Plan.

The intent of this report is to outline the steps that the proponent (UTRCA and City) have taken to satisfy the requirements of the Municipal Class Environmental Assessment planning and design process for Schedule B projects. The Project File should detail the following:

- Background to the project and earlier studies;

- Nature and extent of the problem or opportunity, explain the source of the concerns or issue and the need for solutions;
- Description/inventory of the environment;
- Identify solutions that are possible and define a preferred solution; and
- Identify the cost to implement the preferred solution.

The Municipal Class EA process currently allows a 10-year window for implementation following completion of the Class EA.

2.5 CHANGING PROJECT STATUS – "PART II ORDER"

Subsection 16 of the amended Environmental Assessment Act provides the Minister of the Environment or delegate an opportunity to review the status of a project. Members of the public, interest groups, review agencies and First Nation communities may submit a request to the Minister or delegate to require a proponent to comply with Part II of the Environmental Assessment Act (i.e., Individual EA) before proceeding with the proposed undertaking. The Minister or delegate determines whether the request is justified and then determines the course of the undertaking. This decision is considered final.

A request to the Minister or delegate must be in writing and must address the following issues as they relate to the identified concerns:

- Environmental impacts of the project and their significance;
- The adequacy of the planning process;
- The availability of other alternatives to the project;
- The adequacy of the public consultation program and the opportunities for public participation;
- The involvement of the person or party in the planning of the project;
- The nature of the specific concern which remains unresolved;
- Details of any discussions held between the person or party and the proponents;
- The benefits of requiring the proponent to undertake an individual EA; and
- Any other important matters considered relevant.

The person requesting the Part II Order shall forward a copy of the request to the proponent at the same time as submitting it to the Minister of the Environment or delegate.

The Minister has four options for a decision on a Part II Order (bump-up) request:

- Deny the request;
- Deny the request with conditions;
- Refer to mediation; and
- Grant the request and require the proponent to undergo an individual EA.

2.6 STAKEHOLDER CONSULTATION

The following potential stakeholders were included:

- **Public:** this includes individual members of the public including property owners who may be affected by the project, individual citizens who may have a general interest in the project, special interest groups, and community representatives.
- **Review Agencies:** this includes government agencies that represent the policy positions of their respective departments, ministries, authorities, or agencies.

The role of the members of the public with an interest in the study is to provide background information to advise the proponent of their support and concerns, and to review and provide comments and input about the study findings (as the project progresses). Members of the public with an interest in the study can ask to be placed on the mailing list to receive notification of the consultation opportunities of this project.

Residents within the area surrounding the West London Dyke as well as other stakeholders were provided with a Notice of Commencement, which included information on Public Information Centre 1 (PIC 1), Notice of Public Information Centre (PIC 2), Notice of Public Information Centre (PIC 3) and Notice of Completion through Canada Post. Advertisements were published within the London Free Press or the Londoner prior to each of the three PICs.

A list of relevant public and agency contacts were developed at the onset of the project. Throughout the process, these contacts were sent letters notifying them of the project progress. Appendix 2.1 contains the contact list. Appendix 2.2 contains public and agency comments that were received during the project as well as agency notifications. Comments received following PICs are included in a separate appendix.

Table 2.1 summarizes the agency comments received and follow up either taken or recommended by Stantec.

Table 2.1: Summary of Agency Comments

Agency	Date Received	Agency Comment and Follow Up
Union Gas	June 16, 2010	Union Gas does not foresee any conflicts (given the preliminary scope of the work).
Transport Canada	June 23, 2010	Reminder that if any elements of proposed works "cross or affect a potentially navigable waterway" then approval through Transport Canada is required.
Ministry of Natural Resources	July 5, 2010 and July 27, 2010	Requested clarification on how the Master Repair Plan relates to those in the 2007 replacement project, confirmation that works are within the existing footprint, and works will not result in an in-fill of the Thames River. Considerations should be given to impacts on wildlife resources, habitat and any at risk species. Clarification provided by Stantec, however MNR contact no longer with Ministry. Comments noted are incorporated into the Master Repair Plan.
Ministry of Tourism and Culture	July 20, 2010	If any ground disturbances are to take place outside of the existing footprint an archaeological assessment is required.
City of London Advisory Committee on the Environment	July 22, 2010	Wishes to be provided with copies of the Master Repair Plan Study to its members. July 28, 2010 copies of the PIC 1 information package were sent to the committee secretary to be forwarded to its members.
MPP – London West	August 18, 2010	Wishes to be kept informed on the development of the project.
Canadian Environmental Assessment Agency	August 24, 2010	A project description of the preferred alternative is required if the project potentially triggers CEAA.
London Hydro	September 10, 2010	Requests that Hydro's existing infrastructure remain unaffected and remain accessible and to work together to incorporate future works together.
Ministry of Aboriginal Affairs	January 18, 2011	Provided First Nations contact information for communities which may have existing or asserted rights that could be impacted by the project.
Ministry of Tourism, Culture and Sport	September 24, 2015	Screen project with MTCS Criteria for Evaluating Archaeological Potential to determine if an archaeological assessment is needed. Screen project with MTCS Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage to determine whether EA will impact cultural heritage resources.

2.7 ABORIGINAL CONSULTATION

A list of relevant Aboriginal communities was developed at the onset of the project. Throughout the process, these communities were provided with letters notifying them of project commencement and invitation to attend PICs. The following eight communities were engaged as part of the consultation process:

- Aamjiwnaang First Nation;
- Bkejwanong Territory (Walpole Island First Nation);
- Caldwell First Nation;
- Chippewas of Kettle and Stony Point First Nation;
- Chippewas of the Thames First Nation;
- Moravian of the Thames First Nation (Delaware Nation);
- Munsee-Delaware First Nation; and
- Oneida of the Thames First Nation.

At the request of Caldwell First Nation, Stantec met with Chief Hiller on December 14, 2015 to provide an overview of the project and answer questions. At the request of Walpole Island First Nation, Stantec met with Dean Jacobs and Jared Macbeth on July 14, 2015 and again with Jared Macbeth on January 28, 2016 to provide an overview of the project and answer questions. Based on the outcome of these meetings, the following requests were made:

Caldwell First Nation requested the following:

- Remediation of disturbed areas to be completed with native wildflowers and grass mix;
- Remediation to take place immediately so as to minimize the establishment of invasive species;
- Projects should not result in harmful issues regarding health and/or detriment to the environment;
- Opportunity to provide an Aboriginal Monitor should a Stage 2 Archaeological Assessment be required for any project; and
- Be included on any future project correspondence.

Walpole Island First Nation requested the following:

- Opportunity to provide an Aboriginal Monitor should a Stage 2 Archaeological Assessment be required for any project;
- Be provided with a copy of any Archaeological Assessment reports that are completed; and
- Be included on any future project correspondence.

After review of the documentation provided, Moravian of the Thames First Nation stated that additional consultation was not required. Chippewas of Kettle and Stony Point First Nation stated that further consultation with regards to this project was not required unless project scope changes occurred which may affect or impact their Traditional Territory. Aamjiwnaang First Nation indicated that they would like to continue to receive project information. After reviewing project information and discussions via phone conversation with Chippewas of the Thames First Nation, additional consultation was not required. Munsee-Delaware First Nation and Oneida of the Thames First Nation did not provide any comment.

At the conclusion of the study, the Notice of Completion was sent to the above listed communities as outlined in the Aboriginal Consultation Log. Appendix 2.3 contains the Aboriginal Consultation Log which was completed for this project to document the consultation process with Aboriginal communities contacted as part of the Class EA process. Appendix 2.4 contains a copy of each response received.

2.8 PUBLIC INFORMATION CENTRES

Public Information Centres are a method to communicate with the general public, interested parties, review agencies and First Nation communities. For this project, three PICs were held.

2.8.1 Public Information Centre 1

PIC 1 was held Wednesday, June 16, 2010 at the Kiwanis Seniors' Community Centre in London. The purpose of the first PIC was to inform the public of the commencement of the West London Dyke Master Repair Plan and to receive any input or comments they might have. The PIC was held as a drop in session from 6:00pm to 9:00pm in order to provide direct interaction with the public and solicit comment on the initial planning for this project. Eleven poster boards were created and put on display so that members of the public would be able to review the material at their own pace. The first display board provided an introduction to the project as well as the problem opportunity statement. The second display board briefly outlined the historical significance, as well as the dyke's primary purpose of flood protection, as illustrated by photos of previous flood events. The third display board summarized past repair and rehabilitation work carried out on the dyke structure, dating back to the early 1980's and concluding with the recent Phase 1 Replacement construction. The fourth display board provided an explanation of

the Environmental Assessment process and key features. The fifth display board was a visual representation of the Master Planning process, complete with the project drivers that are to be considered. The sixth display board outlined the West London Dyke Study area which was subdivided into eight rather distinct segments (i.e., Blackfriars, Labatt Park/Forks, etc.), each to be discussed separately during the engineering review of the structure. Photo's illustrating each segment were shown to assist the public in familiarizing themselves with each area. Display boards seven through ten outlined each of the project drivers identified as follows: flood risk reduction, public safety, functional improvements, environmental enhancements, and funding opportunities. As the project was in the initial stages at the time of PIC 1, only a brief outline was provided for the drivers above. The last display board provided project contact information and detailed the next steps to be taken. Subsequent to PIC 1, the technical review phase of the Repair Plan commenced in order to provide recommendations for PIC 2.

Throughout PIC 1, a video loop was projected of the entire length of the dyke, as filmed from the pathway along the top of dyke.

Twenty-eight people were in attendance at PIC 1. Staff from the City of London, UTRCA, and Stantec were on hand to answer questions during the drop in session. In addition, comment sheets were provided to all attendees. The comment sheet posed four questions:

1. Do you live within the proposed study area?

2. Along with protection of life and property, what other features of the dyke are important to you? Accessibility, Amenity, Architecture, Heritage/History, Lighting/Security (ranked numerically).

3. What is your opinion on the works completed to date?

4. Other comments or concerns.

Eight comment sheets were returned following PIC 1. Appendix 2.5 contains a copy of the presentation handout and comment sheet given to all attendees, a copy of the attendance sheet, and copies of all comments received.

An abbreviated description of comments received is provided in Table 2.2. Refer to Appendix 2.5 for all comments collected.

Table 2.2: Summary of Public Comments (PIC 1)

Issue	Comment
Aesthetics	• Phase 1 Structure is aesthetically pleasing
Railing	• New railing along Phase 1 increases safety • Old railings easily vandalized
Pathway	• Inclusion of bike path should be in future plans • Pedestrian underpasses are outstanding • Widened pathway along Phase 1 is beneficial / Widened pathway to City Standards is not supported
Lighting	• Reduce intensity of overhead lighting, consider direction of lighting • Future lighting plans? (i.e., what is the intent for lighting)
Fountain	• Fountain is appealing / fountain is 'useless' • What are the fountain upkeep costs?
Vegetation	• What are the plans for mature trees along dyke? • Planting of native species along rivers edge • Phase 1 plantings are nice
Access	• Access to river along St. Patrick
Flood Prevention	• Importance of dyke to prevent basement/residential flooding
Other	• Removal of old material during reconstruction work? • Further construction should only proceed after entire river corridor study has been completed

Generally, work completed during the Phase 1 Replacement project was well received by the public. However, many residents had an issue with intensity and direction of lighting that should be considered during future work.

2.8.2 Public Information Centre 2

PIC 2 was held on Thursday, February 23, 2012 at the Kiwanis Seniors' Community Centre in London. The PIC was held as a drop in session from 6:00pm to 9:00pm with a presentation at 7:00pm. Fourteen people were in attendance. Following the presentation, a question period was held. In addition, comment sheets were provided to all attendees. Staff from the City, UTRCA, and Stantec were available to answer questions during the drop in session. Appendix 2.6 contains a copy of the presentation handout and comment sheet given to all attendees, a copy of the attendance sheet, and copies of all comments received.

The purpose of the second PIC was to outline the principles and project drivers established to guide future requirements relating to repairs/replacement of the West London Dyke to the public and to receive any input or comments they might have. Seventeen poster boards were created and put on display so that members of the public would be able to review the material

at their own pace. The first display board provided an introduction to the project as well as the problem opportunity statement. The second display board outlined the West London Dyke Study area which was subdivided into eight rather distinct segments (i.e., Blackfriars, Labatt Park/Forks, etc.), each to be discussed separately during the engineering review of the structure. Photo's illustrating each segment were shown to assist the public in familiarizing themselves with each area. The third display board briefly outlined the historical significance, as well as the dyke's primary purpose of flood protection, as illustrated by photos of previous flood events. The fourth display board summarized past repair and rehabilitation work carried out on the dyke structure, dating back to the early 1980's and concluding with the recent Phase 1 Replacement construction. The fifth display board was a visual representation of the Master Planning process, complete with the project drivers that are to be considered. The sixth and seventh display board provided an explanation of the Environmental Assessment process and key features. Display boards eight through ten outlined the alternatives for each section. Display boards eleven through seventeen provided typical cross sections for various areas along the dyke.

One comment sheet was returned following PIC 2. Appendix 2.6 contains a copy of the presentation handout and comment sheet given to all attendees, a copy of the attendance sheet, and copies of all comments received.

2.8.3 Public Information Centre 3

PIC 3 was held on Thursday, September 10, 2015 at the Kiwanis Seniors' Community Centre in London. The PIC was held as a drop in session from 4:30pm to 6:30pm. Sixteen people were in attendance and comment sheets were provided to all attendees. Staff from the City, UTRCA, and Stantec were available to answer questions during the drop in session. Appendix 2.7 contains a copy of the comment sheet given to all attendees, a copy of the attendance sheet, and copies of all comments received. Six comment sheets were returned following PIC 3.

An abbreviated description of comments received is provided below in Table 2.3. Refer to Appendix 2.7 for all comments collected.

Table 2.3: Summary of Public Comments (PIC 3)

Issue	Comment
Aesthetics	• Sight lines to the river should be considered.
Vegetation	• Residents concerned over the removal of mature trees and trees planted on the embankments (around 2 Carrothers Avenue and east end of Cherry Street).
Access	• Would like access to the river maintained/facilitated for fishing, walking, boating, picking up garbage, etc. (west side at St. Patrick Street). Concern was also expressed for the wildlife that currently inhabits the bank.

The third PIC was held in recognition of the change from Approach #1 to #2, potential changes to the Master Repair Plan findings, the time that had elapsed since the last public meeting, and the City and UTRCA's commitment to ensure sufficient consultation was provided in support of finalizing each identified Schedule B project through Approach #2.

2.9 NOTICES

Four notices were published throughout the planning process for the West London Dyke Master Repair Plan.

2.9.1 Notice of Commencement & PIC 1

The Notice of Commencement was published in the London Free Press in two separate issues on July 5, 2010 and July 12, 2010. As well, the Notice was displayed on the City of London website prior to the meeting. Appendix 2.8 contains of copy of the Notice of Commencement.

2.9.2 Notice of PIC 2

The Notice of PIC 2 was published in the London Free Press in two separate issues on February 11, 2012 and February 18, 2012. As well, the Notice was displayed on the City of London website prior to the meeting. Appendix 2.8 contains a copy of each date of the newspaper notice.

2.9.3 Notice of PIC 3

The Notice of PIC 3 was published in the Londoner on two separate issues on August 27, 2015 and September 3, 2015. As well, the Notice was displayed on the UTRCA's website as well as the City of London's website prior to the meeting. Appendix 2.8 contains a copy of each date of the newspaper notice.

2.9.4 Notice of Completion

The Notice of Completion was published in the Londoner on February 25, 2016 and March 3, 2016. The publishing of this Notice (February 25, 2016) signals the beginning of the 30-day review period.

3.0 GUIDING PRINCIPLES

The West London Dyke has been in place since initial development within the floodplain area first began. Its primary function has been to provide flood protection to areas located behind the dyke. Since upgrading of the dyke following the 1937 flood, it has successfully protected the area against floods approaching the 100 year flood elevation.

In order to review the issues and opportunities for the West London Dyke with regards to repairs and/or replacement over the 20-year planning period, the following principles to guide future requirements were established.

1. The primary purpose of the West London Dyke is to provide flood protection to the area and therefore any future changes or enhancements should be based on a risk management approach to determine:

    a. Level of flood protection to be provided, including freeboard,

    b. Preference for hard (passive) flood protection measures,

    c. Identification of areas where active flood protection measures are required due to existing constraints and process of identifying active areas on a periodic basis for incorporation into the overall flood management strategy,

    d. Need to introduce changing risk due to climate change.

2. Recognizing the presence of the West London Dyke as a significant feature within the core of the downtown area, identify opportunities to incorporate amenity and functional improvements (pathway, recreation, etc.) as identified in the *2007 West London Dyke Flood Control Structure Master Plan* or noted in other City initiatives into future works.

3. Preference should be for long term solutions over interim solutions.

4. Identify opportunities to incorporate environmental considerations where possible to:

    a. Minimize environmental impacts during construction,

    b. Ensure no net loss in environmental quality as much as possible,

    c. Provide for environmental gains as much as possible.

4.0 PROJECT STUDY AREA DESCRIPTION

The subject area generally reaches from the Oxford Street Railway Bridge, south along the west side of the Thames River, to Cavendish Park and is shown in Figure 4.1.

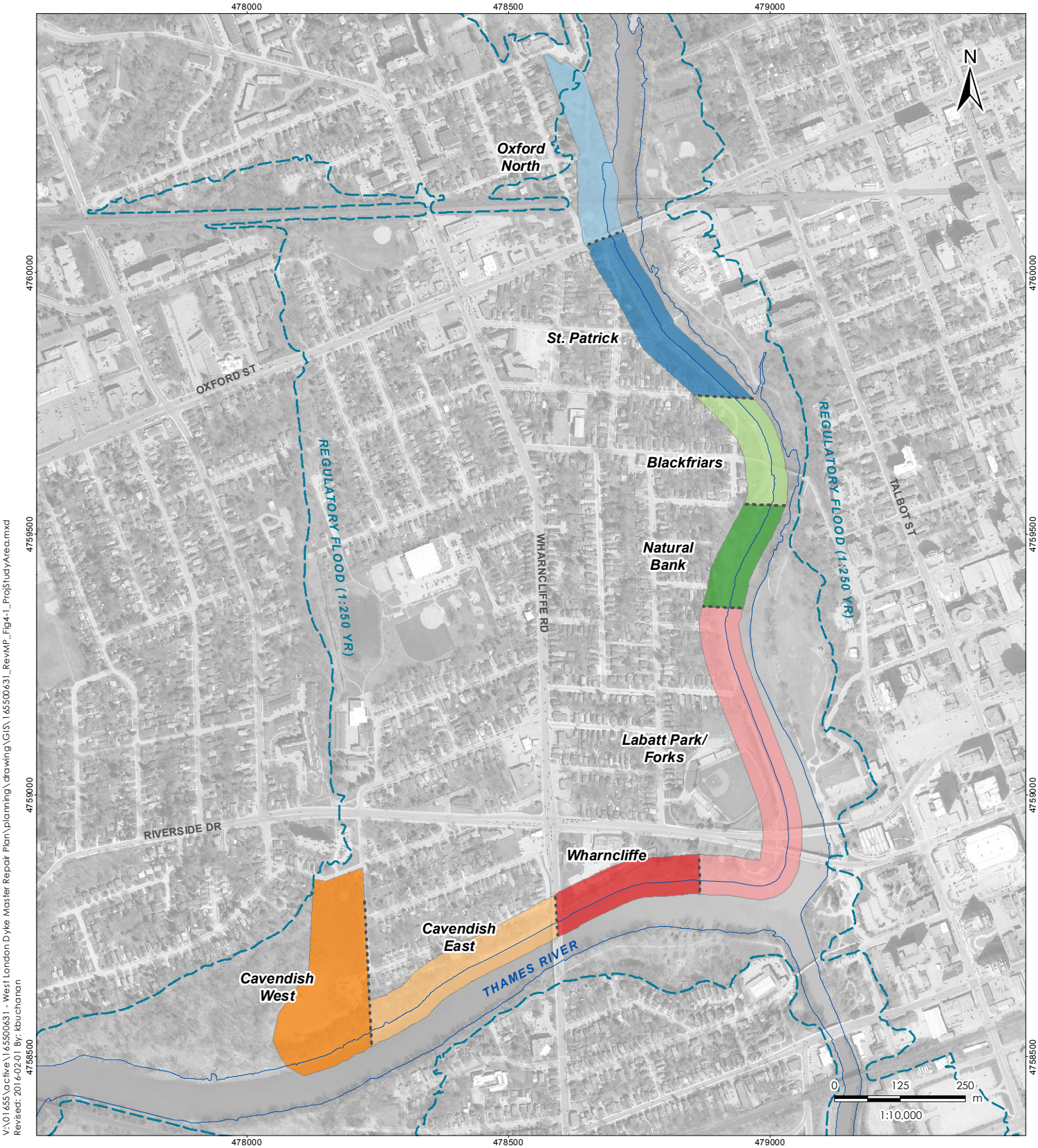
Given the length of the West London Dyke, major differences in the structure, level of flood protection provided, condition and surrounding land use, there is a need through the various components of this Master Repair Plan review to subdivide the dyke into segments. The *West London Dyke Flood Control Structure Master Plan* identified four general sections with regard to planning and environmental issues. These are (from upstream to downstream):

1. Oxford Street West to Blackfriars Bridge;
2. Blackfriars Bridge to Labatt Park;
3. Labatt Park to Wharncliffe Road North; and
4. Wharncliffe Road North to Cavendish Park.

With regard to engineering review, costing, and trigger point determination, this Master Repair Plan considers the following segments (from upstream to downstream) which were derived based on the physical location and/or physical characteristics of the dyke:

1. Oxford North;
2. St. Patrick's (Oxford Street West – Empress Avenue);
3. Blackfriars (Empress Avenue – Cummings Avenue);
4. Natural Bank (Cummings Avenue – Leslie Street);
5. Labatt Park/Forks (Leslie Street – Dundas Street);
6. Wharncliffe (Dundas Street – Wharncliffe Road North);
7. Cavendish East; and
8. Cavendish West.

These segments are shown in Figure 4.1. General descriptions of each section are provided in the following subsections.



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Revised: 2016-02-01 By: kbuchanan

February 2016
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Stantec

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2009-2015.

Client/Project

Upper Thames River Conservation Authority & City of London
West London Dyke Master Repair Plan

Figure No.

4.1

Title

Project Study Area

4.1 OXFORD NORTH

This area is generally bordered by Beaufort Street to the north and terminates to the south limit of the Oxford Street Bridge. The CP Railway Bridge is located within this segment. This section consists of the following:

- Densely vegetated slope with natural toe from the northern extent to approximately 30 m south of the CP Railway Bridge; and
- Concrete revetment and toe from 30 m south of the CP Railway Bridge to the south limit of the Oxford Street Bridge.

Access to the northern (vegetated) segment is provided by a partially paved pathway/lane extending from the end of Beaufort Street to Saunby Street. Overhead hydro lines are present near the end of Beaufort Street and extend across the river. Additional hydro poles and sanitary and storm manholes are located near the top of dyke at Saunby Street.



Figure 4.2: Oxford North (Facing South)

Access to the concrete revetment segment is generally provided via an existing private parking lot off Gunn Street attributed to the adjacent commercial development, or through the parcel of land occupied by the CP Railway Bridge west abutment.

Adjacent land use consists mainly of residential development transitioning to commercial development approaching Oxford Street West. Railing along the top of dyke generally coincides with the limits of the concrete revetment and consists of the original steel pipe style railing. Unpaved pathways also run along this segment.

Along this section, the majority of land is currently owned by the City; however two existing residences located north of the CP Railway Bridge extend to the river's edge and therefore intersect this segment.

At present, areas north of the CP Railway Bridge are generally not considered a portion of the West London Dyke, however adjacent lands are located within the current damage reach in the event of a flood event. Should additional freeboard be required to address enhanced flood protection requirements, extension of the dyke structure within this area may be required. Currently, this area is characterized as moderately sloped from the river's edge for a distance of approximately 40 to 60 m, then increasing in slope over a marginal distance west of the existing pathway. West of the pathway, the slope is generally flat. Drainage is towards the river.

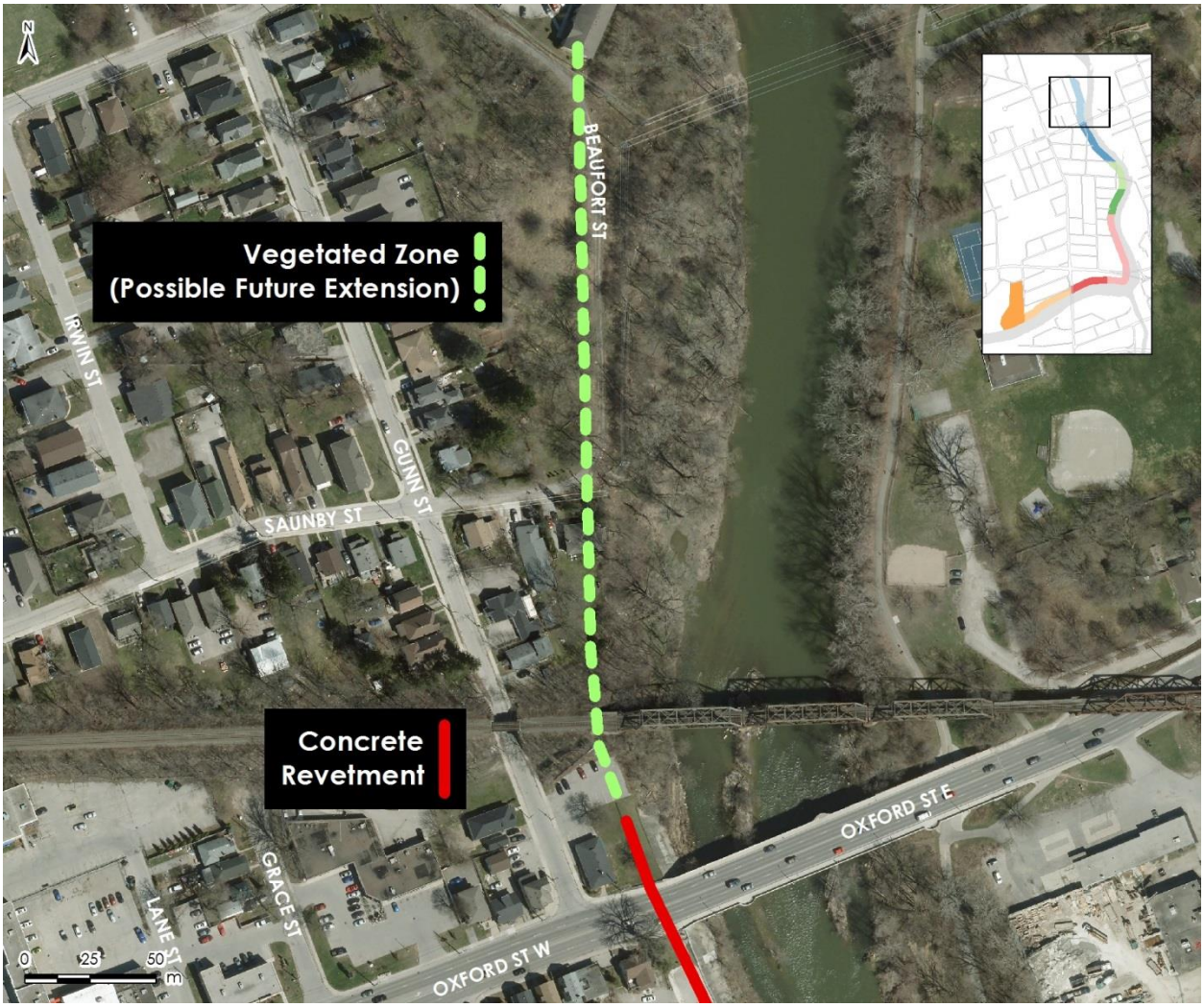


Figure 4.3: Oxford North (Aerial)

4.2 ST. PATRICK (OXFORD – EMPRESS)

Commencing from the south limit of the Oxford Street Bridge, this section consists of concrete revetment panels, supporting concrete toe, and ballast blocks and extends south approximately 500 m terminating at Empress Avenue. Noticeable vegetation is also present along the toe area for the majority of this segment.

The pathway system commences at Oxford Street West and abuts the top of the dyke along the length of this section. At Empress Avenue, an open space area is present with bench seating and connection of the pathway to the City sidewalk. The section of path along this area has quite an open character with more expansive views to both Blackfriars Street, Oxford Street West and the railway bridge, as well as to the east side of the river which is quite heavily treed. The

existing railing along this section consists of galvanized steel. Adjacent land use along this area is classified as residential with a City owned park located at the end of St. Patrick Street.



Figure 4.4: St. Patrick's (Aerial)



Figure 4.5: St. Patrick's (Facing South)



Figure 4.6: St. Patrick's (Facing South)

4.3 BLACKFRIARS (EMPRESS – CUMMINGS)

This section runs from Empress Avenue to Cummings Avenue, bordering Napier Avenue along most of its length and includes the historic Blackfriars Bridge. With the exception of the abutment structure which forms a part of the dyke, the remaining structure generally consists of concrete revetment panels on underlying soil, with toe and supporting ballast blocks. Downstream of the Blackfriars Bridge, the revetment is located within an area of accretion, resulting in only partial visibility of the concrete panels.



Figure 4.7: Blackfriars (North of Bridge, Facing South)

An open space area is present along a significant portion of the dyke, primarily north of the Blackfriars Bridge. The pathway is particularly narrow along portions of this area. Access to the pedestrian walkway on the Blackfriars Bridge off the pathway system is provided by means of a ramp on the north side of the bridge.



Figure 4.8: Blackfriars (Aerial)

4.4 NATURAL BANK (CUMMINGS – LESLIE)

The area between the Blackfriars Bridge and Leslie Street consists of concrete revetment panels that are only partly visible due to the presence of a heavily vegetated area of accretion along the base of the wall. The area behind the existing pathway and adjacent residential land use varies from marginal at approximately 7 m to 9 m between Carrothers Avenue to Leslie Street, with upwards of 20 m further north in the vicinity of Cummings Avenue adjacent to City parkland.



Figure 4.9: Natural Bank (Aerial)



Figure 4.10: Natural Bank (South of Bridge, Facing South)



Figure 4.11: Cast Iron Streetlight Base (Facing South)

Characteristics along this section of the pathway range from fairly open views that highlight Blackfriars Bridge as a focal point, to relatively narrow sections shaded by trees and shrubbery on both sides, creating a more intimate experience. A small, relatively hidden, informal access path to the river within the area of accretion is situated approximately one block south of Blackfriars Bridge. In general, this section of pathway and dyke represents a softer, more natural edge along the river due to the mix of vegetation along both the west side of the path and the base of the dyke.

The path in this section is slightly narrower than the City's standard width of 3 m, and access via stairs or ramps exist at all abutting streets. Sections of the railing along the pathway are in relatively poor condition and do not meet current standards. They are interspersed by old cast iron streetlight bases, which have an attractive design and historical pedigree, but are generally in poor condition (rusting, chipped paint, broken fronts) and tend to be used for garbage.



Figure 4.12: Natural Bank (Facing South)

A small playground is located at the bend on Cummings Avenue.

4.5 LABATT PARK / FORKS

This section extends from Leslie Street on the north branch of the Thames River to west of the confluence of the Forks terminating south of the Dundas Street Bridge.

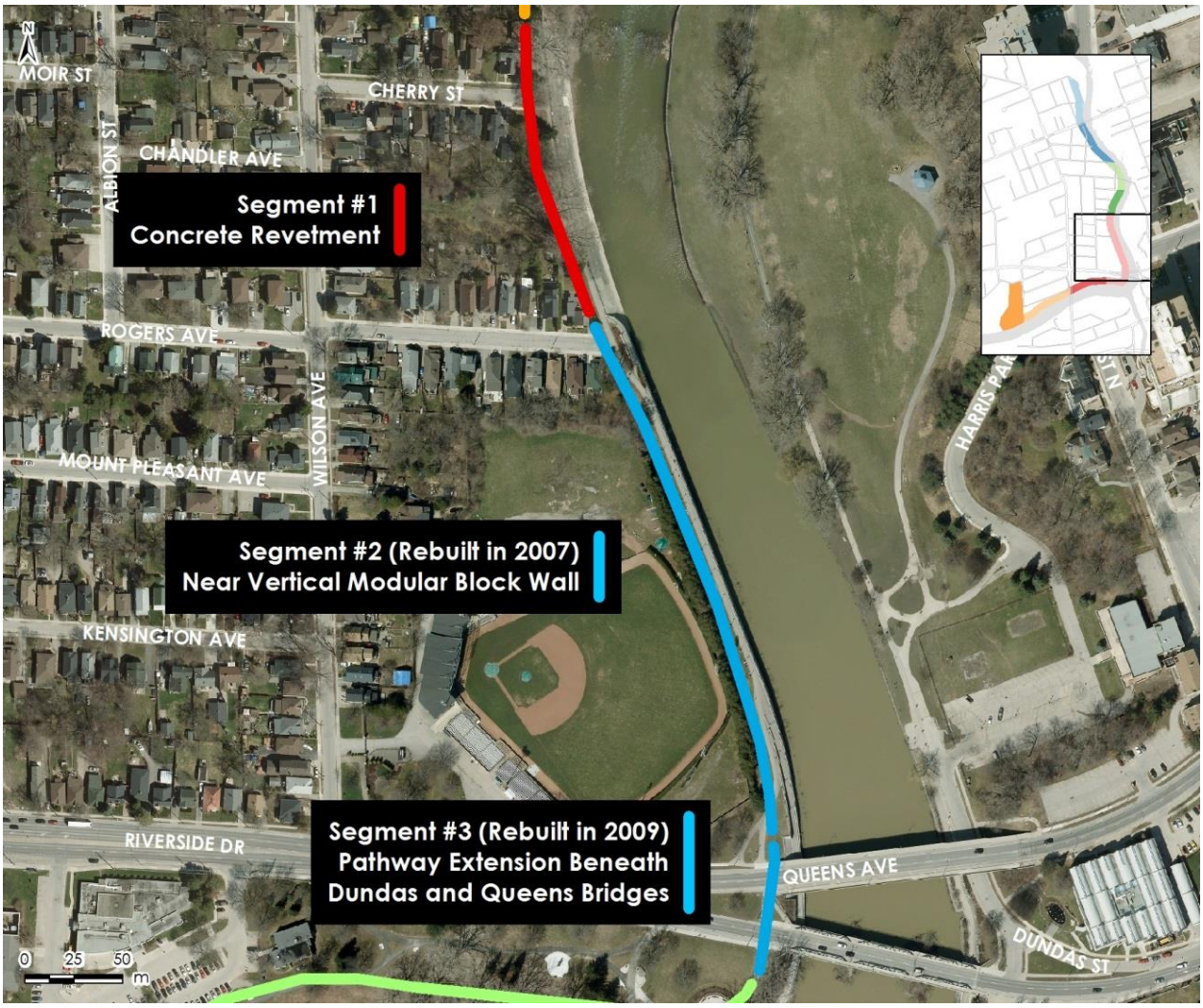


Figure 4.13: Labatt Park / Forks (Aerial)

Three distinct structures are located along this section:

- Existing concrete revetment consisting of panels, toe, and ballast block from Leslie Street to Rogers Avenue;
- Precast modular block wall with geogrid support from Rogers Avenue to the Queens Avenue Bridge; and
- Pedestrian pathway with armour stone, concrete toe and pour in place stamped panels beneath the Queens Avenue and Dundas Street Bridges.

From Leslie Street to Rogers Avenue along the north branch of the Thames River, the concrete revetment transitions from partially buried (within the downstream limits of the area of accretion) to full panel. Adjacent land use is exclusively residential and borders this segment of dyke at approximately 7 m to 12 m from top of dyke structure to property line. This section of dyke provides views into Harris Park and conversely is very visible from Harris Park, and therefore events occurring in the park tend to draw crowds of onlookers to this section of pathway. A number of mature cottonwood trees are situated along the west side of the pathway along this segment, shading both the pathway and residences. The path in this section was also observed to be slightly narrower than the City's standard width of 3 m. Railing along this section north of Rogers Avenue is similar to the Natural Bank area and consists of the original steel railing with interspersed old cast iron streetlight bases which were observed to be in poor condition.



Figure 4.14: Phase 1 Structure (Pre-Cast Modular, Facing North)



Figure 4.15: Pedestrian Pathway (Facing South)

At Rogers Avenue, the dyke structure transitions to a pre-cast modular near vertical block wall which extends to the vicinity of the Queens Avenue Bridge. A seating and lookout area is located at the transition of the newer and original dyke structure at Rogers Avenue, with ramps leading to the abutting street. Residential properties are located adjacent to the dyke along the north end, with Labatt Park abutting the dyke length to the Queens Avenue Bridge. Labatt Park is North America's oldest operating baseball park and is a historical feature located along this segment of dyke. The baseball park is obscured from the dyke and pathway system by a cedar hedge except for one small gap in the hedge.

The pathway along this section of dyke meets the City standard width of 3 m. Further south, the wall transitions into a two tiered structure providing a pathway from the top of dyke to the underside of the adjacent bridges.

Further south, the West London Dyke pathway consists of a 3 m wide asphalt path providing passage beneath the Dundas Street and Queens Avenue Bridges. This pathway consists of a modular block wall supported by the original concrete toe. South of the pathway, the dyke consists of vegetated berms with gabion baskets to termination of this section in the vicinity of the Blackburn Memorial Fountain.

4.6 WHARNCLIFFE (WHARNCLIFFE – DUNDAS)

The hard structure gives way to a natural edge between the Dundas Street and Wharncliffe Road North bridges consisting of light to dense vegetation along the dyke face complete with gabion basket toe and open park space.



Figure 4.16: Blackburn Memorial Fountain (Facing West)



Figure 4.17: Wharncliffe Berm (Near Kiwanis Seniors' Community Centre, Facing West)

The Blackburn Memorial Fountain, the fourth phase of the Forks of the Thames development, is located behind the dyke structure along this section which also borders the Kiwanis Seniors' Community Centre and parking lot area. The West London Dyke pathway is present along the entire section. An additional pathway connection to the Wharncliffe Road Bridge is present at grade, adjacent to the parking lot at the Kiwanis Seniors' Community Centre.

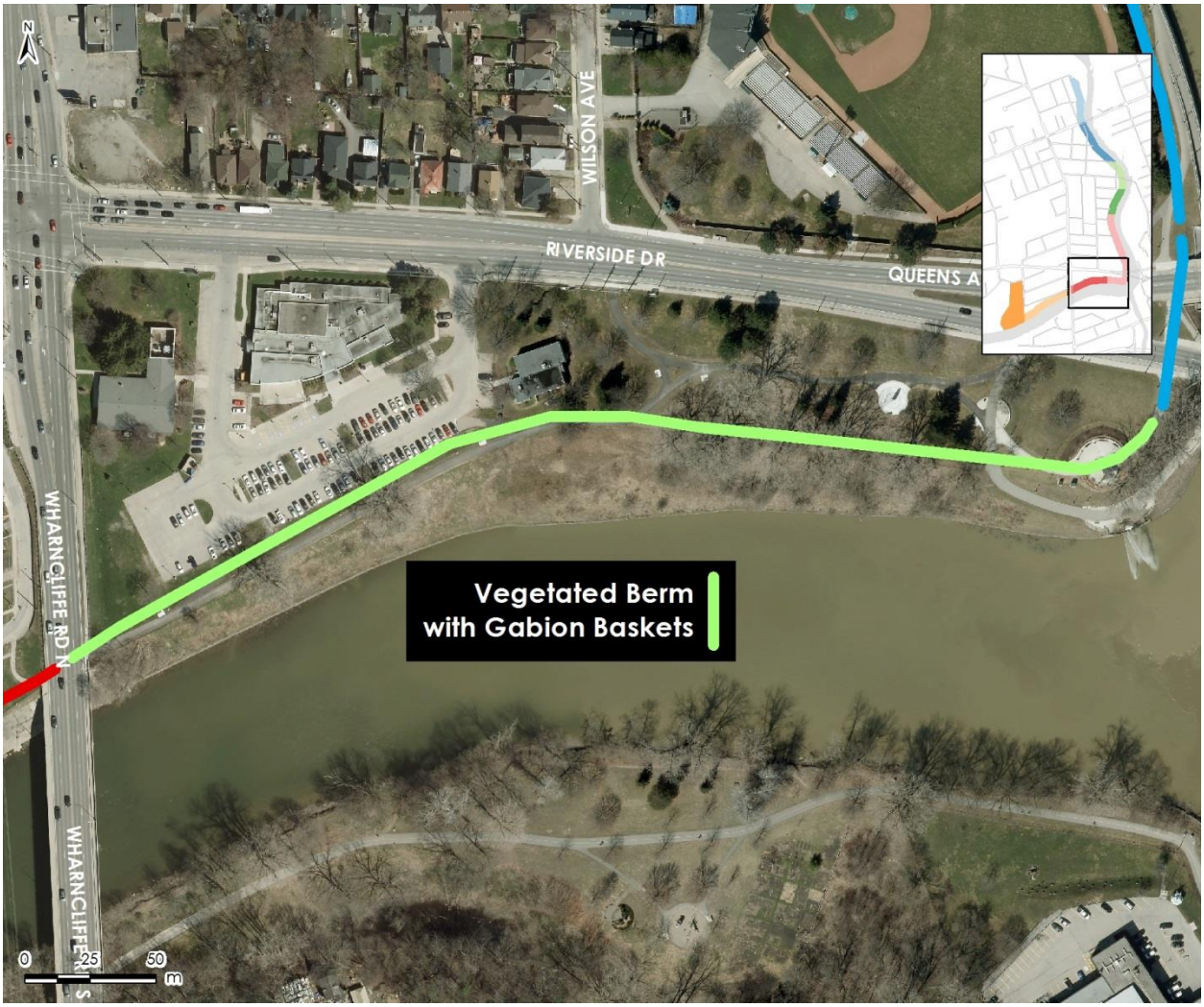


Figure 4.18: Wharncliffe (Aerial)

4.7 CAVENDISH EAST

This section extends from the east limit of the Wharncliffe Road North Bridge to the City Works yard located on Cavendish Crescent. In general, the dyke consists of concrete revetment panels with supported toe structure from the underside of the Wharncliffe Road North Bridge extending approximately 180 m west, and then becoming an earthen berm that has become overgrown with trees. A galvanized steel railing extends along the length of the concrete revetment only.



Figure 4.19: Cavendish East (Facing West)

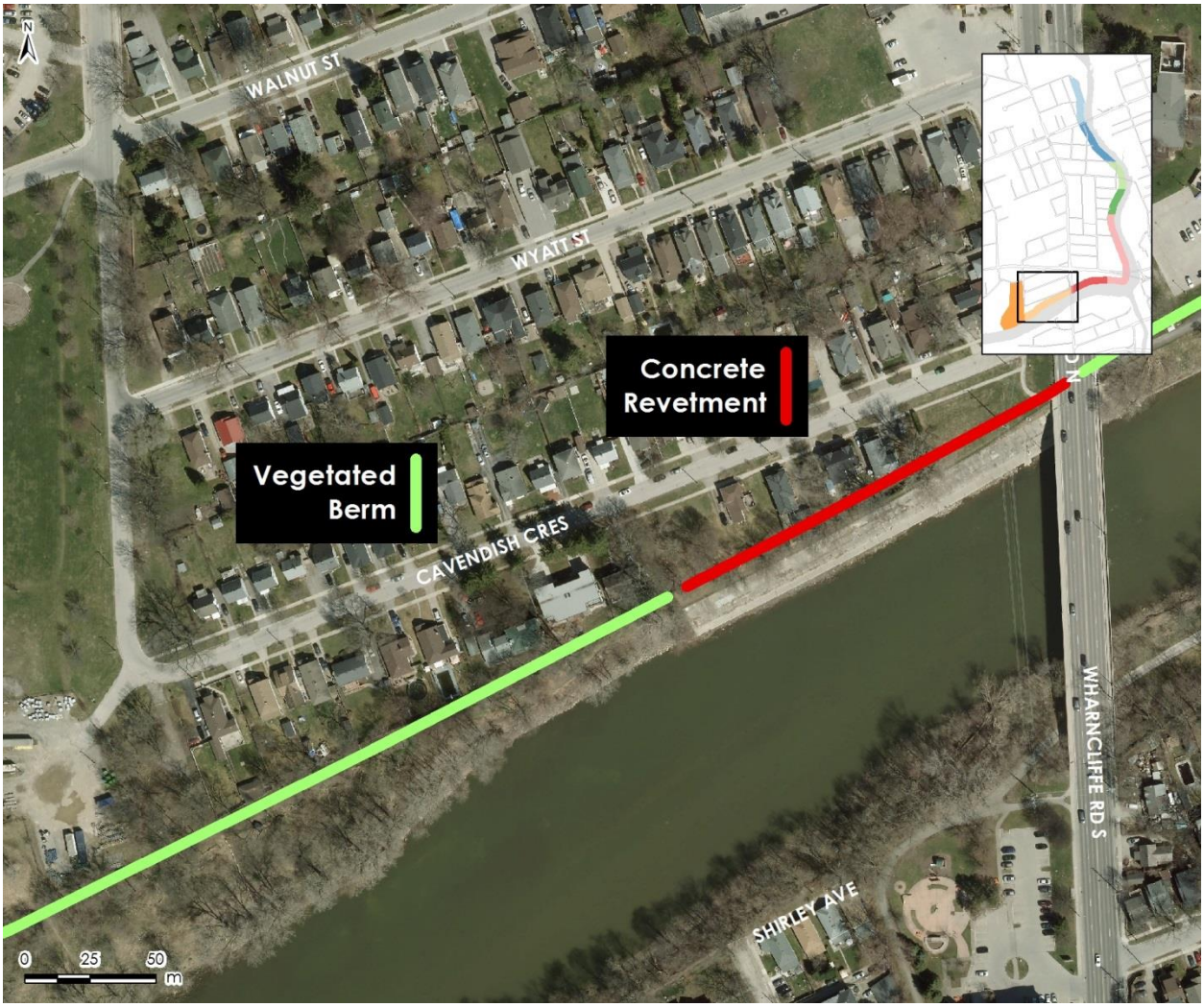


Figure 4.20: Cavendish East (Aerial)

Adjacent land use along this section of dyke is residential. The pathway along the top of dyke is currently unpaved providing a more natural character to this section of dyke. A crossing at the Wharncliffe Road North Bridge is present and is at grade with the top of dyke.

4.8 CAVENDISH WEST

The structure in this segment extends westerly for approximately 220 m along the river and consists of a heavily vegetated earthen dyke. From this point, the earthen dyke structure extends as a heavily vegetated berm continuing northeast towards Cavendish Park. The Cavendish Nature Trail is located within this segment, as is a park



Figure 4.21: Cavendish West

landscape berm, sewer cover berm, and storm sewer outlet to the Thames River. The former Douglas Avenue municipal sewage pumping station is also located in this vicinity.

The general topography of the area is south to southwest. Land adjacent to the eastern extent of the vegetated berm, including the City of London's Cavendish Works Yard and Cavendish Park, is significantly higher in elevation in comparison to lands west of the berm. Noticeable increases in elevation are also evident with the existing residential development bordering the general berm limits, including the Walnut Street apartment block to the northeast.



Figure 4.22: Walnut Street Apartments



Figure 4.23: Douglas Avenue Pumping Station

As with the Oxford North segment, should additional flood protection be required, extension of the dyke structure may be required beyond its current limit.

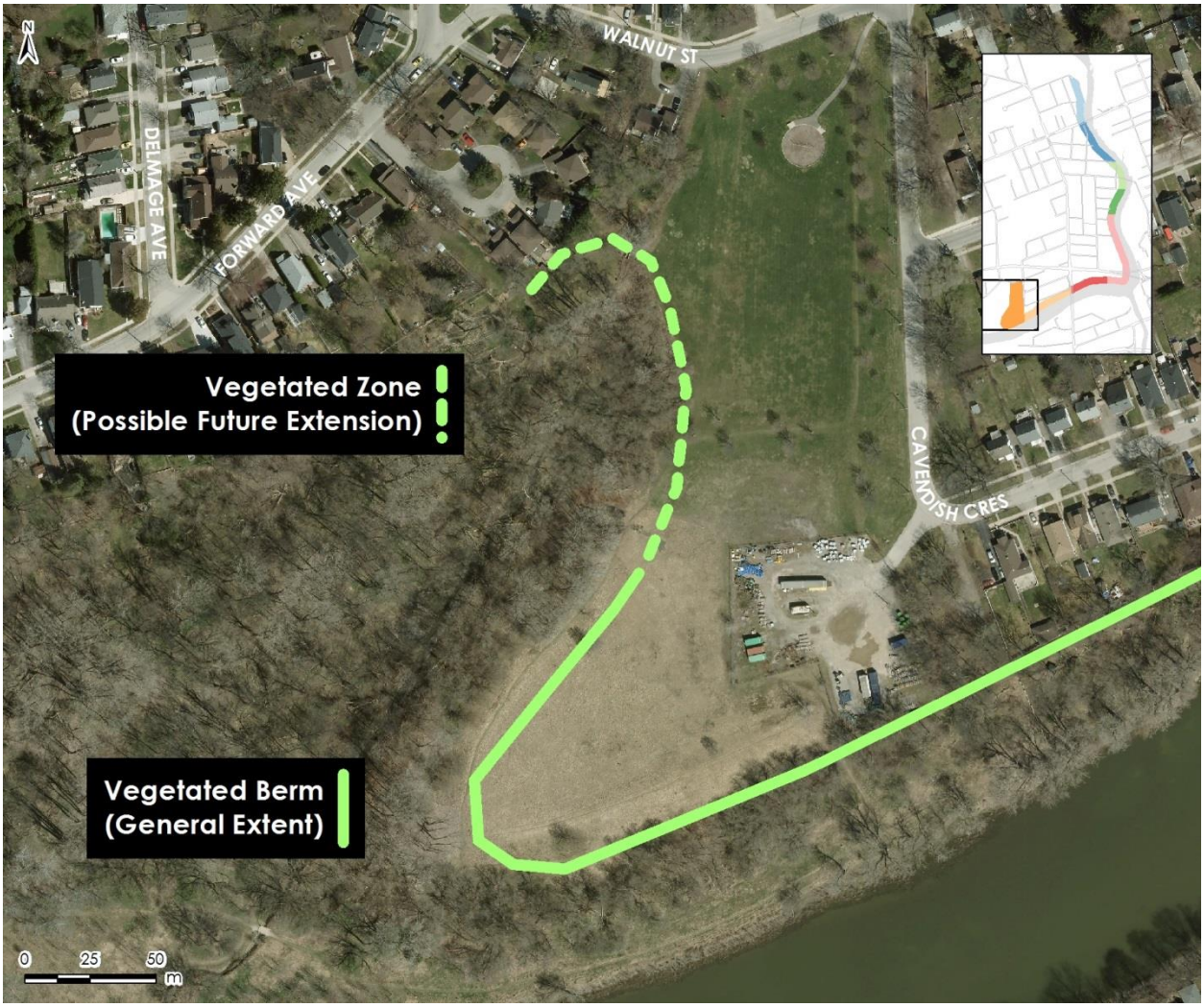


Figure 4.24: Cavendish West (Aerial)

4.9 INTERPRETATION OF SEGMENTS

The assessment of the dyke structure on a segment by segment basis, as defined by Sections 4.1 to 4.8, has been undertaken for discussion purposes only. These segments are not intended to represent exact limits for future construction projects. Future works (involving repair or replacement) may involve either work within a segment, or overlapping of portions of segments. Further information on proposed staging of work is provided in Section 9 of this report.

4.10 CURRENT FLOOD PROTECTION

Dyke elevations were determined based on integrating previous survey work completed as part of the Phase 1 and Phase 2 work in 2007 and 2009 by Stantec, with additional survey work

completed by Callon Dietz for the remaining areas. Figure 4.25 provides a general view of the updated dyke profile in comparison to the revised flood elevations provided by the UTRCA.

Refer to Appendix 4.1 for plan and profile views of the dyke which also depicts top and bottom of dyke elevations, river elevations (where available), and back of dyke elevations.

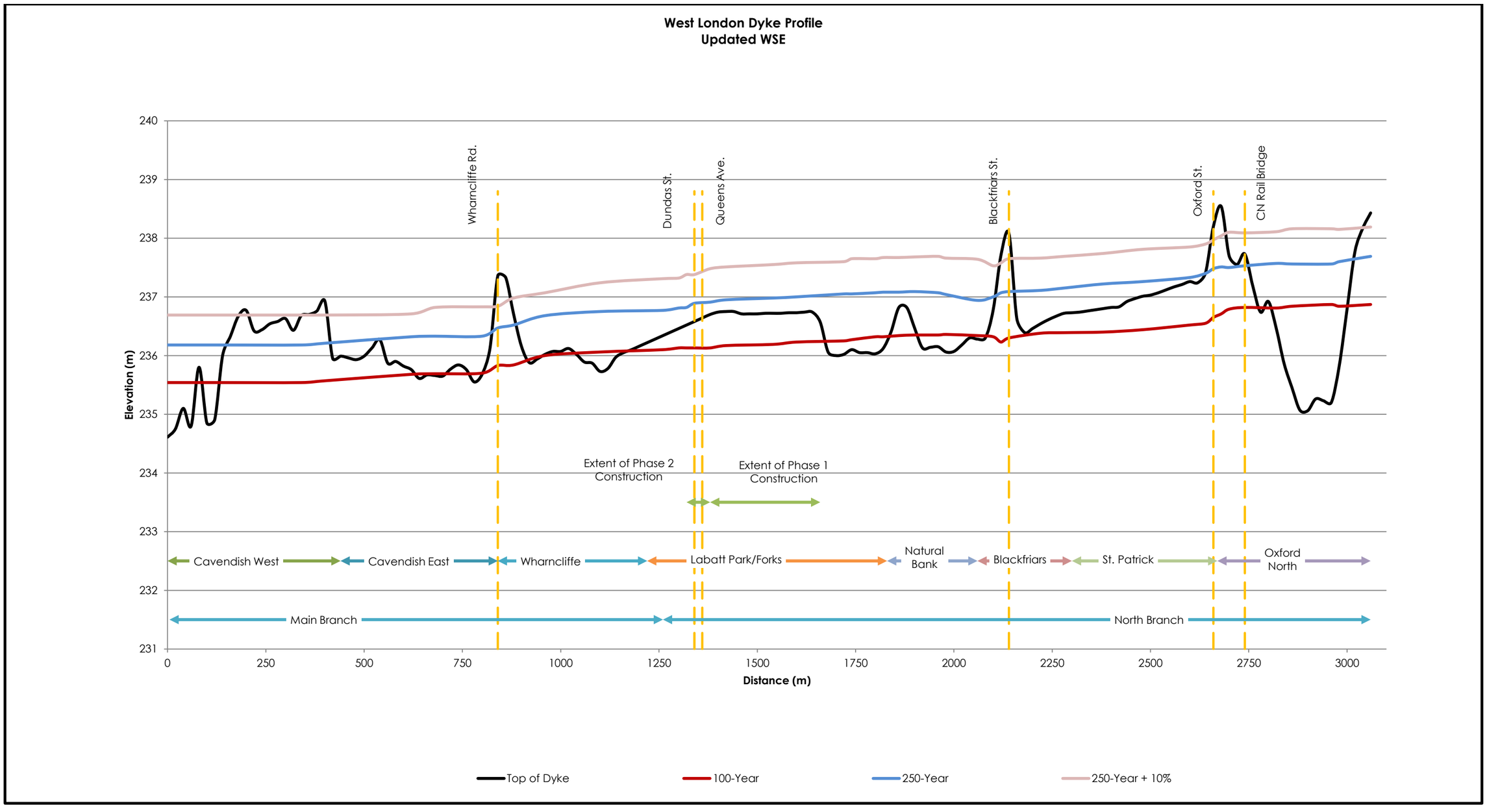


Figure 4.25: West London Dyke Profile

5.0 PROJECT DRIVERS AND RISK MANAGEMENT

5.1 PROJECT DRIVERS

Project drivers, as noted within this Master Repair Plan, are defined as potential reasons to implement or otherwise initiate work. For the West London Dyke, a project driver may result in the need for additional review, maintenance, enhancement, rehabilitation, or replacement. As noted in Section 1.4 of this report, a "trigger point" to implement a project is reached when the client considers that the need for the project (i.e., project drivers) is greater than the cost to implement it.

In order to properly define the long-term planning requirements for the West London Dyke, it is critical that appropriate project drivers are defined. As part of the Master Repair Plan planning process, the Project Team developed a conceptual list of project drivers based on the guiding principles for presentation to interested stakeholders and for subsequent evaluation during selection of the preferred alternative(s). At that time, the following project drivers were identified:

- Flood Risk Reduction;
- Public Safety;
- Functional Improvements;
- Environmental Considerations;
- Funding Opportunities; and
- Other (to be determined through the Class EA process).

The following sections provide a description of the project drivers that were carried forward for consideration within the Master Repair Plan.

5.1.1 Project Driver 1 – Flood Risk Reduction

As previously noted, the primary function of the dyke is to:

- Reduce risk of Thames River flooding to existing development, transportation routes and infrastructure, and utilities by providing separation of protected areas from the flood event;
- Support the viability and economy of the community protected by the dyke (i.e., through Special Policy Area designation, which allows for relaxation of flood plain policies and allows for limited development and redevelopment to continue);

- Address public policy and legislation (i.e., flood plain policies, emergency management, etc.); and

- Compliment watershed flood protection initiatives.

Accordingly, future projects may be initiated due to the opportunity or requirement to enhance flood protection.

Potential flood risk reduction measures may consist of the following:

- **Passive Measures** – Generally consisting of structural measures (earthen dyke or flood walls) that, by elevation, separate protected areas from the threat of flood and do not require any intervention to ensure effective flood threat reduction; and/or

- **Active Measures** – Measures that must be implemented at times of a flood threat. Examples include barriers added at low roadway crossings or bridges, pumping systems, sandbags on top of passive measures, etc.

The decision on passive versus active measures will need to be assessed by the City and UTRCA based on a review of the overall flood protection planning strategy and specific constraints along the various areas of the dyke including bridge abutments, and proximity to adjacent land uses.

5.1.2 Project Driver 2 – Public Safety

A significant portion of the existing dyke structure is over 80 years old and, is therefore susceptible to significant deterioration or damage that may result in a public safety hazard (i.e., railing failures, etc.).

Amenities such as pathway width and lighting may also impact public safety if not deemed to be appropriate. This includes both "normal" use and as part of emergency management where access to the dyke as an area of potential refuge and escape from flooding is desired. The availability of lighting and access is also important when considering worker safety from the perspective of general maintenance requirements and flood response duties.

Through the public consultation process, preference for river access was noted. While river access may enhance concerns relating to public safety and would need to be reviewed as part of the City's overall risk management strategy, access to areas of the river (i.e., key points) to permit water rescue should be considered.

As with flood protection measures, future projects may be initiated where a public safety hazard, such as localized failure, is known to exist. Should a future project be initiated, regardless of the project drivers, additional education and physical mechanisms including signage to provide warning and/or education on the safety of the dyke and proximity to the river should be considered for implementation to enhance overall public safety.

5.1.3 Project Driver 3 – Functional Improvements

In 2009, a pathway extension beneath the Queens Avenue and Dundas Street Bridges was constructed. This project consisted of additional dyke improvements; however the general purpose of the work was to implement the City Parks Department planning initiatives.

In accordance with the *Thames Valley Corridor Study*, *Bicycle Master Plan*, and previous *2007 Master Plan*, other amenity and functional improvements have been identified for areas along the dyke. These objectives may trigger future works either independently or in conjunction with other project drivers such as public safety (refer to previous subsection for additional information as it may relate to amenities) or flood protection enhancement.

5.1.4 Project Driver 4 – Environmental Considerations

A *Vegetation Management Plan* was completed by Dougan & Associates in 2006 in order to identify and prioritize vegetation that may currently pose a threat to the structural integrity of the dyke, and to provide a management plan for future maintenance of vegetation. The *2007 Master Plan* also identified potential implementation of environmental features along and within the areas surrounding the dyke, including plantings and/or grass cover to provide erosion protection.

Consideration for environmental improvements should also take into account the potential impact on existing habitat or introduction of habitat that could result in damage to the dyke structure, including potential for rodent burrowing under cover, etc.

As with amenity and functional improvements, these objectives may trigger future works either independently or in conjunction with other project drivers such as public safety or flood protection enhancement.

5.1.5 Project Driver 5 – Funding Opportunities

This project driver allows for the implementation of a project that may be required to address issues/concerns noted in Project Drivers 1 to 5 ahead of schedule due to the availability of funding. Examples include cost sharing opportunities between City departments and/or with the UTRCA (i.e., WECI), and provincial/municipal grants or programs (i.e., stimulus programs).

5.1.6 Project Driver 6 – Other

This generic project driver was identified as part of PIC 1 and was intended to allow for the identification of any additional project drivers that may be determined/established as part of the Class EA process via project team and/or stakeholder input. As part of the planning process, the following additional or "other" project driver was determined:

- Hydrologic Considerations - While connected to Project Driver 1 (Flood Risk Reduction), this project driver identifies potential hydraulic or hydrology changes that may warrant the need for future improvements.

5.2 RISK MANAGEMENT REVIEW

Several items are noted that will require further review from a risk management perspective during the preliminary and detailed design stage for future works or in relation to repairs to the current dyke structure. Many of these items were noted previously under potential project drivers. These include:

- Accessibility;
- Risk to natural environment;
- Spacing and intensity of lighting; and
- Railing.

The issue of accessibility relates to both access to the dyke and access to the river. Currently there are several areas along the dyke that rely on access by means of stairs. Beyond the general accessibility issues for some users of the dyke (cyclists, people with specific disabilities, etc.), there is also a risk of injury associated with the use of stairs, and ongoing maintenance concerns. Future design or rehabilitation should look to eliminate the use of stairs through proper walkway transitioning. Where physical room may not be available to allow for a proper transition, the use of stairs or steeper slopes should be reviewed from a risk management perspective prior to implementation.

With regards to accessibility to the river, this does not necessarily mean direct access to the river along the west and north banks, but could mean transitions in the dyke structure to areas approaching the river, in similar fashion to the recent pathway project. However, the social benefits will need to be reviewed in relation to risk management (i.e., access to areas during high water levels) and overall maintenance and operational concerns as these lower areas will be exposed to more frequent flooding.

Risk to the natural environment will need to be assessed during each phase of repair or replacement as it is possible that existing vegetation will be disturbed to permit construction. Furthermore, depending upon the area of work, in-river activities may be required and, therefore, associated risks to the natural environment including potential species at risk will need to be determined at the preliminary design stage and appropriate mitigation measures determined.

The issue of lighting was a key item noted during the public consultation process, primarily in relation to concerns regarding "light pollution". Subsequent replacement or repair phases will

need to consider the appropriate level of lighting to be provided in more detail based on an assessment of the following:

- Avoidance of "black out" areas attributed to inadequate lighting intensity and/or spacing;
- Minimizing impact to adjacent homeowners by means of utilizing directional lighting/screens, etc.;
- Current City standards with respect to the use of public spaces at dusk;
- Minimizing adverse effects to the natural environment (habitat);
- Minimizing "tunnel" effect caused by using intense lighting that may impair view of peripheral areas; and
- Appropriate lighting in the event of a flood event.

There is a combination of steel, galvanized steel and aluminum handrail along the majority of concrete revetment. Previous inspection investigations revealed that a portion of the existing railing is in poor condition and requires repair. Concern in relation to the condition of the railing was also noted during the public consultation process. In addition, with exception of the section of railing installed as part of the Phase 1 Replacement Structure project, the remaining railing does not meet current Building Code requirements. As the incline of the dyke is quite steep in many sections, the importance of a functional and protective handrail is paramount towards the safety of the public. The City and UTRCA should review the current condition of the railing and consult with their risk management policies to confirm an appropriate course of action, particularly for areas where future work is not anticipated to proceed for some time.

6.0 ASSESSMENT OF NATURAL-SOCIAL-ECONOMIC ENVIRONMENT

In order to assess the alternative solutions proposed in this Master Repair Plan, general evaluation criteria was established based on a review of the key components of "environment" as defined in Part 1 of the Environmental Assessment Act.

The following provides a general description of each component in reference to the West London Dyke structure and surrounding area:

- **Natural Environment**: Element addressing the protection of the natural and physical elements of the environment (i.e., air, water, land, etc.). This includes both natural heritage and environmentally sensitive areas.

- **Social/Cultural Environment**: Component that addresses the potential effects on the public, including adjacent landowners (residents, businesses), community groups, social elements, historical/archaeological and heritage factors, and development objectives of the City.

- **Economic**: Component that addresses capital and maintenance costs, potential flood damage impacts, etc.

- **Legal**: Factor that considers potential land requirements related to each proposed alternative.

- **Technical**: Component that addresses the technical requirements and suitability of each alternative.

General information relating to the existing environment conditions are presented in the sections that follow. An evaluation of key alternatives with respect to impact to the "environment" is provided in the summary table in Section 9.

6.1 NATURAL ENVIRONMENT

The purpose of the natural environment section is to characterize the significance and sensitivity of the natural features in the study area, identify potential impacts, and recommend appropriate measures in order to avoid or minimize potential negative impacts on the surrounding environment.

Information was collected through a review of published data as it relates to the proposed undertaking. Environmental sensitivities, additional fieldwork recommendations, and associated mitigation measures are presented to protect the identified environmental features and their functions.

6.1.1 Study Area

The study area is defined as the geographical area that could potentially be affected by any of the alternatives presented and was determined on the basis of the expected range of natural environmental effects associated with the Master Repair Plan for the existing West London Dyke.

6.1.2 Natural Environment Policy Considerations

Federal, provincial, and municipal policies provide the framework for the identification of significant natural features. These policies also provide the context in which approvals will be granted for works identified within the Master Repair Plan. Relevant policy documents are outlined below.

6.1.2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) was issued under Section 3 of the *Planning Act*, and came into effect on May 22, 1996. It was revised in 2005 and most recently in April 2014. Decisions made by Planning Authorities shall be consistent with the policy statements issued under the *Planning Act*, such as the PPS, which includes policies on development and land use patterns, resources and public health and safety. Section 2.1 of the PPS deals with Natural Heritage and requires natural heritage systems to be identified in various EcoRegions. The Project Study Area is located in EcoRegion 7E. Natural heritage policies of the PPS that are applicable to EcoRegion 7E are presented below.

According to Section 2.1.4 of the PPS, development and site alteration shall not be permitted in the following features in EcoRegion 7E:

- Significant wetlands; or,
- Significant coastal wetlands.

According to Section 2.1.5 of the PPS, development and site alteration shall not be permitted in the following features, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant areas of natural and scientific interest; or
- Coastal wetlands that are not subject to policy 2.1.4(b).

Development and site alteration shall not be permitted in the following features, except in accordance with provincial and federal requirements:

- Significant portions of the habitat of endangered or threatened species; or
- Fish habitat.

The PPS also includes policies that highlight the importance of natural heritage systems. The diversity and connectivity of the natural features in an area should be maintained and enhanced, where possible, recognizing linkages between and among natural heritage, surface water and groundwater features.

Policy 2.2 directs planning authorities to protect, improve and restore the quality and quantity of water through a number of means, including but not limited to, the following:

- Identifying surface water and groundwater features, natural heritage features and hydrologic functions necessary for the ecological and hydrological integrity of the watershed;
- Implementing necessary restrictions on development and site alteration to protect, improve or restore sensitive water features and their hydrologic functions;
- Maintaining linkages and related functions among surface water and groundwater features, hydrologic functions and natural heritage features and functions;
- Promoting the sustainable use of water resources through conservation and sustaining water quality; and
- Ensuring stormwater management practices minimize volumes, minimize contaminant loads and maintain or increase the extent of vegetative and pervious features.

In accordance with PPS Policy 3.1, development is generally directed to areas outside of hazardous lands adjacent to rivers and streams that are impacted by flooding and erosion. No development is permitted with the regional floodway and should be adequately set back from the steep slopes to avoid potential hazards.

6.1.2.2 City of London Official Plan

The City of London OP (2006a) contains City Council's objectives and policies to guide the short-term and long-term physical development of all lands within the boundary of the municipality. The general environmental goals of the Official Plan include, but are not limited to, the following:

- Promote a healthy natural environment in the City of London;

- Maintain a healthy Natural Heritage System for the benefit of present and future generations through the implementation of an ecosystem approach to environmental planning;

- Reduce the risk to public health and safety from natural and human generated hazards, such as areas susceptible to flooding, erosion and slope instability; and

- Conserve natural resources for the benefit of present and future generations of Londoners.

The Environmental Policies (Section 15) of the Official Plan recognize lands with significant natural features and ecological functions, as well as lands that are subject to natural hazards (flooding, erosion hazards), and establishes requirements for their protection and rehabilitation. The environmental features are identified on Schedule A (Land Use) as "Open Space" and Schedule B (Natural Heritage Features).

Natural heritage features identified as Open Space areas include (a) Provincially Significant Wetlands; (b) Environmentally Significant Areas; (c) Significant River, Stream, and Ravine Corridors; (d) Life Science Areas of Natural and Scientific Interest as identified by the Province; (e) Habitat of Endangered and Threatened Species; and (f) Areas of Significant Woodlands, Significant Wildlife Habitat, Habitat of Vulnerable Species, Locally Significant Wetland and re-naturalization corridors and linkages. The intent is to protect these areas for their natural features and ecological functions and to encourage their rehabilitation where warranted (Official Plan Section 15.3).

Buffers may be required around, or adjacent to, such areas and other components of the Natural Heritage System. The location, width, composition and use of ecological buffers necessary to protect natural heritage areas from the impacts of development on adjacent lands are to be specified through an EIS (Official Plan Section 15.3.6). Other protection measures, such as site planning, establishment of parklands, and construction setbacks, may also be required to assist in minimizing the impact of development.

These environmental policies are to be addressed within an EIS, which is required where development or site alteration is proposed within or adjacent to components of the Natural Heritage System as defined in the Official Plan or Subwatershed Planning Studies. An EIS is required prior to the approval of a development plan in order to demonstrate that the proposed development will not negatively impact the natural features and ecological functions.

6.1.2.3 UTRCA Environmental Planning Policy Manual

The *Upper Thames River Conservation Authority Environmental Planning Policy Manual* (UTRCA, 2006) includes policies for the protection of natural hazards and natural heritage features within their jurisdiction (watershed), which apply to both municipal plan review and the

implementation of the UTRCA's Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 157/06).

UTRCA's policies are intended to protect life and property from flood and erosion, ensure a sustainable water supply, protect and enhance water quality, preserve and manage natural areas and provide outdoor recreation opportunities. The purpose of this manual is to provide policies to guide development and site alteration while protecting, preserving and enhancing the natural environment.

These policies are similar to those included in the PPS and apply to the protection and preservation of natural hazards, such as floodplains and steep or eroding slopes, and natural heritage resources, such as wetlands, woodlands, wildlife habitat, threatened and endangered species, fish habitat and adjacent land areas. The UTRCA's policies also include the protection of all wetlands from development and site alteration, but does allow for some restricted uses (i.e., municipal infrastructure, conservation uses, hazard control structures) provided they are supported by an EIS.

6.1.2.4 Endangered Species Act

The *Endangered Species Act* (ESA) protects individuals and habitat of wildlife species designated as endangered, threatened or extirpated in Ontario. Provincial species at risk are identified and designated by the Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is a committee of wildlife experts and scientists, including those who provide Aboriginal Traditional Knowledge, that classify species according to their degree of risk based on the best available scientific information, community knowledge and aboriginal traditional knowledge.

The ESA protects species listed by COSSARO as endangered, threatened or extirpated by prohibiting anyone from killing, harming, harassing or possessing protected species, as well as prohibiting any damage or destruction to their habitat. All protected species are provided with general habitat protection under the ESA. General habitat protection extends to areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. For some species protected habit may be identified by regulation. Some species have had detailed habitat regulations passed that go beyond the general habitat protection to define specifically the extent and character of protected habitats. Regulated habitat provides a more precise definition of a species' habitat and may describe features, geographic boundaries or other unique characteristics. Once finalized, protection of regulated habitat replaces the general habitat protection for that species.

Any activity that may impact a protected species or its habitat requires the prior issuance of a Permit from the Ontario Ministry of Natural Resources and Forestry (MNRF), unless the activity or species is subject to any of the special provisions in Ontario Regulation 242/08. Permits may only be issued under certain circumstances, which are limited to activities required to protect human health and safety, activities that will assist in the protection or recovery of the species, activities

that will result in an overall benefit to the species or activities that may provide significant social or economic benefit without jeopardizing the survival or recovery of the species in Ontario.

6.1.3 Data Collection

6.1.3.1 Background Data Collection

A variety of background documents and sources of information were consulted during the preparation of this report, including the following:

- City of London Official Plan (2006) and Zoning By-Law (2013);
- Government of Canada. Species at Risk Public Registry (2012);
- Ministry of Natural Resources and Forestry (MNRF). 2012-2015. Species at Risk Ontario;
- Physiography of Southern Ontario (Chapman and Putnam, 1984);
- Aerial Photographs (City of London, 2012);
- 2007 and 2012 Upper Thames River Watershed Report Cards;
- Bank Stabilization Study - Forks of the Thames, London (Delcan, 1983);
- Bank Stabilization Study – Phase II – Forks of the Thames, London (Delcan, 1984);
- Natural Heritage Information Centre (NHIC) database. 2012 and 2015. Natural Areas and Species records search. Biodiversity explorer;
- Ministry of Natural Resources and Forestry (MNRF). Background information request submitted March 30, 2015. MNRF provided background information on natural heritage features and species at risk for the project study area in writing on April 13, 2015 [Andrea Fleischhauer, District Planner];
- Atlas of the Mammals of Ontario (Dobbyn, 1994);
- Ontario Herpetofaunal Atlas Internet Database (Oldham and Weller, 2000);
- Ontario Breeding Bird Atlas (Cadman et al., 1987-2007 in references);
- Important Bird Areas Database (Bird Studies Canada and BirdLife International, undated-added to refs);
- Ontbirds Archives (various years); and
- West London Dykes Subject Land Status Report (UTRCA, 2015).

6.1.3.2 Field Studies and Investigations

Fieldwork was not incorporated into the natural environment characterization for the Master Repair Plan. Through discussions with agency staff it was determined that the species information obtained may not be sufficiently updated at the time of project implementation. Fieldwork should be planned and completed at the preliminary design phase. Potential impacts and recommendations of appropriate mitigation measures for the selected designs are to further be identified in the Master Repair Plan.

6.1.3.3 Vegetation Surveys

Dougan & Associates prepared a Vegetation Management Plan for London Dykes in 2007. The main purpose of the plan was to identify and prioritize vegetation that may have posed a threat to the structural integrity of the dyke, however a comprehensive species list was also recorded. It is recommended that updated surveys be completed prior to undertaking future projects, and that these surveys include an assessment within the north and west extensions (Beaufort-Saunby/Cavendish West) which were not previously included.

6.1.4 Existing Natural Features and Functions

6.1.4.1 Climate

The nearest Environment Canada weather monitoring station to the West London Dyke with both temperature and measured rainfall is located in London (Climate ID 6144478). Data was collected for the years 2011 – 2015 and is summarized in Table 6.1.

Table 6.1: Climate Data (Study Area)

Climate Station ID 6144478	2011	2012	2013	2014	2015
Total Annual Precipitation (mm)	1,165	664	1,022	868	777
Daily Mean Temperature (°C)	8.5	10.0	8.0	6.6	8.1
Maximum Temperature (°C)	36.7 (July)	36.1 (July)	34.3 (September)	31.2 (June)	31.9 (September)
Minimum Temperature (°C)	-22.8 (January)	-21.4 (January)	-18.7 (February)	-27.2 (February)	-28.8 (February)
Wettest Month	September	October	October	September	June
Driest Month	July	November	March	March	March

6.1.4.2 Physiography, Geology, Soils and Topography

The West London Dyke is situated across spillways of the Thames River and two physiographic regions. A small northerly section occurs in the Stratford Till Plain with the remaining occurring across the Caradoc Sand Plains. The major physiographic unit of the study area is sand plain.

The bedrock geology consists of limestone, dolostone and shale of the Hamilton Group of Middle Devonian age (Ontario Geological Survey, 1991).

Various geotechnical investigations have been completed along the West London Dyke, including bank stabilization studies in 1983 and 1984, and a 2005 geotechnical investigation in support of the Phase 1 Replacement project. In general, boreholes advanced along the dyke indicated up to 6 m of silt, sand, and sand and gravel fill. Beneath the fill, boreholes advanced along the north branch encountered a stratum of sand, and sand and gravel, terminating in clayey silt to silty clay tills. Within the natural bank area east of the Wharncliffe Road North Bridge, sand and gravel was noted beneath the fill to termination of the borehole.

6.1.4.3 Upper Thames River Watershed

The study area is located within the Upper Thames River watershed. It is situated in a highly developed part of Southern Ontario and therefore faces ongoing pressure from urban and rural land use. The Thames River is one of the most biologically diverse rivers in Canada and is home to over 88 species of fish. The entire Thames River system is designated a Canadian Heritage River.

The study area is located within the Forks watershed, one of 28 that comprise the Upper Thames watershed, and is under the jurisdiction of the UTRCA. The Thames River continues to Chatham, into Lake St. Clair and eventually Lake Erie. It is a warmwater system characterized by low flows and high levels of turbidity and sediment deposition. The Forks watershed comprises approximately 3% of the Upper Thames River watershed.

6.1.4.4 Hydrology

The Upper Thames River watershed has a drainage area of 3,570 km^2. The watershed is drained by two main stream channels with the confluence located in downtown London, also known as the Forks of the Thames. The north Thames River drains 1,693 km^2 in the northern area of the watershed, whereas the main branch of the Thames River drains 1,374 km^2 in the southern area. Flow rates are regulated by three dams and reservoirs, Wildwood, Pittock and Fanshawe. The Wildwood Dam is located on Trout Creek, upstream of St. Mary's, on the north branch. It has a drainage area of 137 km^2 and controls approximately 8% of the north branch. Fanshawe Dam is located at the northeast limits of London and has a drainage area of 1,417 km^2 which controls roughly 84% of the north branch, and 46% of the Thames at the Forks. Pittock Dam is located on the northern edge of Woodstock and has a drainage area of 256 km^2, and controls roughly 18% of the south branch and 8% of the Thames at the Forks. Water levels along the north branch of

the Thames river are dependent on both the flow in the branch and the backwater effect caused by the combined flow at the Forks (Marshall Macklin Monaghan, 1983). Overall flow regulation controls approximately 55% of the flow at the Forks of the Thames, which has a total drainage area of 3,067 km^2.

Flooding within the City of London is predominately caused by rain on snowmelt events on a saturated watershed during the spring season. When a watershed is saturated, runoff is generally rapid with major peaks occuring within a day of extreme temperatures or heavy rainfall. To mitigate the effects of these event, the maintenance of the London dykes system is considered to be an important flood protection measure.

6.1.4.5 Flood Plain

A flood plain is generally defined as an area that is subject to natural flooding from an adjacent watercourse. Flood plain areas generally contain unconsolidated sediments.

The adjacent land areas along the West London Dyke are located within a flood plain, primarily due to sections of the dyke that are currently below the Regulatory Flood Line. Refer to Figure 6.1 which depicts the current 250 year flood hazard line.

6.1.5 Aquatic Resources

6.1.5.1 Riverine Habitat Assessment

The mean average flow of the Forks watershed is 46.1 m^3/s. The total length is 75 km. It is 76% natural, 5% channelized, and 19% buried. The flow type is 64% permanent, 31% intermittent, and 19% buried. Temperature is 55% warmwater, 2% cool/coldwater, and 44% unconfirmed. The riparian zone (30 m on either side of a watercourse) is 32% permanent vegetation. The average for the Upper Thames watershed is 34% and the ideal is 75%.

6.1.5.2 Fish Species

Based on background information provided by the UTRCA Watershed Report Cards, 59 fish species and 24 freshwater mussel species have been recorded within the Forks watershed. There are three at-risk fish and mussel species listed on the NHIC database for the study area, discussed further below.

The Bank Stabilization Study - Forks of the Thames, London (Delcan, 1983) report also noted the presence of common white sucker, rock bass, pumpkinseed, hognose sucker, carp, various small minnows, and stoneroller based on a shoreline investigation, which included the length of the current dyke.

Any project undertaken through this Master Repair Plan will require additional review of available information and may require field investigations to determine presence/absence of at-risk species.

6.1.5.3 Water Quality

The *Upper Thames 2012 Watershed Report Cards* use the provincial grading system developed for conservation authorities: *Watershed Reporting: Improving Public Access to Information, May 2003*.

Three indicators are used to assess the surface water quality for each watershed:

- Bacteria (E. coli);
- Total phosphorus; and
- Benthic invertebrates.

The UTRCA scored each of the surface water quality indicators a D, F, and D, respectively producing an overall grade of D for the Forks area. This watershed is the second most downstream section of the Upper Thames River and is heavily influenced by upstream activities. Samples were taken from the Provincial Water Quality Monitoring Network (PWQMN) station located at Byron, the watershed's downstream end. The bacteria concentration has declined since 2007 while total phosphorus has improved slightly. The benthic score has remained steady since 2001.

6.1.6 Terrestrial Resources

6.1.6.1 Vegetation Communities

The ecosystem along the Thames River has been highly disturbed by urbanization thus making vegetation community classification difficult. Two general communities were described (Dougan & Associates., 2006):

- Anthropogenic Community - This comprises the actual dyke sections and much of the adjacent residential areas; and
- Floodplain Community - This comprises the remaining natural habitat adjacent to the Thames River.

6.1.6.2 Vascular Plants Species

Vascular plant species were previously identified in the *London Dykes Vegetation Management Plan* completed for the UTRCA in 2006. A total of 28 vascular plant species were recorded along the West London Dyke. Of these, nine are native with the remaining 19 species introduced.

6.1.6.3 Species at Risk and Species of Special Concern

Based on the review of background documentation listed above, historic records of 34 Species at Risk (i.e., species listed by COSSARO as At Risk in Ontario, and afforded protection under the *Endangered Species Act, 2007*) or Species of Conservation Concern (i.e., species identified as S1-3 in Ontario, but not listed as At Risk by COSSARO) were identified in the vicinity of the project study area. These species include:

- Nine (9) plant species: American chestnut, broad beech fern, butternut, eastern green-violet, fall crabgrass, green dragon, hairy-fruited sedge, Middlesex frosted hawthorn and striped cream violet;
- One (1) insect species: Rusty-patched Bumble Bee;
- Eight (8) reptile species: Blanding's Turtle, Eastern Spiny Softshell, Northern Map Turtle, Snapping Turtle, Spotted Turtle, Eastern Milksnake, Eastern Ribbonsnake and Queensnake;
- Ten (10) bird species: Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Common Nighthawk; Eastern Meadowlark, Eastern Wood-Pewee, Henslow's Sparrow, White-eyed Vireo and Wood Thrush;
- Three (3) mammal species: Little Brown Myotis, Northern Myotis and Woodland Vole; and
- Three (3) fish and mussel species: Lake Sturgeon, Silver Shiner and Rayed Bean.

Based on preliminary ELC using air photo interpretation and imagery, potential habitat for nineteen of these species (including their Provincial/Sub-National Rank[1] and COSSARO listing) may occur in the project footprint:

- American chestnut (S2, endangered);
- Broad beech fern (S3, special concern);
- Butternut (S3?, endangered);
- Eastern green violet (S2);
- Green dragon (S2, special concern);

[1] Provincial/Subnational Status Ranking (S-Ranks) for plants and wildlife are based on the number of occurrences in Ontario, assigned by the NHIC. S-Ranks range from S1 (fewer than 5 occurrences/critically imperiled), to S5 (secure and very common). 'S?' rankings denote classifications that are deemed uncertain or unranked, based on available information. The 'B' qualifier denotes that the status ranking applies to the breeding population in the province.

- Hairy-fruited sedge (S3);
- Middlesex frosted hawthorn (S1?);
- Striped cream violet (S3, special concern);
- Eastern Spiny Softshell (S3, threatened);
- Northern Map Turtle (S3, special concern);
- Snapping Turtle (S3, special concern);
- Eastern Milksnake (S3, special concern);
- Barn Swallow (S4B, threatened);
- Common Nighthawk (S4B, special concern);
- Eastern Wood-Pewee (S4B, special concern);
- Wood Thrush (S4B, special concern);
- Little Brown Myotis (S4, endangered);
- Northern Myotis (S3?, endangered); and
- Woodland Vole (S3?, special concern).

For projects identified within the Master Repair Plan, additional field investigation may be needed in order to confirm the presence of species at risk and/or species habitat.

6.1.7 Natural Hazard Features

Natural hazards are caused by naturally occurring physical and ecological processes which continuously shape and reshape the landscape. Risks to the community develop when these processes are not fully understood or dealt with effectively in the development process. Hazard lands in the Upper Thames River watershed include the following components:

- Riverine flood hazards – flood plain;
- Riverine erosion hazards – slopes and meander belt;
- Watercourses – streams, creeks, rivers, ditches, and municipal drains; and
- Wetlands – swamps, marshes, bogs, fens, all which may contain organic soils.

The West London Dyke is within the area of the Regulated Limit as set by the UTRCA. The Regulation Limit is the maximum extent of the following areas:

- Riverine Hazard Limit;
- 15 m allowance;
- Wetland boundary; and
- Area of interference (30 m) adjacent to all wetlands.

Any development, construction, or site alteration proposed within the Regulation Limit may require prior written approval from the UTRCA.

Table 6.2: Potential Impact and Mitigation Measures

Potential Impact	Recommended Mitigation and Enhancement Measures
Aquatic Habitat, Fisheries and Water Quality	
Direct loss, alteration, or disruption of fish habitat	• Ensure sufficient fish passage is provided through all in-water works. • Restore vegetation and aquatic habitat (substrate) to pre-construction condition (or better), ensuring that any habitat features (pools, riffles, structure) are restored or enhanced. • Any Harmful Alteration, Disruption or Destruction (HADD) of fish habitat that may result from the proposed dyke improvements will require prior authorization from DFO. A compensation plan will be required for review and approval and should be discussed with UTRCA staff on behalf of DFO. • Opportunities to enhance riparian vegetation through the planting of other hanging grasses, shrubs and trees will improve stream cover, reduce temperature impacts, and provide allochthonous inputs (food source for various fish species).
Increased turbidity and siltation in downstream areas resulting in "smothered" plants and animals due to the deposition of silt and increased turbidity of surface watercourses	• Ensure enhanced erosion control measures are installed and maintained throughout all phases of construction to protect exposed surfaces, control run-off and minimize the deposition of silt or suspended sediments within downstream habitats. • Worksite isolation and dewatering plans should be prepared to identify appropriate isolation methods, siltation controls and dewatering measures to be implemented. • Any pumped water resulting from dewatering activities should be discharged to settling areas or through filter media before entering the surface water bodies.

Potential Impact	Recommended Mitigation and Enhancement Measures
	• Utilize suitable backfill material along banks and footings. • Stage construction activity to minimize the frequency and duration of any in-water work, as much as feasible. • Re-vegetate all disturbed areas as soon as possible following disturbance to stabilize the area and minimize erosion potential. • Effective monitoring and reporting is required.
Impacts on species at risk	• Improve water quality enhanced erosion controls. • Restore riparian vegetation cover through the planting of overhanging grasses, forbs and shrubs, to provide cover, shade and a source of food (insects). • Any work along or in the watercourse margins should be timed/scheduled to minimize impacts to fish and mussel species. A review of the particular activity may assist in negotiating the timing window.
Stress on fish communities	• Any fish that may occur within isolated work areas should be captured and released in accordance with appropriate MNR protocols.
Terrestrial Habitat and Species	
Removal or disturbance of significant trees or ground flora	• Relocate or replant any significant species in a timely manner following construction. • Minimize tree removal during construction. • Stabilize all disturbed areas upon completion of any grading works through re-vegetation of the disturbed areas utilizing native plant species (i.e., seed and mulch, compost mix, tree and shrub planting).
Stress on biological communities	• Avoid construction impacts during sensitive wildlife periods, such as breeding seasons for various bird species.
Introduction of exotic species through disturbance	• Use only native species for all re-vegetation work.
Interference with ecological corridors and linkages	• Minimize vegetation disturbance in grassland areas to ensure habitat protection.

The above-referenced mitigation measures are standard procedures used at locations where potential habitat disturbance exists. Detailed mitigation and compensation measures should be further developed as the detailed design of proposed projects are finalized in consultation with appropriate regulatory agencies.

6.2 SOCIO-ECONOMIC ENVIRONMENT

The West London Dyke is centrally located in the City. Development behind the dyke commenced prior to Annexation by the City in 1897 in response to economic activities at that time which relied on the proximity to the Thames River.

The area protected by the dyke quickly became a significant cultural base that was unique to the City. An attraction to the Thames River as a recreational resource resulted in further residential development in the area. The construction of additional corridors to connect to areas east of the river contributed to the establishment of businesses in the vicinity of these crossings to attract the increased traffic in the area.

There are currently about 1,100 structures located behind the West London Dyke that are within the Regulatory Flood Line.

6.2.1 Land Use and Zoning

The West London Dyke study area is located within land designated as Open Space Zone (OS4). The OS4 zone variation is regulated by the UTRCA pursuant to the Conservation Authorities Act and recognizes the area as hazard lands. Larger OS4 areas along the dyke include the area north of Oxford Street (Waldorf Park), south of Blackfriars Bridge (Blackfriars Park) and west of Wharncliffe Road North Bridge (Cavendish Park).

In general, land use behind the dyke structure is predominately classified as Residential R2 Zone, which provides for and regulates low density residential development including single detached dwellings, semi-detached dwellings, duplex dwellings and two unit converted dwellings.

In addition to residential use, various commercial and office establishments are located behind the dyke structure along its length. A small commercial area within the Neighbourhood Shopping Area Zone is located north of Oxford Street West to the Canadian Pacific Railway. This Zone provides for and regulates various neighbourhood scale commercial retail, service and office uses which are primarily intended for the convenience shopping and service needs of nearby residents. Along the south side of Oxford Street West immediately west of the river, a mix of Residential R3 Zone combined with Office Conversion (OC) Zone is present. Convenience Commercial Zones (CC) are located along Blackfriars Street and at the southeast corner of Wharncliffe Road North and Oxford Street West to permit convenience stores and service establishments, personal service establishments and financial institutions. Additional commercial areas near the southeast corner of Wharncliffe Road North and Riverside Drive are designated as Highway Service (HS) Commercial Zone and include a range of commercial and service uses that are intended to service the needs of the travelling public.

Land use immediately adjacent to the dyke structure north of the Queens Avenue Bridge is comprised of Labatt Park which is designated as a Regional Facility (RF). The RF Zone is intended

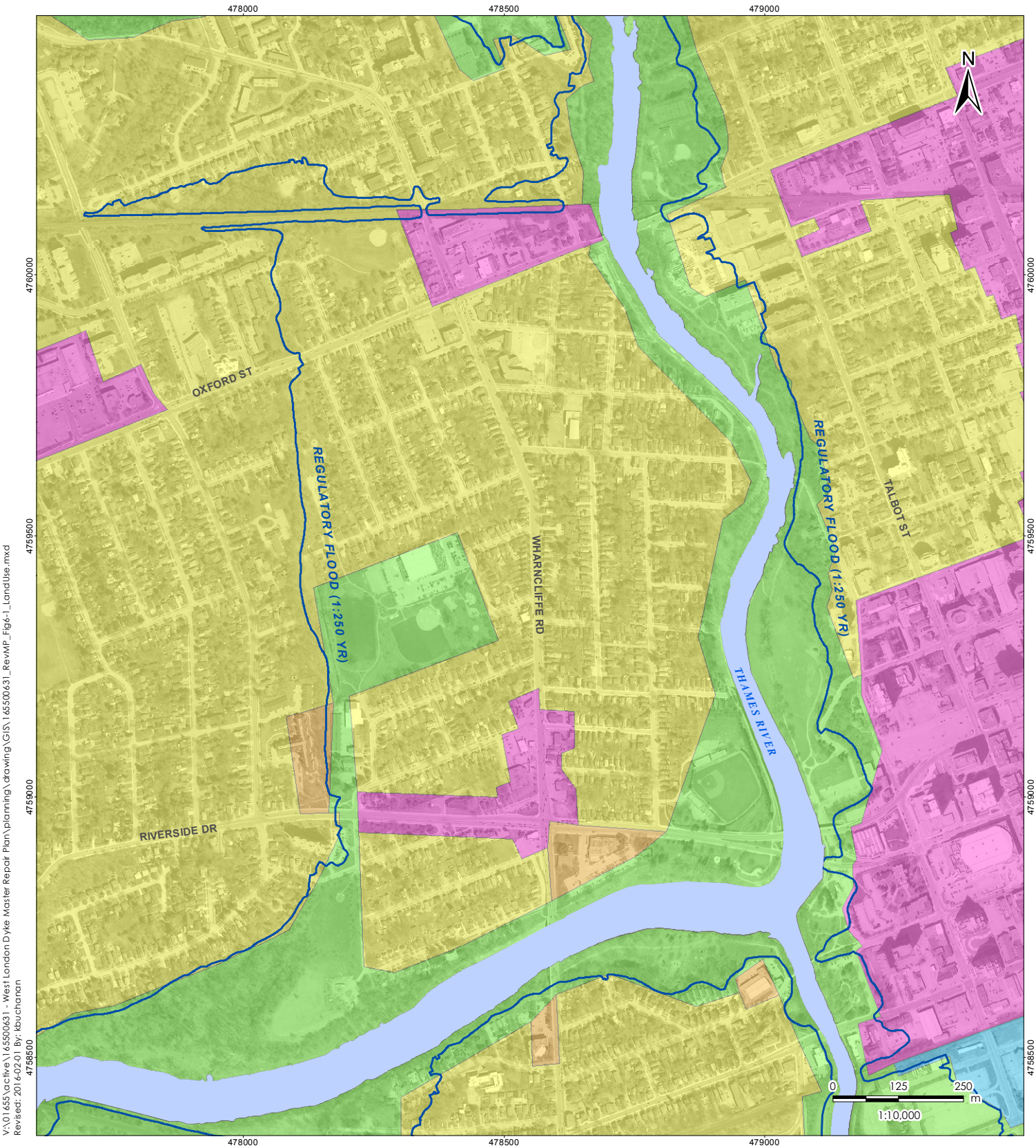
to regulate large institutional type facilities which serve a regional function, but may create impacts on adjacent land uses.

The area behind the West London Dyke south of Riverside Drive and extending to the east side of the Wharncliffe Road North Bridge is classified as a Community Facility (CF1) Zone which allows for institutional type uses that may impact adjacent land uses but are intended to provide a city-wide or community service function.

All adjacent land uses west of the study area are within the floodplain.

The Thames River borders the study area to the east and south with a mixture of Open Space (OS4) consisting of Harris Park (OS4 land), commercial, residential and institutional land beyond which forms the downtown core. Much of the dyke structure forms an important recreational corridor and park space and incorporates the Thames Valley Pathway System, providing a link to surrounding communities.

Figure 6.1 depicts the generalized Official Plan land use adjacent to the West London Dyke. Figure 6.2 depicts municipal and conservation authority lands.



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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2009-2015.

Legend

Generalized Land Use

- Commercial
- Industrial
- Institutional
- Open Space
- Residential

Client/Project

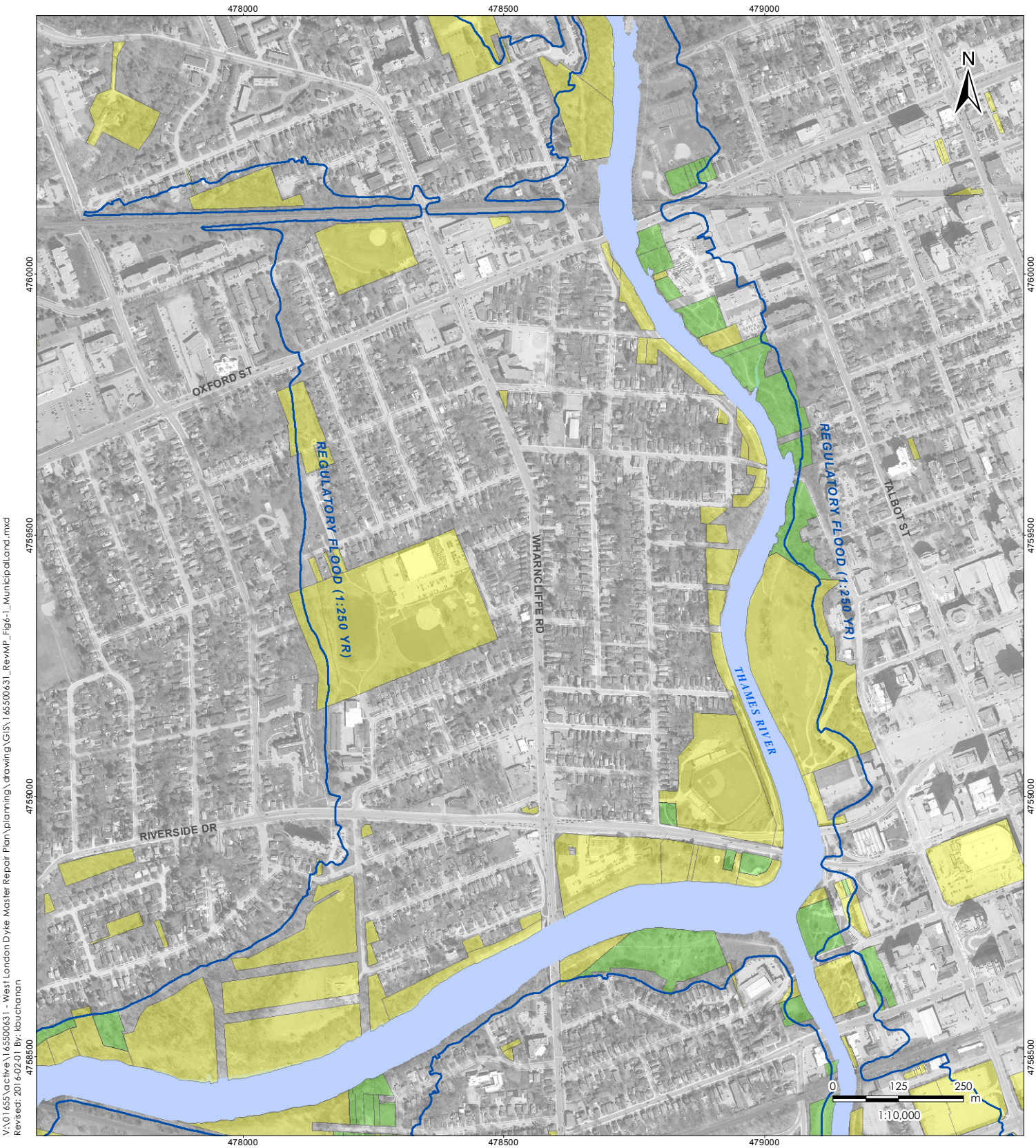
Upper Thames River Conservation Authority & City of London
West London Dyke Master Repair Plan

Figure No.

6.1

Title

Generalized Official Plan Land Use



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Revised: 2016-02-01 By: kbuchanan

February 2016
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Legend

- Owned by UTRCA
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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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West London Dyke Master Repair Plan

Figure No.

6.2

Title

Municipal and Conservation Authority Lands

6.2.2 Flood Plain and Special Policy Area Designation

As noted in Section 6.1.4.5, floodplains are areas that are vulnerable to flooding, which include lands adjacent to a river, lake or other watercourse that has been or can be covered by floodwaters. Floodplain management in Ontario generally consists of three components:

- Prevention – through land use planning and regulation of development, increasing public awareness of potential risks;
- Protection – construction of protective works such as dams and dykes, purchasing of hazardous land to convert them into park lands/open spaces; and
- Emergency preparedness and response – flood preparedness plans, flood forecasting, warning and emergency action.

Within Ontario, floodplain management is generally addressed by means of three approaches or concepts:

- One-zone concept which is considered the most effective means of minimizing threats and consists of the determination of the flood hazard limits by planning authorities, and prohibition of any development or site alteration within these limits;
- Two-zone concept resulting in the identification of the floodway and flood fringe, whereby development and site alteration within the floodway would be prohibited due to the threat to public health and safety, and damage to property, and limited development within the flood fringe would be permitted due to the reduced risk within this section; and
- Special Policy Area concept to be used in exceptional situations whereby the SPA designation would be critical to the continued viability of the existing area. This concept is typically employed in areas of historical or cultural significance that were constructed prior to flood policies coming into effect and where strict adherence to provincial policies would result in significant social and economic hardships to the area.

The current City of London Official Plan identifies several potential Special Policy Areas, including the areas protected by the West London Dyke. The City of London has made an application to the Province to receive a SPA designation. If granted, this designation would allow for relaxation of flood plain policies, therefore permitting limited development and redevelopment to continue. The SPA is not intended to allow for new or intensified development and site alteration, particularly where growth opportunities exist for a community outside of the floodplain area.

Provincial policy indicates that, in order to achieve SPA designation, the area must be protected by a dyke system with elevations set at or above the Regulatory Flood Level. However, in some instances this policy has been relaxed where it is impractical to provide this level of protection.

Further information relating to the current protection offered by the dyke system is provided in subsequent sections of this Master Repair Plan.

To date, the SPA application has not been actively pursued by the City.

On a cultural level, a previous report "Petersville Neighbourhood Project" (LACAC, 1994) identified the barrier attributed to floodplain regulations and SPA restrictions. However, the report noted that these same restrictions have likely contributed significantly to the protection of the character and uniqueness of the area

In addition to Official Plan flood plain policies, all flood plain lands are subject to the construction regulations administered by the appropriate Conservation Authority pursuant to the Conservation Authorities Act. Under these regulations, construction is prohibited unless prior written consent has been received from the Authority.

6.2.3 Heritage Features

The area in and around the West London Dyke consists of several significant historical structures and spaces. Originally populated due to the presence of flat low lying plain and access to the river, the area also contained the earliest road connecting the former London West area to the City of London via the Blackfriars Bridge which resulted in additional development.



Figure 6.3: Blackfriars Bridge

Constructed in 1875, the Blackfriars Bridge represents the earliest link to the remainder of the City and is a historical landmark that has survived two major floods. The structure remains a physical, historical and metaphorical link between the West London SPA and the central core area and is cherished by the area residents.

Labatt Park (formerly Tecumseh Park), located along the West London Dyke north of the Queens Avenue Bridge is reputed to be the oldest continually used baseball park in North America, dating back to 1877. The park has been designated as a historic site in accordance with Part IV of the Ontario Heritage Act.

A Cultural Heritage Evaluation Report was completed for the North Branch of the Thames River (Queens Avenue to the CPR rail line just north of Oxford Street) and can be found in Appendix 6.1. The purpose of the Cultural Heritage Evaluation Report is to identify heritage resources,

including built heritage and cultural heritage landscapes, which are present within the study area. Potential heritage resources were identified through consultation and a pedestrian survey, inventoried and evaluated according to O. Reg. 9/06, the criteria for determining cultural heritage value or interest (CHVI). A land use history was completed to provide a cultural context for the study area and to provide a background upon which to base evaluation. The objectives of this report are summarized below:

- Prepare a land use history of the area for use in the identification and evaluation of heritage resources;
- Identify potential heritage resources within the area through a preliminary property inspection from accessible roadways;
- Evaluate the CHVI of the potential heritage resources to determine the number of heritage resources present; and
- Prepare recommendations for future work where heritage resources were identified.

Where potential negative impacts to heritage attributes are identified, strategies should be prepared to mitigate the impacts on heritage resources.

6.2.4 Archaeological Assessment

A Stage 1 archaeological assessment was completed for the North Branch of the Thames River (Queens Avenue to the CPR rail line just north of Oxford Street) and can be found in Appendix 6.2.

For the purposes of the Stage 1 archaeological assessment, the Ministry of Tourism, Culture and Sport's (MTCS) *2011 Standards and Guidelines for Consultant Archaeologists* were followed. The objectives of the Stage 1 assessment were to compile available information about the known and potential archaeological heritage resources within the study area and to provide specific direction for the protection, management and/or recovery of these resources. The objectives of the Stage 1 archaeological assessment are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork and current land conditions;
- To evaluate in detail the study area's archaeological potential which will support recommendations for a Stage 2 survey for all or parts of the property; and
- To recommend appropriate strategies for a Stage 2 survey.

To meet these objectives, the following research strategies were employed:

- A review of relevant archaeological, historic, and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- An examination of the City of London's Archaeological Master Plan;
- An examination of the Ontario Archaeological Sites Database to determine the presence of known archaeological sites in and around the project area; and
- A property inspection of the study area.

The Stage 1 archaeological assessment determined that there are small pockets in the study area that have archaeological potential. The remainder of the study area has no archaeological potential due to steep slope, low and wet conditions, and modern disturbances. Therefore, portions of the study area retain archaeological potential and any area of archaeological potential that will be subject to construction disturbance will be subject to a Stage 2 archaeological assessment prior to construction. It has also been determined that portions of the study area do not retain archaeological potential and no further archaeological assessment is recommended for those areas.

The objective of the Stage 2 archaeological assessment will be to document archaeological resources within the study area and to determine whether these archaeological resources require further assessment. It will consist of a test pit survey. If the archaeological field team judges any lands to be low and wet, steeply sloped, or disturbed during the course of the Stage 2 field work, those areas will not require assessment, but will be photographically documented instead. In addition, due to the potential for deeply buried archaeological resources in the area of the former Samuel Peter's distillery, the Stage 2 assessment of that portion of the study area will include mechanical excavation to identify subsurface cultural features.

6.3 ECONOMIC ENVIRONMENT

A review of the economic environment within the area protected by the West London Dyke must consider the following components:

- Capital costs associated with future replacements or rehabilitations due to either planned or emergency events;
- Maintenance costs associated with the ongoing operation of the dyke; and
- Potential flood damages that could occur if the West London Dyke was breached during a flood event.

The following subsections provide additional information with respect to each item.

6.3.1 Capital Costs

The cost and complexity of the West London Dyke Phase 1 Replacement Project (in excess of $3.5 million 2008 Canadian dollars construction costs only) which was completed in 2007/2008 for a 300 m segment demonstrated what the impact could be on capital budgets if a repair/replacement strategy is not in place if and when other segments of the dyke fail to meet minimum performance requirements.

In addition to protecting the properties adjacent to it, the West London Dyke is considered a significant piece of infrastructure within the City. It is estimated that the cost to replace the existing structure is in the order of approximately $32 million (-10% to +40%) in 2016 Canadian dollars assuming full replacement at one time and based on the existing flood protection level (100 year), present amenities, projection of costs associated with the 2007 Phase 1 Replacement project assuming a Construction Price Index average rate of 2.7%, and other costing tools. The -10% to +40% is considered a standard preliminary cost range and reflects the variation in replacement options, phasing of work, potential market variations, site conditions, and unknown subsurface impacts.

As part of the Master Repair Plan, a cost estimation model was developed to determine order of magnitude cost estimates based on potential staging of construction, level of flood protection desired, and additional freeboard variations. Refer to Section 9 for additional information relating to costs associated with future replacement options.

6.3.2 Maintenance Costs

As with any significant infrastructure, ongoing maintenance is required in order to extend the useful life of the structure and minimize the potential for significant capital cost replacements. The existing West London Dyke is approximately 2,300 m long and consists of approximately 1,500 m of original concrete revetment which is about 85 years old. Typically, concrete structures are designed for 75 years; however, the actual useful life may extend either significantly longer or shorter depending upon the quality of the original construction and subsequent maintenance.

Additional attributes along the dyke, including railing, lighting, pathways, seating, vegetation, and utilities (water, storm, sanitary, hydro, etc.) also require periodic maintenance and these costs should be assessed for the purpose of establishing future maintenance recommendations and costing.

Estimated costs associated with maintenance of the existing dyke structure are provided in Section 10 of this report.

6.3.3 Flood Damage Estimate

River flooding is considered to be the most significant hazard to life and property within the Special Policy Area protected by the West London Dyke. In terms of cost, the West London SPA represents a significant flood damage centre within the Upper Thames River watershed. The West London Dyke runs adjacent to the confluence of the Thames River. Flows along the Thames River are attenuated by three major flood control structures: Wildwood Reservoir; Fanshawe Dam and Reservoir; and Pittock Reservoir in Woodstock as well as a series of dykes in London.

The West London Dyke area has experienced severe flooding on several occasions. In 1883, flooding along the Thames River resulted in 17 deaths and extensive property damage, resulting in the construction of dykes along the river. However, breaching of the dyke walls occurred following the worst flood event on record in April 1937, resulting in 5 deaths, the destruction of 1,100 homes, and severe damage to roads and bridges. Total damage was estimated at $3 million (1937 Canadian Dollars). As a result of the flood, the dykes along the river were reconstructed. Following another less severe flood in 1947, the current dam structures were constructed to control flooding in the urbanized area, and further raising of sections of the West London Dyke was completed. Since that time, there have been significant floods in March 1977, September 1986, September 1997, July 2000, March 2008 and December 2008; however, no breaching of the dykes occurred.

As part of a feasibility study in the 1970's and 1980's for the proposed Glengowan Reservoir, an extensive inventory of all structures in the floodplain downstream of the proposed location for the structure was completed. Results from the survey were incorporated into the Flood Damage Study in the Upper Thames River watershed (UTRCA, 2005), which provided flood depth-damage tables for various damage reaches along the Upper Thames Basin, including the West London Dyke area (consisting of reaches 8, 9, 11, 12, 13, and 14). Damage reaches were developed throughout the developed portion of the floodplain, each based on the assumption that a single water surface elevation applies to all points within the reach defined. Results from this investigation indicated that the area of the north branch of the Thames River just upstream of the Forks is comprised of the most densely populated portion of the watershed and therefore the estimated annual damage within these zones were more significant compared to other sections within the study area.

The Glengowan Reservoir was ultimately deemed to be unfeasible, but provided the basis for other more cost effective improvements to minimize flood damage within the existing urbanized area. Within the City, this included extension of the Broughdale Dyke to the Regulatory Flood Level. No additional recommendations related to West London Dyke were provided as modeling completed at that time indicated that topping of the dyke would only occur, barring failure, at flows approaching the 500 year event based on optimized regulation of flood flows.

A review of flood damage potential estimates was undertaken by the UTRCA in 1995 for the Thames River in London. Previous damage estimates and defined damage reaches from the Glengowan study and subsequent information on the dyke were used as part of the

reassessment. At that time, total damages above the Regulatory Flood condition were estimated at $19,000,000 (1995 Canadian Dollars) without the dyke in place or approximately $238,000 expressed in terms of Average Annual Damages (AAD). With the dyke system, the AAD was reduced to $50,000 (UTRCA, 1997).

In 1997, the UTRCA prepared the report "Flood Plain Technical Background Report: West London Special Policy Area" in order to assist the City with the technical implementation of flood plain planning policies for the West London Dyke area. This report also included a review of the benefits of increasing the dyke height to comply with the Regulatory Flood Standard. Based on the anticipated cost to increase the dyke height (onto existing dyke excluding potential land costs), and relatively small decrease in the AAD (by only $6,000), the benefit to cost ratio was less than 0.1.

In 2005, the UTRCA undertook an updated flood damage estimation to examine potential increases in occurrences of flooding through different climatic change scenarios. The updated assessment utilized the series of depth-damage tables developed through the Glengowan Reservoir study as well as the 1989 MNR document "Flood Damage Estimation Guide". A review of flood damage curves for each damage reach along the West London Dyke indicated the potential for approximately $23,000,000 (2005 Canadian Dollars) based on the 100 year flood and $42,000,000 (2005 Canadian Dollars) based on the 250 year Regulatory Flood Level. These costs consist of the total direct damages from residential, commercial, industrial, and public lands plus "other" damages (i.e., possessions, etc.) as per MNR recommendations, but include lands across the river included within the damage reach. However, a review of the lands within each damage reach suggests that the majority of the damage costs would be attributed to areas behind the West London Dyke.

As part of the Master Repair Plan, previous flood damage reports were reviewed in order to provide an updated estimate of the potential flood damage costs (2016 Canadian Dollars) for the West London Dyke area. In general, the review consisted of updating of the 2005 costs (which were revised in 2015 by UTRCA) to 2016 Canadian dollars based on a Consumer Price Index of 2.7 % for Damage Reach Zones 8, 9, 11, 12, 13, and 14 which represents the extent of the West London Dyke.

Table 6.3 provides an estimate of the flood damage update based on the available information. Previously, the damage reaches developed as part of the Glengowan study contained lands across the river and therefore damage estimates may have contained additional costs beyond damages attributed to areas behind the West London Dyke. As part of the update undertaken in 2015 by UTRCA, analysis of damages only considered structures that were behind the West London Dyke (i.e., structures on the right bank when facing downstream).

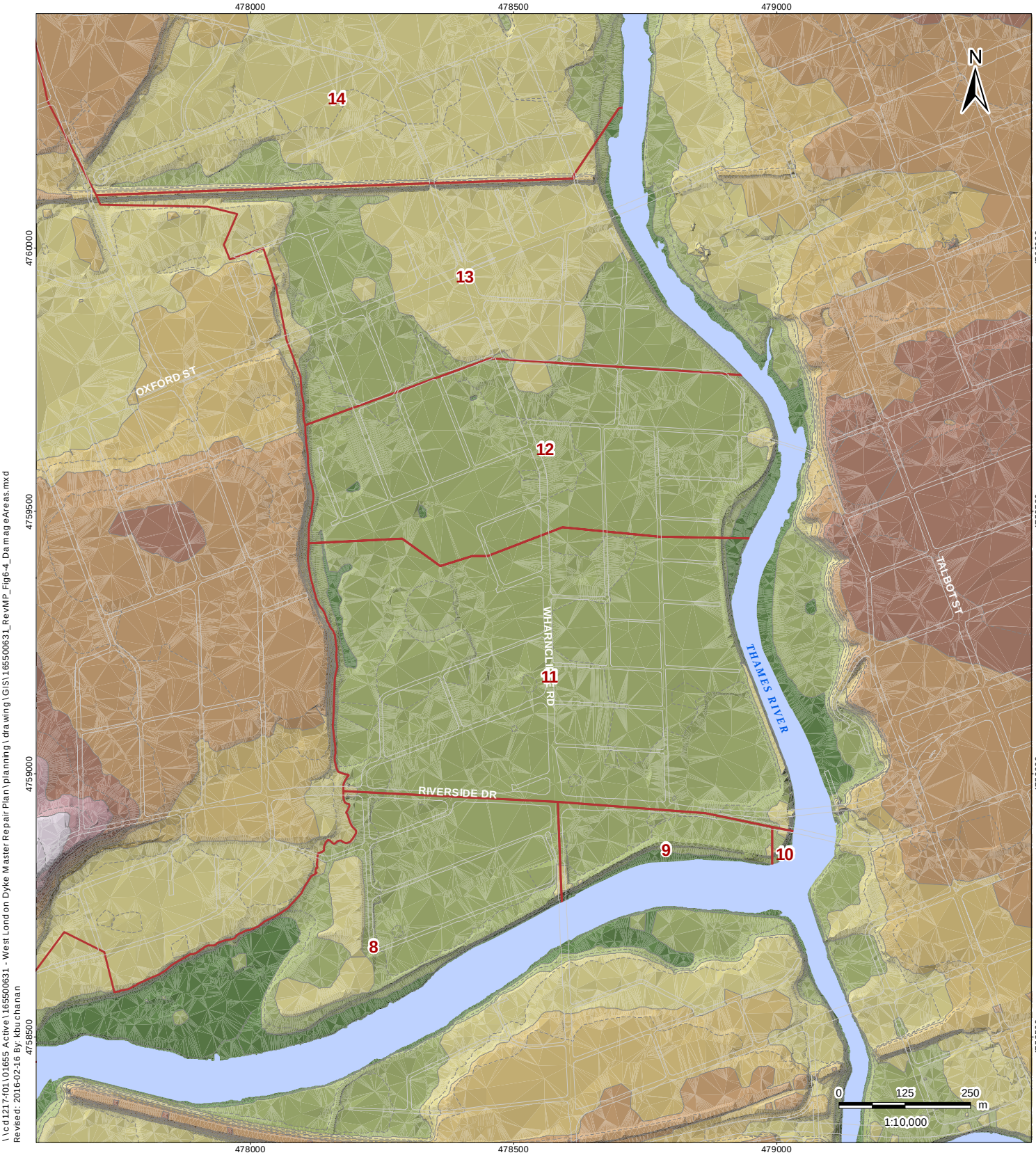
Table 6.3: Updated Flood Damage Estimate (2016 CDN Dollars)

Location	Damage Reach	Return Period	Approximate Elevation (m)	Max Elevation (m)	Lowest Dyke Elevation (m)	Approximate Damage Cost (2016 CDN)[1,2]
North of CP Rail Bridge to Oxford Street	14	1:100	236.87	237.03	235.06	$382,000
		1:250	237.57	237.69	235.06	$1,558,000
Oxford Street to Empress Ave.	13	1:100	236.64	236.79	236.74	$3,627,000
		1:250	237.34	237.48	236.74	$9,799,000
Empress Ave. to South of Blackfriars Bridge	12	1:100	236.35	236.44	236.28	$14,931,000
		1:250	237.06	237.15	236.28	$16,654,000
South of Blackfriars Bridge to Queens Ave.	11	1:100	236.23	236.35	236.00	$25,067,000
		1:250	236.95	237.08	236.00	$26,842,000
Queens Ave. to Wharncliffe Bridge	9	1:100	235.93	236.06	235.73	$1,233,000
		1:250	236.61	236.75	235.73	$1,236,000
Wharncliffe Bridge to Cavendish	8	1:100	235.61	235.70	234.61	$4,862,000
		1:250	236.25	236.33	234.61	$5,496,000
Total Estimated Flood Damages		1:100				**$50,102,000**
		1:250				**$61,585,000**

1. Updated cost based on 2005 flood damage estimates adjusted by Consumer Price Index of 2.7% (averaged from 2005 to 2016).
2. Damage estimate based on boundaries noted in damage reaches.

As noted in Table 6.3, damage reach areas #8, 9, 11, 12, 13 and 14 all contributed to the total flood damage estimate for the West London Dyke. Damage Reach #10, while located at the Fork of the Thames, had no influence on the damage estimate as it contained no significant infrastructure that would suffer damage during a flood event. The majority of damage appears to occur along Damage Reach #11 and #12 where the majority of residential homes are located within the West London area. Figure 6.4 shows the respective flood damage reaches.

Although the Phase 1 Replacement (which is included in Damage Reach #11) was raised to the previous 250 year flood level (with additional 0.3 m freeboard), areas to the north within the same reach are at a lower elevation which results in overtopping of the dyke in the reach.



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Revised: 2016-02-16 By: kbuchanan

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Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
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Legend

Damage Area

Elevation (m)

- 256 - 260
- 252 - 256
- 248 - 252
- 244 - 248
- 240 - 244
- 236 - 240
- 232 - 236
- 228 - 232

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Upper Thames River Conservation Authority & City of London
West London Dyke Master Repair Plan

Figure No.

6.4

Title

Flood Damage Reaches

7.0 UPDATE OF 2007 AMENITY MASTER PLAN

7.1 DESIGN IDEAS

The following design guidelines, vision and general recommendations related to general planning initiatives and amenity upgrades are taken directly from the *West London Dyke Flood Control Structure Master Plan* (Stantec, 2007) with minor updates to make comments current. This document should be directly referenced for details related to the process undertaken to generate the resultant information. Specific reference to processes undertaken as part of the Phase 1 Replacement project, such as the design charette, have been omitted from this chapter.

7.2 DESIGN GUIDELINES

The design guidelines have been prepared to provide guidance for detailed design of the West London Dyke and Thames Valley Parkway redevelopment, extending from Oxford Street West to Cavendish Park. Examples and illustrations are provided to help give direction, but are not intended to presuppose specific design solutions, materials or products that are to be determined during the detailed design stages. The Master Plan Concept is provided as Figure 7.1.

This section discusses the following subjects:

- Vision;
- Areas of use;
- Wall structure;
- Natural environment;
- Heritage;
- Safety;
- Access to the river; and
- Gateways.

7.3 VISION

The following vision statement was prepared after examination of existing site conditions and the results of the consultation process. The vision will be achieved through implementation of the design guidelines.

LEGEND

- CIRCULATION NODE
- LAND MARK
- CITY OWNED LAND
- DYKE STRUCTURE
- LOOKOUT
- VIEW
- DESTINATION/ATTRACTION
- POINT OF INTEREST
- TRAIL CONNECTION
- POINT OF TRANSITION
- PEDESTRIAN CIRCULATION
- UNPAVED PEDESTRIAN CIRCULATION

RAILWAY TRACKS
PICCADILLY ST
ANN ST
MILL ST
OXFORD ST
GATEWAY FOR TRAIL / HIGHLIGHT CONNECTION
ST. PATRICK ST
ST ANDREW ST
EMPRESS AVE
ARGYLE ST
BUTTERFLY AND BIRD WATCHING GARDEN
TALBOT ST
JOHN ST
BARTON ST
LOOK OUT / HISTORICAL INTERPRETIVE SIGNAGE / ACCESS TO RIVER
BLACKFRIARS ST
HISTORICAL INTERPRETIVE SIGNAGE
GATEWAY FOR TRAIL / HIGHLIGHT CONNECTION
BLACK FRIARS BRIDGE
ENHANCED PLAYGROUND / SPLASH PAD AND SEATING
CUMMINGS AVE
VIEW TO BLACK FRIARS BRIDGE
ALBERT ST
CARROTHERS AVE
ACCESS TO RIVER
RIDOUT ST
WHARNCLIFFE RD
LESLIE ST
WILSON AVE
KENT ST
CHERRY ST
CHANDLER AVE
HARRIS PARK
LOOK OUT / VIEW OF HARRIS PARK
EXISTING TRAIL
TRANSITION
ROGERS AVE
MOUNT PLEASANT AVE
KENSINGTON AVE
INTEREST AT TOP OF WALL / SEATING / HIGHLIGHT
LABATT PARK
LABATT PARK
GARDEN
RIVERSIDE DR
QUEENS AVE
GATEWAY FOR TRAIL SYSTEM
RIDOUT ST
GATEWAY FOR TRAIL SYSTEM
WALL STREET
CAVENDISH PARK
CAVENDISH CRES
CAVENDISH CRES
THAMES RIVER
WALTER BLACKBURN MEMORIAL FOUNTAIN
BOARDWALK / SEATING / INTERPRETIVE SIGNAGE
INTERPRETIVE SIGNAGE
ACCESS TO RIVER
INTERPRETIVE SIGNAGE

0 20 40 60 80 100
METERS

Figure 7.1 Master Plan Concept

The West London Dyke is directly connected with both the culture and environment of the Forks of the Thames area in London. The natural processes of the river have been intertwined with culture throughout the City's history and they continue to play a part in everyday lives. In addition to the obvious need for improved flood control, the vision for the West London Dyke is to preserve the natural environment, historic character and cultural connections to the river, while creating a usable, attractive and distinct place within the City.

7.4 AREAS OF USE

The dyke and the land surrounding it has many uses for people, which include biking, running, walking, fishing, sitting, bird watching, playing, commuting and dog walking. Improvements for these uses and expanding the range of uses are important and necessary, but certain sections are better suited for particular activities. Four distinct areas along the West London Dyke have been identified as having different uses and are listed below:

1. Oxford Street West to Blackfriars Bridge
2. Blackfriars Bridge to Labatt Park
3. Labatt Park to Wharncliffe Road North
4. Wharncliffe Road North to Cavendish Park

7.4.1 Oxford Street West to Blackfriars Bridge

The top of the dyke between Oxford Street West and Blackfriars Bridge abuts a mixture of residential and park space. The dyke extends slightly to the north of the Oxford Street West Bridge as well. The areas adjacent to open space have been identified as having potential as gathering spaces. Access to the river and variations in the wall structure are desirable. Areas, which are in close proximity to houses, should be sensitive to such uses and minimize the potential for activities that would generate excessive noise or impact resident privacy.

7.4.2 Blackfriars Bridge to Labatt Park

The section between Blackfriars Bridge and Labatt Park abuts only residential land use. Because of the limited space and close proximity to houses this section should keep much of its existing character. The following points describe the items that can help achieve this.

- Maximize the landscape buffer to residences;



Figure 7.2: Playground at Cummings Avenue

- Minimize the number of gathering spaces and locate gathering spaces away from residential buildings / in higher visibility areas;
- Use of natural looking materials is preferred where it is practical and feasible;
- Implement informal native planting; and
- Preserve existing trees.

The only existing gathering space is a small playground located at the bend in Cummings Avenue (Figure 7.2). Serving an expanded use for play would make better use of this space.

7.4.3 Labatt Park to Wharncliffe Road North

The portion of the dyke and pathway system between Labatt Park and Wharncliffe Road North has been identified as a section that suits higher use because it runs next to Labatt Park and the open space around the Kiwanis Seniors' Community Centre. As mentioned previously, the pathway passes through Phase 4 of the Forks of the Thames project. As the Forks of the Thames will have a very different character and appearance from the dyke, the West London Dyke and Thames Valley Parkway redevelopment can be an extension of what will be high volume usage and should cater to people with a variety of interests. Look outs, gardens, and seating areas should be incorporated. Where the hard structure gives way to a natural edge, access to the river is desirable, but the existing edge condition should be preserved (Figure 7.3).

7.4.4 Wharncliffe Road North to Cavendish Park

The area between Wharncliffe Road North and Cavendish Park is the only portion with an unpaved pathway. This section abuts a residential area and the pathway leads into Cavendish Park and the Cavendish Nature Trail. The paved pathway should blend into the open space system making the required community linkages and support the recommendations of the recreational routes of the City of London Bicycle Master Plan. Unpaved side trails will be maintained in this area to preserve the character of the natural space.

7.5 WALL STRUCTURE

The West London Dyke structure is primarily an engineered structure to protect life and property during periods of extreme river flows. As such there are many technical considerations, which determine its functional design. Therefore, the design concept presented in this section is intended to complement the overall design and not to take precedence over functional considerations. The wall structure will have the most visual impact upon the area because of its sheer vertical size. Creating an aesthetically pleasing and interesting view from the east side of the river has been identified as a major consideration, as well as creating continuity throughout the structure and creating interest from across the river.

7.5.1 Wall Material

The wall material used in both Phase 1 and Phase 2 of the West London Dyke replacement was selected based on an extensive list of criteria. The pre-cast product gives the greatest chance for long-term availability to ensure continuity throughout the phases of the structure replacement process. A more natural look was created by selecting a large, gray style of block that resembles natural stone. The use of large wall blocks/modules rather than small helps to reduce the perceived scale of the wall. Because the dyke will be replaced in phases there is a possibility that the same wall material will not be available at such time that the next section is ready for construction. Accordingly, it is strongly suggested that sections are replaced in sequence to give the appearance of a seamlessly constructed structure or else replaced in sections allowing for logical termination points (i.e. bridges, natural edge areas, etc.).

7.5.2 Creating Interest

Creating an interesting, aesthetically pleasing and culturally significant structure is key to achieving the vision for the dyke. The wall should be visually varied, horizontally and vertically. Horizontal and/or vertical banding, possibly to indicate significant flood levels, could be considered. Planting at the toe of the slope would shorten the wall visually and give some softness to the hard structural components (Figure 7.4). The use of lighting on the wall face would give interest at night, but lighting should not shine directly on water, so it does not adversely affect wildlife. The application of shape and form to create interest should be strongly considered in the context of technical requirements of the wall construction. A smooth, natural curve to the wall (Figure 7.3) creating platforms at the top of wall or closer in elevation to the water would accomplish this. Large shade trees, plantings, railings and lighting will give interest and texture to the top of the wall and offset its overall dominance.



Figure 7.3: Natural Curve Observed in Existing Structure

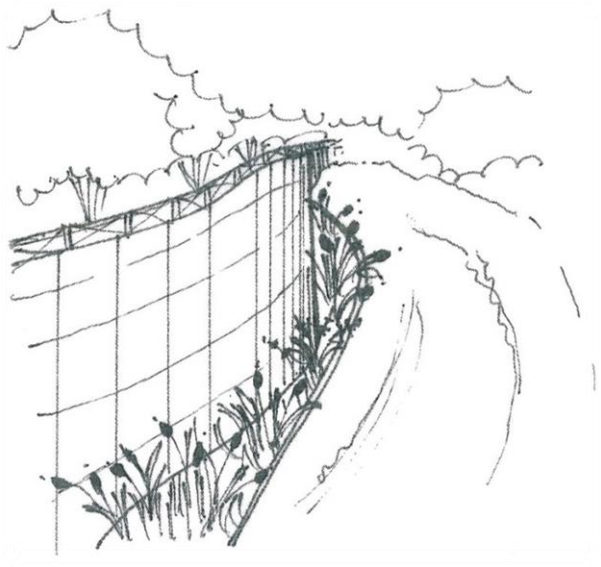


Figure 7.4: Curved Wall Gives Varying Amounts of Space Between Wall and Toe Structure

7.6 NATURAL ENVIRONMENT

The naturally vegetated areas along the water's edge and the native trees existing at the top of the wall are significant to the character of the dyke. The trees give shelter from the wind, shade from the sun, homes for wildlife, and provide a colourful and varied backdrop through the four seasons. Existing significant vegetation must be preserved and protected. Where appropriate the shape of the wall and/or pathway alignment should be altered to save trees of significance.

7.6.1 Environmental Enhancement

An attempt should be made to plant native aquatic material at the toe of the dyke structure that will soften hard surfaces and stabilize soils. Vegetation will introduce itself by means of erosion and deposition, so establishing desirable, non-invasive native species is valuable. An effort should be made to create habitat for aquatic and terrestrial life along the edge of the river where conditions allow for self-sustaining habitat. It is important to preserve and enhance all existing natural edges for this reason (Figure 7.5). If these remaining natural edges become unstable, bioengineering should be considered as a method of stabilization. Management of vegetation to remove invasive species will go a long way to reestablishing native plant diversity.



Figure 7.5: Natural Edge Condition between Dundas Street and Wharncliffe Road North

7.6.2 Urban Tree Management

Refer to the Dougan & Associates report for information related to the recommended urban tree management program for the West London Dyke. This report includes not only documentation of trees of significance, but also identification of areas in need of maintenance, plantings and/or removals.

7.6.3 Plant Design

Informal, natural plantings are suited for areas of lower use, particularly where the site borders on residential land use. Areas identified as gathering spaces should make use of more formal plantings to create emphasis. Native plant material should be used throughout to create continuity and protect the natural environment, but varying layouts can identify the intended use. Year round form and colour should be taken into consideration at the planting design stage. Planting should also be used to emphasize significant views. The creation of these views is discussed further in Section 7.6.5.

7.6.4 Signage

There is an opportunity to expand the existing interpretive signage program to incorporate information on natural systems and natural heritage in the area. Refer to Section 7.8 where the interpretive signage program is discussed further. Trail information signage should also be incorporated throughout the trail system. Suitable locations for signage are identified on the Master Plan Concept.

7.6.5 Views

Several significant views were identified as having connections with the river and natural heritage. These views should be preserved and enhanced. They have been identified in Section 7.8.1 along with suggestions for preservation and enhancement.

7.6.6 Bird and Butterfly Garden

The opportunity for users to participate in passive recreation activities was established as an important attribute of the trail system. Activities such as sitting, reading, people watching, bird and butterfly watching and walking are all considered types of passive recreation. A portion of the small open space at the end of St. Patrick Street is currently used as a community garden. It seems natural that this area be expanded to incorporate a seating area and a garden that attracts birds and butterflies. This would serve as a destination along the pathway.

7.7 HERITAGE

The West London Dyke and the surrounding area have a strong historic character. The most significant features to recognize are the existing Dyke itself, the Thames River, Labatt Park and Blackfriars Bridge. In addition, Eldon House and the Old Courthouse are important heritage buildings in the area. The dyke replacement is an opportunity to create a place, which provides information on the area's rich history while meeting the current needs of users.

7.7.1 Lighting and Site Furnishings

Through the consultation process it was determined that site lighting and furnishings should be consistent with the dyke's strong links to cultural heritage. The historic style of post and fixture (Figure 7.7) and existing light post base (Figure 7.8) were used as inspiration for the new light posts implemented in Phase 1 of the West London Dyke Replacement (Figure 7.6). The new light posts should be considered for future phasing implementation to create continuity along the dyke.



Figure 7.7: Historic Light Post



Figure 7.6: Phase 1 Light Post



Figure 7.8: Historic Light Base

All furnishings should be durable, vandal resistant and cohesive with the area's cultural heritage. The existing railing was also recognized as significant to the identity of the dyke (Figure 7.9). The master plan process indicated that the existing railing should be used as inspiration for the new railing design that will meet safety codes. Due to budget restrictions, project timeline and safety requirements, the railing implemented in Phase 1 and Phase 2 of the West London Dyke replacement was of a generic variety (Figure 7.10), but was designed to allow for custom design panels to be installed at a later date. The new railing design should be considered for future phasing implementation to create continuity along the dyke.



Figure 7.9: Existing Dyke Railing



Figure 7.10: New Dyke Railing, Complete with Inserts

In addition, the historic style bench (Figure 7.11) and trash receptacle (Figure 7.12) used in Phase 1 of the West London Dyke replacement should be used consistently in future phases to create continuity. Any other furnishings such as bollards that are implemented in future phases should be consistent with the historic style. The use of public art within destination areas or incorporating art within site furnishing design should also be considered.



Figure 7.11: Bench (Phase 1)



Figure 7.12: Phase 1 Trash Receptacle

7.8 SIGNAGE

An interpretive signage program for the dyke and pathway system exists and it is seen to be an inherent element to incorporate into and expand on in such a culturally rich area. The content of the existing interpretive signage program should be carried through, but it is suggested that a new format and unique appearance be implemented throughout the dyke and pathway system. This altered signage program should be in keeping with site lighting and furnishings, be durable, unique in appearance and vandal resistant. Consideration should be given to incorporating signage into the design of site elements (i.e., railings and pavement). Unique signage will assist in establishing the distinct character of the dyke. Suitable locations for interpretive signage are identified on the Master Plan Concept. Trail information signage is valuable and should be incorporated throughout the pathway system as well.

7.8.1 Views

It was determined that views of significance along the dyke and pathway system have direct links with cultural and natural heritage in the area. Significant views are identified below, along with suggested approaches to preserve/enhance these views.

- View of the Wharncliffe Road North Bridge, Thames River and the Fork of the Thames from Kiwanis – marked by lookout, seating area and interpretive signage (Figure 7.5);
- View of Dyke structure and Thames River from the Queens Avenue Bridge – implement attractive wall structure and a discrete, aesthetically pleasing transition (Figure 7.13);
- View of the Queens Avenue Bridge and the Fork of the Thames from outside of Labatt Park – look out and interpretive signage to remark on significant features (Figure 7.14);
- View into Labatt Park – mark with interpretive signage and seating area (Figure 7.15);
- View of Harris Park – look out and interpretive signage to allow users to stop along pathway (Figure 7.16, Figure 7.17);
- View of Blackfriars Bridge from the South – should not be obscured (Figure 7.18); and
- View of Blackfriars Bridge from the North – look out and interpretive signage to mark point of significance (Figure 7.19).



Figure 7.13: Phase 1 (from Queens Avenue Bridge)



Figure 7.14: View of Queens Avenue Bridge



Figure 7.15: View into Labatt Park



Figure 7.16: View of Thames River and Harris Park



Figure 7.17: View into Harris Park



Figure 7.18: View of Blackfriars Bridge (from South)



Figure 7.19: View of Blackfriars Bridge (from North)

7.9 SAFETY

Improved site features and pathway system improvements will increase the number of users. With this increase, improved safety becomes a very necessary consideration. Circulation, visibility, lighting and vandalism are among those items that must be addressed.

7.9.1 Circulation

The existing pathway system crosses five major streets, without any form of traffic control to give users the right-of-way. Not only is this dangerous, but it is inconvenient for pathway users. As identified in the City of London Bicycle Master Plan, access under road bridges would increase safety for pedestrians and cyclists and improve circulation for those who choose to use the pathway functionally as a green method of transportation. A continuous path encourages users, especially cyclists, to make use of a pathway system because of its convenience. For the reasons noted above, implementing pathways under each bridge should be given serious

consideration. The existing pathway also varies in width and material. As the pathway is redeveloped, its design should be consistent with City of London Standard Multi-Use Pathway to improve circulation, safety, and create continuity.



Figure 7.20: View West to the Wharncliffe Road North Crossing

7.9.2 Lighting

As noted earlier, lighting can aid in creating continuity and cultural connections with the dyke system in the daylight. In the evening hours lighting will not only create continuity, but will have a direct impact on the safety of the dyke pathway system. Pathway lighting is required along segments of the dyke because the overall park/pathway design and surrounding land uses have been developed to accommodate and encourage evening use by the public. This is a very different situation than other parks and pathway systems throughout the City.

The existing lighting system is not consistent and leaves dark patches due to the presence of overgrown vegetation or a lack of light posts and fixtures. The dyke system requires consistent lighting throughout. The use of full cut-off optics will help decrease light pollution to adjacent areas. Light post placement and the use of housing shields should be given careful consideration when adjacent to residential areas. It is important to note that pathway lighting does differ from the type, intensity, and spacing of lighting required for City roadways and does not necessarily need to be lit to the same standard.

7.9.3 Vegetation

Vegetation can play a role in how safe a pathway system is and how safe users perceive it to be. Existing vegetation and proposed planting should adhere to CPTED (Crime Prevention Through Environmental Design) principles.

7.9.4 Flood Response

Although not originally noted in the previous *West London Dyke Flood Control Structure Master Plan* (Stantec, 2007), access to the dyke as an area of potential refuge and escape from flooding should be considered in the design of any rehabilitated or replaced segments, as these relate to other previously noted items such as pathway design and lighting. Furthermore, access to the river via the dyke at key locations may require further consideration from a public safety perspective as a means to permit water rescue.

7.9.5 Vandalism

The existing dyke and pathway system has been subject to numerous acts of vandalism over the years (Figure 7.21). A reduction in vandalism can be achieved through appropriate lighting and site design. CPTED principles should be considered during design development in order to reduce occurrences of vandalism. Vandal-resistant site furnishings are available and should be used wherever possible.



Figure 7.21: Existing Sign Damaged by Vandals

7.10 ACCESS TO THE RIVER

It was identified that access to the river is very important to users, whether it is just to be near the edge to look into the water or to fish, feed the geese or canoe. Although the river can be more readily accessed from the east side of the river there are still several existing access points. Access is provided at Cummings Avenue (Figure 7.2) the Kiwanis Seniors' Community Centre and at Cavendish (Figure 7.23) and should be preserved/enhanced as described below. It becomes challenging to provide access where the wall structure exists.

7.10.1 Cummings Avenue

Access to the water is currently available, but not encouraged at Cummings Avenue. As noted previously, the natural vegetation in this area should be preserved and maintained. A wood chip path or gravel path should be provided to encourage users to stay on the path, and to reduce soil compaction and damage to plant material. Steps should be taken during design development to ensure that the water's edge is protected from pedestrian traffic. Access to cyclists should be restricted to protect the natural area from damage. Providing seating at the water's edge would allow for sitting, reading and fishing and should be incorporated.

7.10.2 Blackfriars Bridge

The area north of the bridge has been suggested as a possible location for access to the river by alterations to the design of the wall structure. This area has more room to work with than many other locations along the dyke. Figure 7.22 illustrates this concept.

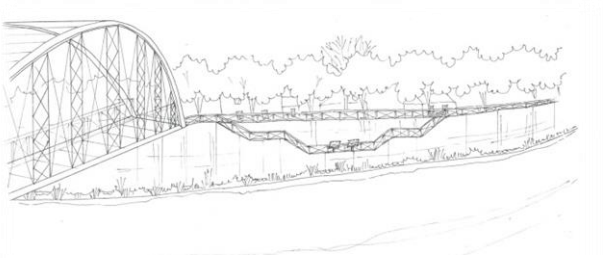


Figure 7.22: Sketch Illustrating Possible Outlook at Blackfriars Bridge

7.10.3 Kiwanis Seniors' Community Centre

The stretch between the Queens Avenue Bridge and the Wharncliffe Road North Bridge currently gives access to the river and has a natural edge condition. This natural edge should be maintained but this section has been identified as a place that would suit higher usage. There is potential for a discreet and unobtrusive boardwalk and lookout with seating and interpretive signage. Implementing a dock into the lookout for canoes and kayaks would expand the number of recreational activities in the area. Seating would allow for reading, people-watching and observing wildlife.

7.10.4 Cavendish Park

There is currently access to the river between Cavendish Park and east to where the hard structure of the dyke begins (Figure 7.23). This natural edge condition should remain in its present state or be enhanced. The existing edge gives an opportunity for fishing.



Figure 7.23: Pathway Looking West Towards Cavendish Park

7.11 GATEWAYS

Gateways have been identified on the concept plan at various locations where the pathway system intersects major roadways. These specific nodes have the opportunity to identify where the pathway system connects with major streets, while being aesthetically pleasing. The gateways should be in keeping with the aesthetic of the pathway system and dyke redevelopment initiatives. As these connections are where many pedestrians and cyclists enter the pathway, these are ideal locations for trail information signage.

7.12 GENERAL DESIGN RECOMMENDATIONS

The general recommendations found below detail how to specifically implement design recommendations, which apply to all phases of development. All recommendations, which apply, should be addressed during each phase of development.

- Options for creating a functional and interesting dyke layout and structure should be investigated during each phase of the redevelopment and accordingly be detailed in each set of tender documents;

- Confirm the suitability of naturalization plantings at the toe of the dyke for potential environmental enhancement throughout all phases of development;

- Investigate opportunities for naturalization planting areas for environmental enhancement during design development;
- Investigate opportunities for terrestrial and aquatic habitat creation during design development;
- Seating should be incorporated into the pathway system at regular intervals throughout all phases of redevelopment;
- Lighting and furnishing design, including signage, should consider design guidelines and be determined through design development;
- Significant views / lookout locations should be identified and confirmed at the site design scale, during design development for each phase of redevelopment;
- Investigate opportunities to implement pedestrian underpasses under all bridges within the study area where appropriate;
- Lighting design for all phases of the redevelopment should have consistent lighting types and levels to increase safety and should be adjusted to suit adjacent land uses;
- Consider Crime Prevention Through Environmental Design principles when preparing planting plans for all phases of redevelopment;
- CPTED principles should be considered for all phases of redevelopment to reduce the occurrences of vandalism and increase safety for its users;
- Investigate all opportunities during each phase of the redevelopment to provide access to the river for a broad range of activities;
- Functionality and aesthetics should be key design considerations for any transitions in all phases of development;
- The buffer between residences and the pathway system should be maximized during all phases of design development;
- The wall layout determined through the design development stage should consider both technical requirements and the recommendations given in the design guidelines regarding shape and composition. Where possible it should be varied to create interest and give adequate room at the top of wall for things such as lookouts, buffers and gathering spaces; and
- Public input should be solicited for each phase of the dyke replacement.

7.13 FUTURE PHASING IMPLEMENTATION

The design guidelines and recommendations in the following documents should be considered / incorporated during future phasing implementation:

- "The City of London Bicycle Master Plan: Planning and Design Guidelines", (MMM Group, Stantec Consulting Ltd., August 2007);
- "The City of London Parks and Recreation Strategic Master Plan", (Monteith Brown Planning Consultants, Tucker-Reid & Associates, The JF Group, November 23, 2009); and
- "Thames Valley Corridor Plan" (Dillon Consulting, DR Poulton and Associates Inc., 2011).

7.13.1 Bicycle Master Plan

The City of London Bicycle Master Plan identifies Riverside Drive (turns into Dundas Street and Queens Avenue going east) as a primary bicycle commuter route which cross the West London Dyke pathway system. Cyclist access to the pathway system should be encouraged from Riverside Drive.

The Master Plan also identifies the West London Dyke pathway system as a Secondary Recreation Route. It is essential that cyclists and pedestrians have access to the pathway system from all community access points. The West London Dyke pathway system is an important route that in the future will connect communities along the west side of the Thames River, west to Cavendish Park and north to the University of Western Ontario.

8.0 ENGINEERING REVIEW

8.1 GENERAL

As part of the technical component of the Master Repair Plan study, a general engineering evaluation of the West London Dyke was undertaken. The intent of the engineering review was to establish the following:

- The current condition of the West London Dyke through a review of previous investigations and monitoring inspections;
- Information on the geotechnical characteristics of the site through literature review;
- Information related to potential legacy issues relating to environmental impacts based on past project experience and available documentation;
- Potential maintenance and constructability issues associated with the dyke;
- Requirements for approvals and permits;
- General guidelines for future works based on previous criteria established through the Phase 1 Replacement project; and
- Requirements or recommendations related to future engineering studies.

Additional information related to each of the above noted items is provided in the following sections.

8.2 PAST INVESTIGATIONS AND INSPECTIONS

A review of past documentation was undertaken in order to provide general characteristics related to the West London Dyke. The information provided herein may not represent current conditions and should not be interpreted as a definitive assessment of existing conditions, as these may vary over time and may also vary between test locations, where testing has been carried out. The intent is to provide an understanding of the surface and subsurface conditions along the project area and how these conditions may impact upon the current state of the existing dyke and requirements for future work.

General information on these previous studies is provided in chronological order in the following subsections based on information provided.

8.2.1 Geotechnical Work Undertaken in the 1980's

Prior to work undertaken as part of the Phase 1 Replacement Structure in 2007, the only record of any major rehabilitation work to the concrete revetment involved a multi-year program from 1983 to 1986 undertaken by Delcan Corporation and Golder Associates. The following documentation relating to this work was reviewed:

- Golder Associates Report to Delcan Geotechnical Investigation Bank Stabilization Study, Forks of the Thames, London, Ontario, October 1982 (report #821-3056);
- Delcan Report Bank Stabilization Study, Forks of the Thames, London, Ontario, February 1983 (report #07-1386);
- Delcan Report Bank Stabilization Study, Forks of the Thames, London, Ontario – Phase II, March 1984 (report #07-1418);
- Golder Associates Report to Delcan Geotechnical Investigation Proposed Repairs to Concrete Revetment and Erosion Control Work - 1986 Forks of the Thames, London, Ontario, March 1986 (report #851-3282); and
- Golder Associates Report to Delcan Repairs to Concrete Revetment, Forks of the Thames Phase III, London, Ontario, November 1986 (report #851-3282-1).

The Bank Stabilization Study involved the evaluation of bank stabilization over approximately 4.5 km of river banks extending on both sides of the Thames River. The Golder Associates' reports relate to the initial geotechnical investigation and subsequent monitoring during the repair work. In general, work pertinent to the west river bank was divided into two sections, concrete lined and un-lined.

Based on the results of the investigations, the following items were noted relevant to the West London Dyke:

- Boreholes advanced along select areas of the dyke revealed up to 6 m of fill overlying sand or sand and gravel. Along the revetment areas, the boreholes encountered clayey silt to silty clay tills to termination;
- Revetment panels with substantial movement producing a broken back slope were observed at the north end at Rogers Avenue during the 1982 investigation. Documentation provided in preparation of the report also suggested voids of up to 1 m in depth behind revetment panels in the vicinity of the Queens Avenue Bridge;
- Vegetated slopes along the unlined segment of dyke (between the Dundas Street and Wharncliffe Road North Bridges) appeared to be stable and showed no signs of instability. No additional geotechnical investigation was completed along this area;

- The concrete revetment was generally found to be in fair to poor condition. In general, revetment in fair condition was categorized for very minor shifting of panels which caused some localized cracking, wider than normal joint separation and minor changes in slope inclination. The toe wall was noted as being intact and relatively stable. Concrete revetment in poor condition was noted for shifting and tilting of concrete panels and major abrupt changes in overall slope inclination with associated cracking and panel distortion. The toe wall was also considered to be ineffective in supporting the panels;

- No sufficient deterioration of the concrete revetment was noted during the 1982 visual assessment of the dyke structure;

- Six concrete cores were recovered during the 1982 investigation from two separate locations along the revetment. Compressive strength testing of the cores revealed strengths ranging from 16.8 MPa to 59.9 MPa. Additional testing conducted on the core samples indicated little to no air entrainment at either location;

- The initial geotechnical investigation report (October 1982) recommended that fair condition panels undergo rehabilitation by providing additional support beneath the slab and to the toe, sealing of all cracks and joints, and provision of positive drainage for the subgrade through the revetment slab. Panels considered to be in poor condition were recommended for replacement; and

- Revetment panels reviewed during the March 1986 report were evaluated by means of a drilling and probing program. Penetration depth of the probe within areas along the west bank of the north branch varied from 30 to 790 mm. Recommendations for revetment repairs generally consisted of grout injection with the placement of precast concrete blocks along the toe wall as a means for providing toe protection.

The Golder Associates report dated November 1986 summarized the geotechnical testing and inspection performed during the 1986 repair program. This repair program generally consisted of toe rehabilitation and support from Queens Avenue Bridge extending approximately 165 m upstream and grouting of voids behind the concrete revetment panels to provide support. The intent of the grouting program was to extend the lifespan of the panels for approximately 30 years.

No panel replacement was completed at that time, despite recommendations for replacement for areas where known voids exceeded 15 cm (0.15 m) in depth.

8.2.2 2004 Inspection of Flood Control Structures

In 2004, the UTRCA identified seven dyke structures, including the West London Dyke, as requiring periodic inspections in an attempt to determine the general condition and to identify future maintenance requirements. The need for a condition assessment recognized the potential

susceptibility of these structures to deterioration over time due to environmental conditions. Stantec was ultimately retained to undertake the study and provided the UTRCA with the following:

- Preparation of an inspection protocol with the development of an inspection sheet based upon non-intrusive visual observation;
- Assessment of the current condition of each structure to allow the UTRCA to undertake periodic inspections in the future or to respond to incidents with baseline data on the 2004 condition of the structures;
- Cost estimates for repair and/or maintenance to each dyke structure and the recommended timing for this work; and
- Recommendations relating to the frequency for subsequent periodic inspections for each structure.

Based on the 2004 review which consisted of a non-intrusive investigation of the entire length of the dyke, several sections of concrete revetment were observed to be in poor condition and a recommendation was made to conduct additional intrusive investigations and determine an appropriate repair strategy. Additional deficiencies relating to the pathway, railing, and gabion baskets within the vegetated portion of the dyke were also observed.

8.2.3 Geotechnical Work Undertaken as Part of the Phase 1 Replacement Project

In 2005 a geotechnical investigation was completed by Trow Associates Inc. (West London Dyke Concrete Assessment, dated May 2005, report #LNGE00007940A) along select areas of the concrete revetment between the Queens Avenue Bridge and Rogers Avenue. The intent of the investigation was to confirm the condition of existing concrete panels in order to establish a repair program as recommended by a 2004 visual inspection of the area.

The work plan consisted of the following:

- Examination of the study area including delaminated areas of the concrete revetment through visual observation, hammer tap (surface sounding) and chain drag;
- Recovery of eight core samples at select areas based upon the findings from the 2004 inspection and subsequent site review; and
- Recovery of subgrade material at the location of cores for additional review.

In summary, the Trow investigation reported:

- Results from the surface sounding program indicated areas of surface delamination, surface misalignment, surface deterioration, sunken zones, bulging zones, and prominent cracks and holes;
- All core samples recovered were noted to contain a shattered zone varying in depth;
- Of the eight cores advanced, three could not be penetrated to full depth due to the weak condition of the concrete below 100 mm;
- The remaining cores penetrated the soil fill, which appeared to consist of loose, brown, cohesive silty sand;
- The fill beneath four of the cores was easily probed to a depth of 1.4 m;
- Compressive tests performed on the only two cores where the required minimum solid section was recovered revealed compressive strengths of 15.4 MPa and 6.7 MPa respectively;
- Only two of the eight cores revealed grout at the bottom of the core; and
- Large voids and porous concrete was noted in the majority of the cores recovered.

Additional comments noted in the Trow memorandum titled *Supplementary Comments Riverside Drive Dyke* indicated that the results from the compressive strength tests were less than the typical concrete strength for this class of concrete (20 MPa). Based on a materials testing standpoint, the memorandum stated that the concrete likely had reached the end of its life cycle.

8.2.4 2005/2006 Inspection of Erosion Control Structures in the City of London

A review of existing erosion control structures was undertaken by Stantec between 2005 and 2006 at the request of the UTRCA. The intent of the investigation was to develop a similar inspection protocol for erosion control works within the City of London as had been developed for the dyke structures through the 2004 review. As part of this investigation, the north bank of the main branch of the Thames River, west of the forks and located between Dundas Street and Wharncliffe Road was identified as requiring review.

This section of erosion control had also been reviewed during the 2004 inspection, and therefore findings from the updated review were compared to the previous baseline results.

In general, findings revealed the area to be in fair to good condition with only localized damage observed to gabion baskets along the river. Recommendations were also provided

with respect to the need to install a protective barrier along the pathway in the vicinity of the Wharncliffe Road Bridge due to the steep slopes noted immediately adjacent.

8.2.5 2005 Geotechnical Investigation – Phase 1 Replacement Structure

A geotechnical investigation was completed as part of the preliminary design for the Phase 1 Replacement project in order to characterize the subgrade soils and groundwater conditions within the study area and to determine the slope stability of the existing dyke structure. The result of the work is presented in the Trow Associates Inc. report Geotechnical Assessment *West London Dyke, London, Ontario* dated April 19, 2006 (report #LNGE00007940A).

The investigation revealed the following:

- Boreholes advanced along the top of dyke encountered approximately 6 m of loose to very loose silty sand fill with trace gravel overlying compact to dense sand and gravel. Beneath the sand and gravel, the boreholes generally encountered dense to very dense silt till;

- Short term groundwater level observations indicated groundwater to be generally within the sand and gravel layer at a depth of approximately 6 m (Elevations 229 to 230 m). Fluctuations in groundwater level were expected to vary with changes in river water levels and periods of wet weather;

- No significant stability concern was anticipated for the toe in the near to medium term, however ongoing maintenance and observation was recommended to ensure the integrity of the structure;

- Based upon the results of the slope stability analysis, the worst case event occurred with a 100-year flood followed by rapid draw down of the river level. This resulted in a factor of safety below 1;

- For moderate annual flood events, factors of safety were above 1, but below the recommended 1.4 as per UTRCA standards and the Ministry of Natural Resources report "Geotechnical Principles for Stable Slopes". Factors of safety for small localized failures of the face were below 1 and appeared to correlate to general bulging noted along the lower panel above the toe apron;

- The friction angle of the silty sand fill is 29 degrees, which is less than the existing slope inclination; and

- To increase the slope stability of the dyke, the filled zone must be strengthened or replaced with approved granular backfill. Some form of toe protection should also be implemented to key into the competent native till.

8.2.6 2006 Inspection of Concrete Revetment Structure

In 2006, the UTRCA retained Stantec to conduct an updated assessment of the concrete revetment component of the West London Dyke. This updated inspection included the area of dyke between Oxford Street West to Rogers Avenue, and a small segment of revetment west of the Wharncliffe Road North Bridge. The review excluded the previously identified segment of dyke between the Queens Avenue Bridge and Rogers Avenue which was identified for replacement. The intent of the investigation was to update the results from the baseline investigation from 2004 utilizing the same inspection protocol developed as part of the previous study.

Based on the results of the investigation, several new deficiencies to the concrete structure were observed compared to the 2004 findings and recommendations related to appropriate corrective actions and additional review were provided to the UTRCA.

8.2.7 2010 – 2014 Inspection of Concrete Revetment Structure

Visual assessments of the concrete revetment components of the West London Dyke were undertaken annually between 2010 and 2014 utilizing the inspection protocol. The purpose of these reviews was to confirm any further changes in the condition of the concrete revetment in comparison to previous reviews. Results of these investigations were provided in annual reports and excluded the modular block wall constructed as part of the Phase 1 West London Dyke Replacement Project.

Based on the results of these investigations, significant additional deficiencies were noted in both delamination/deterioration and bulging/cracking of the concrete panels and toe over the previous investigations. Recommendations relating to each deficiency were generally divided into the following three main categories:

- **Monitor**: Item requires regular monitoring. Visual monitoring utilizing the inspection protocol (non-intrusive) was recommended annually or until subsequent results indicate the need for additional review (i.e., hammer tap), intrusive testing (i.e., coring), or repairs.

- **Additional Investigation and Repair**: Item required more detailed monitoring in addition to the visual assessment due to the current condition and the potential for further damage. Intent of additional investigation was to determine extent and type of repair required. Additional investigation may consist of chain drag and/or concrete coring. Information may be used to establish a common repair methodology for similar deficiencies which can be utilized for future areas requiring repair. Note: In general, deficiencies noted during the review that required additional investigation and repair were located either along the concrete toe structure or underneath the bridges. These areas exhibited evidence of change in comparison to previous inspections; however, no signs of soil loss were observed. Given that the damage is located along areas that, if left unattended, could result in substantial damage or failure, it was recommended that

the additional investigation be performed as early as possible to assess whether further repairs should be undertaken.

- **Repair**: Item required repair. This work was generally well defined and, as such, did not require further investigative work. Examples include rail and post repair, and concrete repairs. As a minimum, damaged rails and posts should be repaired immediately to prevent failure and possibility of a public safety hazard. Note: Concrete deficiencies that required repair were generally located along the concrete toe structure with select areas observed underneath the bridges. These areas exhibited damage extending to the full depth of the concrete, resulting in soil exposure or resulted in the exposure of wire mesh and rebar. Given that the damage is located along areas that, if left unattended, could result in substantial damage or failure, it was recommended that the repairs be performed as early as possible.

8.2.8 Phase 1 Bolt Monitoring Program

Following the completion of the Phase 1 structure extending from the Queens Avenue Bridge north to Rogers Avenue, Stantec and Golder Associates Ltd. established a monitoring program which consisted of the following:

- Initial Set Up & Baseline Monitoring
    - Placement of two bolts within the face of the retaining wall structure one below the cap stone and the other above the base. The location of the bolts represented the most likely zone for movement of the structure due to toe shifting or geogrid failure,
    - Each set of bolts was installed at approximately 15 m intervals along the retaining wall structure to provide adequate coverage,
    - Establishment of a site benchmark for ongoing monitoring,
    - Completion of a survey of the bolts to establish their baseline horizontal and vertical position,
    - Preparation of the bolt position survey in AutoCAD and in a spreadsheet detailing the horizontal and vertical position of each bolt,
    - Preparation of an initial report detailing set up, defining thresholds for bolt movement, outlining the periodic monitoring program and preparing a template for future reporting; and
- Follow Up Monitoring
    - An updated survey of the bolts to establish their horizontal and vertical position,

- Preparation of the bolt position survey in AutoCAD and in a spreadsheet detailing the horizontal and vertical position of each bolt,

- Preparation of a monitoring report detailing any changes between the updated survey results and baseline data and recommendations for the frequency of additional review.

The initial set up and baseline data was obtained in November 2009. Follow up monitoring was carried out in June 2010, June 2013 and May 2015. A comparison between the May 2015 survey results and baseline measurements from November 2009 indicated minor differences in horizontal and vertical readings beyond the accuracy range of the survey equipment. Additional comparisons to previous follow up survey results from 2010 and 2013 were also undertaken.

Based on the results, the following comments and recommendations were provided:

- A significant length of the Phase 1 structure, within Sections 9 to 21, appeared to indicate movement of the wall towards the east (towards the river). There was no distinct correlation to construction activity that could explain these readings. Further follow up review was suggested and subsequent bolt monitoring was recommended;

- In general, the majority of variations from baseline results occurred in easting readings with little to no noticeable variations beyond equipment tolerance and estimated human error observed with the northing and vertical measurements;

- Tolerance of +/- 2 mm is in respect to equipment accuracy but may not reflect potential additional error attributed to reference markings on survey bolts nor movement with the bolt itself. Note that each survey bolt consisted of approximate 1 mm wide markings used as the reference point. It is estimated that additional +/- 2 mm error should be allowed for to reflect potential referencing (human) errors;

- Additional monitoring on a semi-annual to annual basis should be undertaken to confirm whether any further variations are observed, primarily if differences are noted beyond the +/- 4 mm tolerance (equipment plus bolt accuracy errors) from baseline data. In the event that subsequent monitoring should indicate little to no movement, the frequency of the survey review can be reassessed;

- Additional errors attributed to the horizontal and vertical control monuments should be considered when reviewing results. In addition, it is possible that, over time, the monuments may become damaged or may vary from previous readings. It should be noted that the vertical and horizontal monuments were last updated in May 2013, but that neither coordinate varied from the previous inspection by the City; and

- If larger variations are observed, survey bolts should be reviewed to confirm whether any potential movement has occurred (i.e., loose bolts, movement due to freeze/thaw

action, etc.). At that time, a visual investigation should also be completed to determine any potential indicators of movement including possible cracking of the modular blocks, seepage through the joints, settlement of the walkway, differential movement along the railing, settlement of areas behind the dyke, and/or signs of soil loss.

8.2.9 London Earth Dykes Stability Review

The *London Earth Dykes Stability Review (AECOM, LVM)* was completed in 2013. The purpose of the study was to conduct a technical assessment of the existing geotechnical stability of the dykes and to provide recommendations for the long-term planning and maintenance of the London earth dykes. The technical assessment included the following components:

- Field inspection and condition assessment of the dykes, including observations of erosion, excessive or hazard vegetation, visible infrastructure, encroachments, and other identifiable features;
- Research into standards and guidelines employed for the management of dykes in other jurisdictions and preliminary recommendations for dyke standards to be applied for the management of the London Dykes;
- Development of engineering base plans and profiles to characterize dyke geometry and provide a basis for future design efforts;
- Development of a generic Operations, Maintenance, and Surveillance (OMS) manual for the ongoing management of the dykes;
- Geotechnical boreholes and soil testing to characterize the structural properties of the dyke fill;
- Environmental testing of selected soil samples to characterize potential contamination issues to be considered during dyke improvement works; and
- Dyke stability analysis based on the technical data collected to determine the stability safety factors at representative locations along the dykes. The stability analysis considered four different loading conditions at each of the representative locations.

The study identified that the West London Dyke (Station 0+525 to 0+980 and Station 1+825 to 1+985) did not meet the recommended factors of safety for the outside/riverside slope under dry conditions. Six sections of the West London Dyke were also prioritized for implementation of stability improvements. In addition, a visual condition assessment was undertaken which identified several areas with a condition score of 2 (out of 5) indicating issues related with erosion, excessive vegetation, slope failure and condition issues. These condition ratings were similar to those observed during previous annual inspections of the West London Dyke.

Findings from the *London Earth Dykes Stability Review* pertinent to the West London Dyke are presented in Table 8.1 below. Corresponding segments as defined in the Master Repair Plan are provided in bold. Further evaluation and explanation of these findings can be found in the *London Earth Dykes Stability Review* report (AECOM, LVM, 2013).

Table 8.1: London Dyke Rating Analyses

Dyke Section	Overall Condition Rating	Dyke Stability Analysis Results	Comments and Recommendations
Sta. 0+000 to Sta. 0+525 (Oxford Street to Blackfriars Bridge) **St. Patrick's / Blackfriars**	2 to 3	Dyke Outside Dry, FS = 1.1 Dyke Inside Dry, FS = 2.9 Dyke Outside, Rapid Drawdown, FS = 0.4 Dyke Inside with Seepage, FS = 1.2 (Analyses at Borehole WL18)	Condition rating reflects deterioration and movement of concrete panels, and loose fill. Recommend monitoring and repair of deficiencies with eventual full replacement of concrete dyke facing or reconstruction of dyke with geogrid reinforced precast concrete block wall.
Sta. 0+525 to Sta. 0+980 (Blackfriars Bridge to Rogers Avenue) **Blackfriars / Natural Bank / Labatt Park**	2 to 3	Dyke Outside Dry, FS = 1.0 Dyke Inside Dry, FS = 2.9 Dyke Outside, Rapid Drawdown, FS = 0.5 Dyke Inside with Seepage, FS = 1.8 (Analyses at Borehole WL15)	Condition rating reflects deterioration and movement of concrete panels, tree growth at joints, and loose fill. Recommend monitoring and repair of deficiencies with eventual full replacement of concrete dyke facing or reconstruction of dyke with geogrid reinforced precast concrete block wall.
Sta. 1+350 to Sta. 1+805 (Riverside Drive to Wharncliffe Road) **Wharncliffe**	3	Dyke Outside Dry, FS = 1.4 Dyke Inside Dry, FS = 2.7 Dyke Outside, Rapid Drawdown, FS = 0.5 Dyke Inside with Seepage, FS = 1.6 (Analyses at Borehole WL8)	Condition rating reflects presence of loose fill, relatively steep banks, fallen trees and hazard trees.

Dyke Section	Overall Condition Rating	Dyke Stability Analysis Results	Comments and Recommendations
			Recommend removal of hazard trees, flattening of slopes on outside and toe erosion protection at riverbank.
Sta. 1+825 to Sta. 1+985 (Concrete panel section west of Wharncliffe Road) **Cavendish East**	2 to 3	Dyke Outside Dry, FS = 1.0 Dyke Inside Dry, FS = N/A Dyke Outside, Rapid Drawdown, FS = 0.4 Dyke Inside with Seepage, FS = N/A (Analyses at Borehole WL6)	Condition rating reflects cracking, spalling and bulging of concrete panels with vegetation growth at joints, and loose fill. Recommend monitoring and repair of concrete panels as required. Toe scour should be checked. Eventual replacement of concrete panels or construction of a geogrid reinforced precast concrete block wall.
Sta. 1+985 to Sta. 2+035 (Section with rip rap facing) **Cavendish East**	3	Dyke Outside Dry, FS = 1.3 Dyke Inside Dry, FS => 3.0 Dyke Outside, Rapid Drawdown, FS = 0.5 Dyke Inside with Seepage, FS = 1.6 (Analyses at Borehole WL4)	Condition rating reflects presence of steep bank, older unmaintained rip rap, vegetation growth, loose fill and toe erosion. Recommend removal of trees from rip rap and placement of additional rip rap to fill voids as required.
Sta. 2+035 to Sta. 2+275 (West end) **Cavendish East**	3	Dyke Outside Dry, FS = 1.4 Dyke Inside Dry, FS = 2.4 Dyke Outside, Rapid Drawdown, FS = 0.8 Dyke Inside with Seepage, FS = 1.0 (Analyses at Borehole WL1)	Condition rating reflects presence of overgrown vegetation, hazard trees, impaired access, encroaching buildings, loose fill, erosion at riverbank and

Dyke Section	Overall Condition Rating	Dyke Stability Analysis Results	Comments and Recommendations
			unmaintained storm outfalls. Recommend placing toe erosion protection along riverbank west of Sta. 2+175, replacement of existing storm sewer outlets, and removal of trees and overgrown vegetation.

8.3 LEGACY ISSUES/CONCERNS

Construction of portions of the West London Dyke commenced in the late 1800's to early 1900's. Historical records reviewed as part of the Phase 1 Replacement Structure project indicated that portions of the earth berms were constructed by means of fill placement of unknown quality. Additional review of available mapping and aerial photography dating to 1922 also indicated former roadways along what is now the top of dyke structure and the potential for contamination beneath roadways of that era was particularly high due to the common practice of dispensing waste oil as a dust suppressant. Accordingly, the risk of environmental impact of the subsoil is considered moderate to high along areas of the dyke.

During excavation relating to the Phase 1 Replacement structure, impacted soil was discovered. The impacted soil was attributed to suspect fill used to construct the original dyke structure in the early 1900's and generally consisted of cinder material, stained soil, shingles, bricks, glass, and miscellaneous garbage. In order to determine the appropriate disposal requirements for this material, composite samples were recovered for laboratory analysis. In total, four distinct impacted areas were visually observed during excavation and were individually sampled and analyzed for indicator parameters consistent with the visual characterization of the material recovered and site history. The results of each analysis were compared to applicable MOECC standards in accordance with the Environmental Protection Act to assess whether contamination was present. Based on the results, significant impact attributed to metals and petroleum hydrocarbon contamination was determined to be present, requiring that the soil be removed and disposed of at a landfill at waste material.

A review of existing documentation on the West London Dyke also revealed potential impact in an area extending south from Charles Street to Cavendish Crescent, which includes parts of West Lions Park and Cavendish Park. Information suggests that the natural watercourse from West Lions Park extending to the river was enclosed with a storm sewer pipe and backfilled with

unknown fill material. In addition, the area south of Walnut Street and west of Cavendish Crescent was filled with garbage in 1946 in order to widen and strengthen the breakwater for flood control purposes. Accordingly, this area is regularly tested for methane as part of the City's ongoing methane monitoring program.

As previously discussed, there exists the possibility that future works may encounter impacted soils due to the historic land use in the area. As a result increasingly stringent regulations relating to the disposal of such soils, the cost for remediation may significantly alter the construction cost estimate and should therefore be considered during the preliminary design phase for any portions of the dyke. Since the implementation of these more stringent guidelines, the City of London has revised their tender documents to include costing for the excavation and disposal of impacted materials. In addition, initial geotechnical investigations which have typically been completed as a precursor to the detailed design phase now includes requirements for environmental screening and testing in order to qualify the nature of the subsoil. While this approach will not eliminate the risk that unexpected contaminated soil may be encountered, it does provide a general indicator of potential environmental impacts and a means to address these additional costs, which can be significant.

Conceptual cost estimates related to future works are included in the overall cost projections provided in Section 9.

8.4 EXISTING MUNICIPAL INFRASTRUCTURE

Various types of municipal infrastructure are present either within or in a close vicinity to the West London Dyke. If this infrastructure was compromised due to flooding or overtopping of the dyke, or through localized failure or damage during construction, repair costs could be significant.

Given the presence of infrastructure along the dyke, it is critical that appropriate planning of future repairs/replacement to the dyke or repairs/replacement to the infrastructure be carried out in consideration for one another. For example, the decision to construct future replacement structures utilizing geogrid reinforcement (as with the Phase 1 Replacement Structure) may impact placement of utilities or maintenance of utilities if not properly planned as geogrids cannot be cut without compromising the structural integrity of the dyke/wall.

If future replacement of the dyke occurs, consideration for oversizing of the infrastructure may be necessary on a case by case basis and this should be coordinated during the preliminary design phase with the utility provider.

Known infrastructure located either through or along the West London Dyke is listed in Table 8.2. This information has been assembled from available data and, as such, may not be representative of complete conditions. It is recommended that utility locates be conducted early in the preliminary design phase in order to confirm the presence of infrastructure within the area under review.

Table 8.2: List of Key Infrastructure

Utility/Service	Size	General Location
Storm Sewers *(Including various seepage drains located along the dyke face)*	450 mm diameter	Near St. Patrick Street
	300 mm diameter	Near Rogers Street
	600 mm diameter	
	1050 mm diameter	West of Wharncliffe Road North Bridge
	450 mm diameter	West of Wharncliffe near Cavendish Crescent
	1200 mm diameter	West of Cavendish Crescent and City yard
Sanitary Sewers *(Including various sanitary manholes and appurtenances in the vicinity of the dyke)*	900 mm diameter *(crossing Thames River)*	Near St. Patrick Street
	300 mm diameter *(crossing Thames River)*	South of Dundas Street Bridge
	900 mm diameter *(crossing Thames River)*	
	1050 mm diameter *(along north bank of Thames River)*	West of Wharncliffe Road North Bridge
	300 mm diameter *(crossing Thames River)*	Near Cavendish Park
Watermains *(Including all appurtenances)*	300 mm diameter	Along Oxford Street West Bridge
	300 mm diameter	Along Queens Avenue Bridge
	300 mm diameter	Along Wharncliffe Road North Bridge
Bridges	4 Lane	Oxford Street West Bridge
	Single Rail	CP Rail Bridge
	2 Lane	Blackfriars Bridge (historical landmark)
	2 Lane	Queens Avenue Bridge
	2 Lane	Dundas Street Bridge
	4 Lane	Wharncliffe Road North Bridge
Hydro	Pole Line Circuit	Crossing Thames River from St. James Street to Beaufort Street and running South along

Utility/Service	Size	General Location
		the west side of the river
	Pole Line Circuit	Crossing Thames River from Ann Street to St. Patrick Street (plans for future additional circuit crossing at this location, and to run north along the west bank)
	Pole Line Circuit	Crossing Thames River parallel to Wharncliffe Road North Bridge (on west side)
	Underground Duct Structure & Cables	Along north side of Thames River east of Wharncliffe Road North
Gas	Gas main present immediately upstream of Blackfriars near Empress Avenue	Additional gas services may be present, to be confirmed during preliminary design phase
Bell	Not known at this time	To be confirmed during preliminary design phase, not anticipated to impact review of options as Bell service can be relocated if necessary
Flood Structures	2.3 km	West London Dyke

Note:

1. Table 8.2 should not be interpreted as an exact representation of all features and utilities that may be present along the West London Dyke or immediate vicinity. The data provided is for information purposes only and should not be used for detailed design. Location and extent of services must be confirmed through utility locates.

In addition to the utilities/services noted above, the following additional infrastructure is present along the West London Dyke area:

- Walter J. Blackburn Memorial Fountain; and
- Municipal parks (including playground equipment, benches, buildings).

8.5 CONSTRUCTABILITY

There are generally three main issues with respect to constructability:

- Access for construction vehicles to and from the "site" (i.e., for hauling of materials);

- Adequate room to allow the Contractor to stage the project (i.e., adequate room for stockpiled material excavated, delivered material, trailer, etc.); and

- Adequate room to physically construct or place the structure.

Site access and construction staging, whether it is for repair or for replacement, has the potential to be problematic along the West London Dyke due to the proximity of residential properties. During the Phase 1 Replacement project, the Contractor was able to access and make use of Labatt Park for staging activities. For future work, in particular areas to the north of Rogers Avenue, access to the site would generally be limited to the residential streets that run perpendicular to the dyke. The impact of these temporary haul routes would need to be considered during each phase of work and properly planned to minimize damage to the roadways and disruption to the public. Depending on the exact location of repair or replacement, municipal park land may be required for temporary construction staging and therefore these impacts would also need to be addressed in terms of short term disruption to public use and potential additional costs for repair to these areas following construction. Working easements may also be necessary, and would require coordination and approval from impacted landowners.

In terms of constructability and based on a review of existing survey and legal information, there is presently as little as 5 m between existing property lines and the top of the dyke structure. While the distance between the top of dyke and existing property lines is not provided for each segment, the distance from toe to property line is listed in Table 8.5. Depending on the type of structure chosen, the top of dyke distance may vary whereas the distance from toe should not. Although it is difficult to predict the exact distance required for construction or repair at this time (as the exact methodology for repair or replacement is a detailed design issue), it is anticipated that significant space will be required to allow for the following:

- Maintenance of safe slopes from the property line to the working area (based on information to be provided through geotechnical review);

- Potential for wider pathways to meet current City standards;

- To raise the dyke structure to the Regulatory Flood Level, which may require additional room for grading behind the structure to property line and/or space to accommodate structural elements (i.e., Phase 1 Replacement Structure required approximately 6 m of geogrid from the face of the modular block extending behind the structure);

- To implement any other initiatives as may be established through the preliminary and detailed design phase; and

- To avoid or otherwise protect existing vegetation along the dyke, including mature vegetation present along the natural bank, adjacent to Cavendish Park, within the area of accretion, and large willow trees north of Rogers Avenue.

The issue of vegetation maintenance and protection and its impact on nearby habitat was a predominant item of concern for nearby residents during the public consultation process. With regards to vegetation, the impact by future construction or repairs may not be eliminated completely, but through proper planning and design can be minimized. Although all attempts should be made to maintain significant vegetation along the dyke, it will be necessary to ensure that such vegetation does not have a negative impact on the structural integrity of the dyke (i.e., damage due to toppling of trees, intrusive roots into joints or geogrid supports, etc.). During the Phase 1 Replacement project in 2007, design of the replacement structure considered the protection of the existing large cedars adjacent to the outfield of Labatt Park with the protection of the structure itself by locating the structural zone of the wall system (including geogrids) beyond the zone of impact from the existing root system. Attempts to make provision for the same should be made for other areas of the dyke, if this is reasonable.

With exception to challenges relating to traffic maintenance, there are generally less constructability issues associated with the non-structural or vegetated segments of the dyke including areas north of Oxford Street West, between the Dundas Street and Wharncliffe Road North Bridges, and within or adjacent to Cavendish Park west of Wharncliffe Road North. These areas typically offer larger staging opportunities and are not immediately adjacent to residential properties.

Depending upon the area along the dyke, it is possible that future maintenance or replacement activities, depending on the scale and extent of the project, may require that the Contractor work within the river although all attempts through design should try to eliminate this need. If deemed to be necessary, appropriate regulatory processes and approvals must be followed, and are outlined in this report.

Additional information related to constructability on a section by section basis is provided in Table 9.1.

8.6 DEVELOPMENT OF FUNCTIONAL, OPERATIONAL, AND SAFETY ISSUES

During the preliminary design phase for the Phase 1 Replacement Structure, a workshop was held between the City, UTRCA, and Stantec to discuss the major functional, operational, and safety issues that would need to be addressed as part of the detailed design for the replacement structure. As a part of the Master Repair Plan process, these previous issues were reviewed and updated along with additional items discussed during the consultation process in order to act as general design principles from an engineering perspective for future projects (vegetated or structural, repair or replacement).

The following subsections note the key issues for consideration:

8.6.1 Issue 1 – Slope Stability

Previous slope stability analysis along localized areas of the concrete revetment component of the dyke revealed the potential for slope failure due to the presence of the fill material. In accordance with the Ministry of Natural Resources document "Geotechnical Principles for Stable Slopes", a minimum factor of safety of 1.4 is recommended. This factor of safety is the ratio of the strength of the soil to resist shearing stresses to the shear stress imposed on the soil along the surface (Coduto, 1999). A factor of safety value of 1 indicates imminent slope failure. Shear stress imposed on a slope can be from the weight of the slope itself, ground or elevated flood water within the soil matrix or "live loads" such as those imposed by snow, structures, vehicles, etc.

Additional investigations in support of preliminary and detailed design for future phases should include an updated slope stability analysis for the proposed works based on the expected soils conditions. The analysis should consist, at minimum, of the following:

- Accurate characterization of soil conditions including groundwater conditions;
- Potential modes of failure, at either soil interfaces or attributed to proposed structural characteristics; and
- Drain or undrained conditions at various water levels (up to Regulatory Flood Level) including assessment of sudden drawdown.

8.6.2 Issue 2 – Physical Constraints

Future repairs and replacements will need to consider physical constraints and critical sections along and behind the West London Dyke as a result of proximity to adjacent private and public lands and river, or potential existing conditions along the dyke that may prohibit work (i.e., proximity to impacted soil areas, former landfill areas, etc.). Depending on the extent of any impacted soils, removal of impacted soils would likely be preferred (as noted in the cost estimates). These space constraints may impact the following:

- Accessibility for maintenance, construction vehicles, construction staging areas, etc.;
- Selection and configuration of the replacement dyke structure, including overall footprint pending further review and assessment of extent of impact;
- Corresponding hydraulic impacts or constraints due to space limitations (i.e., either reduced elevation or otherwise encroachment closer to river that may reduce available storage);
- Opportunity to provide additional or enhanced amenities (i.e., lookout areas, wider pathways, seating, etc.); and

- Opportunity to construct the replacement structure/segment within the existing footprint, specifically in areas where raising of the dyke may be required.

Additional information related to the available spacing relative to the toe of the dyke is provided in Table 8.5.

8.6.3 Issue 3 – Life Expectancy

Major structural components of the dyke such as the revetment facing and restraints (if applicable) should be designed for a life expectancy of 75 years. Sub-drain systems, where present or required, should be over designed to allow for reduced capacity that is expected to occur over time.

For vegetated portions of the dykes, the life expectancy is not easily determined as the requirement for replacement/restoration will be dependent on several factors including frequency of maintenance, slopes, presence of hazard trees/vegetation, and impacts of river hydraulics.

8.6.4 Issue 4 – Special Policy Area and Flood Protection

As noted in Section 1.8, an application was made to the Province in order to designate the area as a Special Policy Area. This would permit the relaxation of provincial policy regarding development. Although policy usually requires that the SPA be protected by a dyke at or above the Regulatory Flood Line (1:250 year), this policy has been relaxed at other locations where it was found to be impractical. During the preliminary design of the Phase 1 Replacement Structure, the UTRCA indicated that the SPA application should not be affected by the final height chosen for the revetment.

A critical component to the replacement of any existing segment of dyke will be the decision on the height for the new structure/segment. For the purpose of this Master Repair Plan review, it is assumed that any replacement segments will be raised to the Regulatory Flood Line. However, an overall assessment of the City and UTRCA's flood management plan should be undertaken to identify the cost-benefit in whole and on a segmented basis should specific limitations on a segment exist (thereby requiring active flood protection measures). However, it should be noted that the overall flood protection benefit would diminish should a segment approach be undertaken.

For areas where raising of the dyke to the Regulatory Flood Level (or above) is not technically, environmentally, or socially/economically feasible, alternative measures may be considered including emergency flood control barriers (active measures).

8.6.5 Issue 5 – Environmental Considerations

Future works will require additional assessment for environmental impacts based on the proposed work scope as part of subsequent approvals or permitting requirements. Additional information on potential permits and approvals related to future works is provided in Section 8.8.

In addition to assessing impacts, planning for future improvements/replacements should consider, where appropriate, opportunities for environmental enhancements along the dyke area. These enhancements may include plantings of native vegetation along the toe area or other such works to encourage and support the native species in the area.

8.6.6 Issue 6 - Walkway

Future replacement phases should incorporate walkway widths and grading in accordance with current City standards. The design of the walkway should also consider loadings due to service and emergency vehicles. Placement of bollards at the transition of walkways to adjacent roads may be required to prevent unauthorized entry.

Wherever walkways are constructed beneath existing bridges in order to provide passageway, the design of the walkways should consider potential impacts to river hydraulics. In addition, the walkway should be designed to withstand the potential effects of erosion and submergence.

8.6.7 Issue 7 - Aesthetics

Given the high visibility of the structure, its proximity to the downtown core, and the City's recent revitalization projects in the general vicinity, aesthetics would have to be considered in the selection of the preferred structure.

8.6.8 Issue 8 - Vandalism

There is noticeable graffiti along the concrete revetment components of the dyke. If left unattended, graffiti has a serious cumulative effect and often gives the appearance of areas of neglect. An effective means of addressing graffiti is to ensure timely removal following the initial appearance in order to discourage future markings. However, the cost for labour and materials to address graffiti abatement can be high.

As part of the Phase 1 Replacement project, an anti-graffiti coating was applied following construction of the surface of the wall structure and seating area. While this coating does not remove the threat of graffiti, it allows for easy and quick removal of the graffiti with minimal equipment (spray bottle and container of water). The anti-graffiti system also considers the proximity to the Thames River and therefore limitations on alternative removal methods such as pressure washing, sand blasting, or painting.

Future replacement projects incorporating hard surfaces for either dyke facing, seating areas, etc. should consider potential impacts of graffiti and incorporate measures to address these potential issues and minimize the potential longer term maintenance requirements.

8.7 OPPORTUNITIES FOR GREEN DESIGN

Through the planning review and the public consultation process, Stantec has defined possible opportunities that may exist for green design. These include:

- As part of the functional design of the pathway;
- On the top of the dyke;
- Maintaining existing vegetated areas of the dyke;
- Plantings along the toe of the dyke; and
- Consideration for vegetated dyke in place of concrete or similar structure.

With regards to the options for vegetated dyke surfaces, several options for replacement of the revetment structure were considered as part of the preliminary design for the Phase 1 Replacement Structure. These included green options such as reinforced slope systems, gabion basket/gabion mat, and composite structures (i.e., concrete base with vegetated upper level). Based on the selection process at that time, none of the proposed vegetated structures were shortlisted due to concerns with performance under flood events, extensive maintenance requirements, and potential for soil loss. A part of this decision was also attributed to the steeper slopes required within the area of the Phase 1 structure and, therefore, each future segment should be reviewed independently to confirm whether green options for the facing is appropriate. Along the existing naturalized segments of the dyke (i.e., Natural Bank, Cavendish Park, and area of accretion), an attempt should be made to maintain the existing vegetated cover if both flood protection/hydraulics and engineering allows for it.

Besides the facing, the planning objectives noted the opportunity to integrate green design along the dyke, both along the toe, path, and behind the dyke. These items should be considered as part of future replacement or enhancement strategies.

In addition to the interpretation of green design as the preservation or installation of plantings, vegetated cover, etc., it may also be representative of sustainable design. Examples of sustainable design elements for the West London Dyke include:

- Selection of low impact materials (i.e., recycled materials or materials that can be recycled, materials requiring reduced transport requirements, production practices that minimize adverse environmental impacts);
- Selection of lighter coloured material to minimize potential for heat absorption;

- Selection of long-lasting materials to minimize future maintenance and requirements for future removals/landfilling;
- Energy efficiency (i.e., selection and spacing of lighting);
- Green asphalt surfaces (utilizing recycled material with cold-mix laying processes); and
- Optimization of existing on-site material (i.e., fill material that can be reused in non-structural zones, etc.).

These sustainable options should be considered in further detail during preliminary and detailed design of any future works.

8.8 PERMITS AND APPROVALS

Potential future works identified within this Master Repair Plan may require various permits and approvals from local, provincial and federal agencies. Verification as to the required permits and approvals would be subject to the completion of detailed design for each project.

There are many factors that may impact requirements for approvals. Construction schedules may pose restrictions regarding the timeline for work allowed within the vicinity of the Thames River. Staging for construction may require the temporary use of adjacent lands (i.e., issuance of temporary easements, etc.). Verification of land ownership through completion of a legal survey has been completed and this information will help to determine the boundary between municipal and private property for assessment of future works.

Floodplains, unstable slopes and erosion are examples of naturally occurring hazardous processes. Natural hazard planning involves planning for risks associated with these processes such as loss of life, property damage, social disruption and environmental impacts. Since there is always a risk associated with natural hazard processes, the Province sets the minimum standards for acceptable levels of risk. Recognizing that the dyke is within the Riverine Flood Hazard or floodplain regulation limit (Figure 4.1), an Upper Thames River Conservation Authority permit through Section 28 of the *Conservation Authorities Act* will be required for all work in the floodplain.

Additionally, a permit to take water will be required if deep excavation or dewatering (i.e., below the water table) is needed for dyke repair, rehabilitation, or replacement. Water takings in Ontario are governed by the *Ontario Water Resources Act* and the *Water Taking and Transfer Regulation*. Section 34 of the Act requires anyone taking more than a total of 50,000 litres in a day, with some exceptions, to obtain a Permit To Take Water from the Ministry of the Environment.

There are no requirements related to Certificates of Approval (C of A) for the West London Dyke, however various infrastructure adjacent or intersecting the dyke (i.e., storm, water, sanitary, etc.) may require separate approval for future work.

Table 8.3 provides a general list of permits and approvals that may be required for future work in relation to the West London Dyke. Estimated costs related to procurement of permits are provided in Table 8.5 of this report.

Table 8.3: General List of Permits and Approvals

Agency	Permit or Approval
Upper Thames River Conservation Authority	Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Permit
	Federal Fisheries Act Letter of Advice through UTRCA-DFO Level 2 Fish Habitat Agreement
Department of Fisheries and Oceans	Authorization for the Harmful Alteration, Disruption and Destruction of Fish Habitat (HADD) Species at Risk Act (aquatic species)
	Species at Risk Act (2002)
Ministry of Natural Resources	Endangered Species Act (2007)
	Public Land Act
	Lakes and River Improvement Act (LRIA)
Transport Canada	Navigable Waters Protection Act
Canadian Environmental Assessment Agency	Canadian Environmental Assessment Act (CEAA)
Ministry of Environment	Certificate of Approval (C of A)
	Permit-To-Take-Water (PTTW)

Section 2.2 of the Master Repair Plan details the Environmental Assessment Process. In accordance with this process, the City of London and UTRCA may be required to undertake further EA work depending on the magnitude of the anticipated environmental impact. As previously noted, this Master Planning process has been initiated with the intention of completion as a Schedule B project. This approach provides a broad level of assessment or mechanism to implement further projects. Although the proposed works may be implemented as separate projects, the Master Plan approach recognizes the larger management system.

At the implementation stage, the proponent will need to address each project on a case by case basis to confirm any additional requirements to satisfy the Environmental Assessment Act beyond this Master Repair Plan process. Table 8.4 provides a general outline of potential EA

requirements that may be applicable to the West London Dyke. Reference should be made to the EAA and MEA for complete information when planning for future projects.

Table 8.4: Potential Requirements for Additional Class EA Approvals

Schedule	Description
Schedule A (Pre-Approved)	On-going maintenance activities.
	Maintenance and/or minor improvements to grounds and structures.
	Replace traditional materials in an existing watercourse or in slope stability works with material of equal or better properties, at substantially the same location and for the same purpose.
Schedule A+ (Pre-Approved)	No relevant references to the West London Dyke.
Schedule B	Construct berms along a watercourse for purposes of flood control in areas subject to damage by flooding.
	Modify existing water crossings for the purposes of flood control.
	Works undertaken in a watercourse for the purposes of flood control or erosion control, which may include: • Bank or slope regrading. • Deepening the watercourse. • Relocation, realignment or channelization of watercourse. • Revetment including soil bio-engineering techniques. • Reconstruction of a weir or dam.
	Enclose a watercourse in a storm sewer.
Schedule C	Construct a new dam or weir within a watercourse.
	*Note: It is anticipated that a Schedule C would be required for work involving the Blackfriars Bridge given the heritage classification of the structure and the public interest.

For projects that are identified as requiring a Schedule C Class EA, the proponent would be required to complete Phase 3 and Phase 4 of the Planning Process. The preparation of an Environmental Study Report (ESR) would need to be completed. Depending on the sensitivity of the project, in terms of both the social and environmental impacts, an additional PIC should be undertaken.

Table 8.5: Permit and Approval Estimated Costs

Permit of Approval	Task	Estimated Cost
PTTW	Application	$4,000
	Hydrogeological Review	$9,000
	Total	**$13,000**
UTRCA	Application (Consent)	**$1,000**
C of A		Subject to municipal infrastructure
Approvals	Temporary Easements	Unknown
Class EA	Schedule A	**$10,000 - $20,000**
	Schedule B	**$45,000 - $50,000**
	Schedule C	**$70,000 - $80,000**
	Environmental (Site Assessment)	**$12,500**

8.9 CLIMATE CHANGE

The previous study "Floods: Mapping Vulnerability in the Upper Thames Watershed under a Changing Climate, (CFCAS, August 2007) completed by a research team from the University of Western Ontario (UWO) with collaboration from the University of Waterloo, Environment Canada, and the UTRCA concluded that climate change was expected to increase the area exposed to flooding under higher return period floods including the 1 in 50 year flood.

Following this initial study, the City of London retained UWO researchers to review existing Intensity-Duration-Frequency (IDF) curves in order to assess potential changes to address climate change impacts. Results from the analysis indicated that rainfall intensity within the Thames River watershed had increased and was likely to continue to increase. The report recommended the potential increase in sizing for storm water management facilities and revision to flood lines within the watershed which would result in changes to the City's Official Plan and other related policies.

Based on the report recommendations, the City proceeded with the development of a comprehensive climate change adaptation strategy for London. This strategy consisted of two phases:

- Phase 1 – Climate Change Adaptation Transition Strategy; and
- Phase 2 – Climate Change Adaptation Long Term Strategy.

The City has completed Phase 1 of its strategy, with recommendations approved by Council in July 2011. Key items from Phase 1 of the strategy included direction to the Planning, Environmental and Engineering Services departments of the City of London to proceed with increasing the City's existing Intensity Duration Frequency (IDF) Curves by 21%, and that this change is incorporated in a phased approach commencing with the update of several subwatershed studies. Approval to proceed with Phase 2 of the strategy was also granted.

In addition to the City's investigation, the UTRCA continues to review the impacts of climate change first addressed in the 2007 study.

It is noted that results from these additional studies, potential City of London Official Plan modifications, and policy revisions by both the City and UTRCA may impact recommendations related to future infrastructure improvements noted herein. At that time, the City of London in collaboration with the UTRCA should review the benefits of raising the dyke further with other socio-economic and physical characteristics and impacts to the area to determine the following:

- Need to address the impacts of flood protection from climate change at the area of concern (i.e., raising of the dyke); or
- Potential opportunities to control or minimize climate change impacts along the West London Dyke by means of upstream mitigation measures.

8.10 FREEBOARD

Freeboard is defined as the height above the predetermined high water mark (or Regulatory Flood Level) of a structure such as a dam or dyke. This height acts as a buffer area between the 250 year flood elevation and the actual top of dyke. When work on the Master Repair Plan first commenced, specific information relating to the proposed elevation of any new dyke structure and associated freeboard could not be defined until such a time as updated hydraulic and hydrologic model results were available. Updated flood elevations were obtained in 2015 based upon work completed by UTRCA in conjunction with the City and the desired freeboard could now be evaluated in terms of both risk and social, natural and economic factors.

The document "*United States Department of Agriculture, Natural Resource Conservation Service, National Handbook of Conservation Practices, November 2002*" provides guidelines on the construction of Class 1 dykes. A Class 1 dyke is defined as a dyke that, if it should fail, could result in loss of life or serious damage to infrastructure including homes, businesses, bridges, etc. By definition, the West London Dyke is defined as a Class 1 dyke. For Class 1 dykes, the handbook recommends a minimum freeboard based on the difference between the normal ground elevation at the dyke centerline (at approximately Labatt Park) and the design high water level. A review of the available topographic information for the dyke indicates an estimated normal ground elevation of approximately 233.0 m at the approximate centerline location, with a corresponding 250 year flood elevation of 236.9 m, for a difference in elevation

of 3.9 m or 12.8 ft. In accordance with the guideline, the minimum freeboard is 0.6 m (2 ft). Accordingly, it is recommended that a minimum freeboard of 0.6 m be provided based on the height of the structure. This is an increase over the freeboard provided for the Phase 1 Replacement Structure (0.3 m). If this is in addition to the adjustment to suit the Regulatory Flood Level, the potential increase over the existing top of dyke may be as high as 2 m which is considered significant.

Potential impacts as a result of climate change also affect the decision on the level of freeboard to be provided. Additional freeboard may provide a buffer to protect areas against potential additional or intensified flood events as are anticipated through the ongoing climate change studies.

Regulated 100 year and 250 year flood profiles were provided by the UTRCA in 2015 which replaced the flood level profiles previously used for the design of Phases 1 and 2. The profiles represent regulated flows for the Thames River watershed through the City of London. The change in profiles was the result of updating of watershed flood flows and the development of a new hydraulic model for the Thames River in London. A regulated 250 year + 10% flood profile was also provided by the UTRCA to evaluate freeboard flood flow capacity which considered preliminary increases in flood flows for the north and main branches of the Thames River at the West London Dyke. It was determined through consultation with the City and UTRCA that the regulated 250 year + 10% flood profile represents the necessary freeboard for any future dyke repairs and reconstruction and accounts for impacts due to climate change. The proposed freeboard was approximately 0.6 m based on this flood profile.

Currently, there are five municipally owned bridges and one railroad bridge that spans the Thames River within the West London Dyke footprint. Regardless of the freeboard to be provided, these significant pieces of infrastructure may limit the passive flood protection capabilities of the dyke, unless raising of the structures is to occur. Table 8.6 provides a general assessment of the potential freeboard present between the existing bridges and 250 year flood elevation.

Table 8.6: Review of Existing Freeboard at Bridges

Crossing	Low Chord Elevations [1] (m)	250 Year Flood Elevation [2] (m)	Available Freeboard (m)
CP Rail	240.12	237.53	2.59
Oxford Bridge	238.02 (238.6)	237.48	0.54
Blackfriars Bridge	237.99 (238.2)	237.09	0.90
Queens Bridge	235.31 (236.7)	236.91	-1.6
Dundas Bridge	235.85 (236.6)	236.82	-0.97
Wharncliffe Bridge	235.90 (237.3)	236.47	-0.57

Note:

1. Bridge low chord elevations (low chord selected to reflect effects on bridge during flood events). Approximate bridge abutment elevations shown in brackets.
2. Calculated water surface elevations from UTRCA HEC-RAS model at upstream bridge face.

As previously noted, there may be a requirement to implement active flood protection measures where it is not considered feasible or cost effective to raise the structure to the Regulatory Flood Level without significant impact. Although potential damages associated with toppling of the dyke are considered significant, the costs associated with raising existing bridges are also substantial and are anticipated to exceed the cost of the dyke improvement itself. Accordingly, these areas may be best addressed by means of active measures such as sand bags, stop logs, etc. and integrated into the overall flood management strategy. With regards to the Oxford Street Bridge which underwent substantial rehabilitation work in 2009, it is anticipated that the end of its useful life has been extended well beyond the current 20 year planning period.

It is noted that there is available freeboard from Blackfriars Bridge, north to the CP Rail crossing. However, Queens, Dundas and the Wharncliffe Road North bridge low chord elevations are less than the 250 year flood elevation and therefore have no available freeboard.

The impact of additional freeboard will also require further review within areas both north and west of the current dyke limits. North of the upstream limit of the dyke, the current regulatory flood limit encroaches near the intersection of Gunn Street and Saunby Street, northwest of the CP rail crossing. Along the downstream end of the dyke, a segment of Walnut Street north of the West Lions Park and west of Cavendish Crescent provides protection to areas along the west. Localized improvements or otherwise extension of the dyke may be required to protect these areas should additional freeboard be required.

8.11 AMENITY/FUNCTIONAL DESIGN IMPROVEMENTS

The Thames River is viewed as a natural amenity by many. Originally, the Thames River provided transportation for settlers and trade, power and irrigation for the local trades. As the surrounding area became settled, the river also became a cultural and recreational amenity. It is now also considered to be a historical amenity and was named as one of Canada's Heritage Rivers. Structural alteration to the west side of the riverbank with the construction of the West London Dyke has taken away some of the 'natural' commodity of the area. However, the dyke offers citizens a viewing area with a walkway that encourages people to enjoy the river. The river also allows for recreational activities such as boating and fishing. The river flats south of the Blackfriars Bridge provide some service access to the water's edge.

Section 7.0 of this Master Repair Plan provided general guidelines and principles relating to amenity and functional improvements along the West London Dyke. These included:

- Signage (interpretive signage and signage indicating natural heritage and natural systems);
- Maintaining views of the river;
- Opportunities for users to participate in passive recreation activities (sitting, reading, walking, etc.) through pathway improvements, provision of additional seating, lookouts, etc.; and
- Accessibility to the river.

The principle role of the dyke as an amenity however, is its role as a walkway. As an area frequented by many pedestrians, cyclists, etc. pathway lighting has been installed in some areas and the pathway widened to safely and comfortably accommodate its users. Park benches and garbage receptacles are also spaced intermittently along the pathway. Future work along the dyke should incorporate all these aspects, and respectfully consider both the needs of the community with those of nearby residents (i.e., consider potential for increase in noise levels, additional traffic, etc.).

During the public consultation process, concerns in relation to lighting spacing and intensity were raised. Comments from adjacent residents suggest "light pollution" as a key issue with respect to lighting design for future projects. The issue of adequate lighting for future projects will need to be assessed further during the preliminary and detailed design stage.

8.12 SUMMARY OF EXISTING DYKE CHARACTERISTICS

Table 8.7 provides a general summary of the existing conditions, characteristics, and issues/items associated with the dyke. This information has been summarized based on a review of the results of previous investigations, and assessment of proposed future requirements.

The condition rating score for each dyke section is based on the rating system utilized during condition assessments of the dykes. The rating system is as follows:

1 – Unsafe Condition (Structure or element in very poor or unsafe condition which poses an immediate public safety hazard);

2 – Poor Condition (Structure or element in poor condition with significant deterioration noted. Deteriorations noted may impact on integrity and may require significant capital cost to bring to fair to poor condition rating. No safety hazard noted);

3 – Fair/Poor Condition (Structure or element condition varies from fair to poor with some signs of significant deterioration in localized areas. Able to perform function but at reduced capacity);

4 – Fair Condition (Structure or element in fair condition with no visible signs of significant deterioration. Able to perform intended function with no apparent hindrance); and

5 – Good Condition (Structure or element in good condition with minor deterioration. Able to perform intended function with no apparent hindrance).

Table 8.7: Summary of Existing Dyke Characteristics

Section	Location (Extent)	Damage Reach	Top of Dyke Elevation (m)	Approximate Distance from Dyke Toe to Property Line (m)	TYPE OF DYKE STRUCTURE				TYPE OF PATH WAY		Existing Infrastructure	EXISTING DEFICIENCIES								Condition/Comments
					Natural Bank	Concrete Revetment	Gabion Basket	Modular Block (Geogrid)	Asphalt	Vegetated (Trail)		Concrete Distress	Settlement	Bulging	Exposure (Loss of Granular)	Hand Rail	General Damage (Gabion Baskets Torn, etc.)	Other (Erosion, Vegetation Loss)	Condition Rating (Previous inspections)	
Area North of Dyke (North Branch)	Earthen Berm (Natural) with Vegetation extending north of concrete revetment	#14	235.06 to 238.43	15-25	✓				✓	✓	• Hydro pole line circuit crossing (overhead). • Saunby Street and Beaufort Street adjacent to dyke in this area.								N/A	• Currently no lighting along the trail. • North of revetment, dyke is moderately to heavily vegetated. • No defined pathway in vegetated area with exception of small access road linking Saunby Street to Beaufort Street. • No handrail north of concrete revetment.
Oxford North	Concrete Dyke	#14	237.55 to 238.54	15-25		✓				✓	• Oxford Street Bridge along south limit. • CP Rail Bridge (single rail). • 300mm ø watermain supported on bridge.					✓			2	• Currently no lighting along the trail. • Pathway generally vegetated along revetment. • Vegetation present in joints between concrete panels. • Handrail (along concrete revetment) is in poor condition.
St. Patrick's	Oxford Street Bridge to Empress Avenue	#13	236.74 to 238.20	15-20		✓			✓		• Oxford Street Bridge along north limit. • 450mm ø storm outlet. • 900mm ø sanitary crossing (St. Annes). • Hydro pole line circuit crossing. • Argyle Street borders back of dyke for approximately 75 m. • Argyle Street, St. Patrick Street and Empress Avenue adjacent to dyke in this area.	✓	✓	✓	✓	✓			2	• Many of the deficiencies are localized just south of the Oxford Street Bridge, spalling, bulging, cracked and separated panels are all present. • Broken and damaged concrete with exposed wire mesh. • Algae is present along the dyke face (also noted in 2004 and 2006 reviews near vicinity of sanitary sewer). • Sinkhole developing along pathway, majority of pathway however is in good condition. • Hydro poles present near top of dyke, would have to be relocated if dyke required replacement. • Aluminum handrail present along this segment observed to be in poor condition at select locations. • Pathway does not meet City standards (< 3m). • Mature vegetation (trees and shrubs) present at toe of dyke, height of vegetation equal to or greater than height of dyke (provides natural buffer between river and residential properties) • North end of Argyle Street, Empress Avenue/Napier Street may allow access to top of dyke for repair. • Potential staging area at end of St. Patrick St., but limited. • Pathway lighting located on hydro poles. • No hazard trees noted in this area but maintenance required to prevent intrusive species.

Section	Location (Extent)	Damage Reach	Top of Dyke Elevation (m)	Approximate Distance from Dyke Toe to Property Line (m)	TYPE OF DYKE STRUCTURE				TYPE OF PATH WAY		Existing Infrastructure	EXISTING DEFICIENCIES								Condition/Comments
					Natural Bank	Concrete Revetment	Gabion Basket	Modular Block (Geogrid)	Asphalt	Vegetated (Trail)		Concrete Distress	Settlement	Bulging	Exposure (Loss of Granular)	Hand Rail	General Damage (Gabion Baskets Torn, etc.)	Other (Erosion, Vegetation Loss)	Condition Rating (Previous inspections)	
Blackfriars	Empress Avenue to Cummings Avenue	#12	236.28 to 238.08	15-20		✓			✓		• Blackfriars Bridge (historical landmark). • Empress Avenue, Blackfriars Street, and Cummings Avenue adjacent to dyke in this area.	✓	✓	✓	✓	✓			2	• Access via Blackfriars Bridge not considered an option due to historical significance and anticipated load restrictions. • In the event that any work should be required on the bridge to accommodate dyke improvements, approvals would likely be significant due to historical landmark classification. • Spalling, bulging, cracked and deteriorated concrete panels are present throughout this section. • Exposed wire mesh and rebar, concrete in poor condition in some areas. • Original steel handrail generally present along this segment. Steel handrail observed to be damaged at various areas. • Mature vegetation present along toe of dyke south of Blackfriars Bridge as well as top of dyke. • Potential staging areas present north (off Empress Avenue) and south (off Cummings Avenue) of Blackfriars Bridge. • Any replacement work may require vegetation removal in area of accretion due to work and staging area requirements. • Little to no lighting fixtures along this segment of dyke. • Pathway does not meet City standards (< 3m). • No hazard trees noted in this area but maintenance required to prevent intrusive species.
Natural Bank	Cummings Avenue to Leslie Street	#11,12	236.25 to 236.10	11-15* *not including accretion area	✓	✓			✓		• Cummings Avenue, Carrothers Avenue, and Leslie Street adjacent to dyke in this area.	✓	✓	✓		✓			4	• Concrete revetment present along the Natural Bank section, however extent of concrete revetment (depth) is unknown due to area of accretion at toe of structure. It is anticipated that a toe structure may not be present in this area based on a review of aerial photography. Only 1 to 2 m of concrete exposed at top of dyke. • Spalling, bulging, and cracked panels present along this section. • Pathway lighting is present. • Pathway does not meet City standards (< 3m), however it is in generally good condition. • Mature vegetation and trees present along revetment. • Residential properties in close proximity to top of dyke/pathway, construction staging for repair/replacement could be an issue. • Cedar hedge (planted by homeowner) very close to pathway. • Potential staging area within area of accretion, however this would require removal of vegetation in this area. • No hazard trees noted in this area but maintenance required to prevent intrusive species.

Section	Location (Extent)	Damage Reach	Top of Dyke Elevation (m)	Approximate Distance from Dyke Toe to Property Line (m)	TYPE OF DYKE STRUCTURE				TYPE OF PATH WAY		Existing Infrastructure	EXISTING DEFICIENCIES								Condition/Comments
					Natural Bank	Concrete Revetment	Gabion Basket	Modular Block (Geogrid)	Asphalt	Vegetated (Trail)		Concrete Distress	Settlement	Bulging	Exposure (Loss of Granular)	Hand Rail	General Damage (Gabion Baskets Torn, etc.)	Other (Erosion, Vegetation Loss)	Condition Rating (Previous inspections)	
Labatt Park / Forks **Deficiencies do not pertain to Phase I Replacement*	Leslie Street to Dundas Street	#11	236.00 to 236.75	20-26		✓		✓	✓		• 900mm ø storm outlet. • 300mm ø storm outlet. • 300mm ø sanitary crossing. • 900mm ø sanitary crossing. • Dundas Street Bridge. • Queens Avenue Bridge. • 300mm ø watermain supported on bridge. • Hydro underground duct structure and cables. • Walter J. Blackburn Memorial Fountain. • Riverside Drive and Wharncliffe Road North adjacent to dyke in this area.	✓	✓	✓	✓				3	• Original concrete revetment with a transition to the modular block structure (Phase 1) at Rogers Avenue to the Queens Avenue Bridge. • Spalling, bulging and cracked panels present north of Phase 1 with vegetation growing between panel joints (original concrete revetment only). • Dyke is fully visible from Harris Park and downtown bridges. • Residential properties in close proximity to top of dyke/pathway. • Pathway along Phase I meets City of London standards. • Pathway lighting is present. • No deficiencies noted along Phase I structure. • Walter J. Blackburn Memorial Fountain present at Forks.
Wharncliffe	Dundas Street to Wharncliffe Bridge	#9	235.73 to 237.36	>15			✓		✓		• Wharncliffe Road North Bridge. • 300mm ø watermain supported on bridge. • Wharncliffe Road North and Cavendish Crescent adjacent to dyke in this area.						✓		4	• Concrete revetment transitions to gabion basket south of Dundas Street Bridge to the Wharncliffe Road Bridge. • Natural bank, grasses and trees present along this section. • Adequate area for construction staging. • Pathway lighting is present. • Pathway runs along top of berm, land slopes down towards Riverside Drive. • No hazard trees noted in this area but maintenance required to prevent intrusive species.
Cavendish East	Wharncliffe Road North Bridge to Cavendish Crescent	#8	235.55 to 236.27	12-20	✓	✓				✓	• 1050 mm ø storm outlet and spillway. • 1050 mm ø sanitary along north bank. • 300 mm ø sanitary crossing. • Cavendish Crescent adjacent to dyke in this area.							✓	3	• Concrete revetment present along this section. Revetment steep in this area. • Cracked and deteriorated concrete panels present. • Handrail repaired prior to 2010 inspection. • No dedicated lighting present. Some lighting present on adjacent bridge. • No defined pathway present, however, an earthen walking trail was observed. • Steep slope from property line to rivers edge • Repair or replacement work may be difficult due to lack of staging area, unless access is through Cavendish West area. • Manitoba Maple infestation noted (refer to Dougan & Associates report). Potential for heaving damage.

Section	Location (Extent)	Damage Reach	Top of Dyke Elevation (m)	Approximate Distance from Dyke Toe to Property Line (m)	TYPE OF DYKE STRUCTURE				TYPE OF PATH WAY		Existing Infrastructure	EXISTING DEFICIENCIES								Condition/Comments
					Natural Bank	Concrete Revetment	Gabion Basket	Modular Block (Geogrid)	Asphalt	Vegetated (Trail)		Concrete Distress	Settlement	Bulging	Exposure (Loss of Granular)	Hand Rail	General Damage (Gabion Baskets Torn, etc.)	Other (Erosion, Vegetation Loss)	Condition Rating (Previous inspections)	
Cavendish West	Cavendish Crescent to Cavendish Park	#8	234.61 to 236.93	>15	✓					✓	• Cavendish Park. • City of London Works Yard. • 1200 mm ø storm outlet. • Cavendish Crescent and Forward Avenue adjacent to dyke in this area.								4	• City trail system present. • Moderate to dense vegetation in the area. • City of London Works Yard present. • Flood protection provided by berm that extends from rivers edge north, then transitions west near adjacent residential property lines. • Active methane monitoring site. • Suspect fill in area attributed to site filling (berm construction) and backfilling of storm sewer. • Increasing vegetation near edge of water. Relatively steep edge to river with combination of vegetation and rip rap in area. • No staging issues anticipated. • Manitoba Maple infestation noted (refer to Dougan & Associates report). Potential for heaving damage.

9.0 REVIEW OF ALTERNATIVES AND IMPLEMENTATION SCHEDULE – TRIGGERS

As part of the Class EA planning process reasonable and feasible alternative solutions to the Phase 1 problem statement are to be identified and described in Phase 2. The magnitude of the net positive and negative effects of each alternative solution, as well as mitigating measures, are to be identified and evaluated. Based on this evaluation a preliminary preferred alternative is selected and confirmed based on public, agency, and stakeholder consultation.

9.1 REVIEW OF BACKGROUND INFORMATION

In order to develop alternative solutions for the West London Dyke the following inputs were utilized:

- Review of the guiding principles related to the dyke;
- Review of the environmental components as defined under the Environmental Assessment Act including:
    - Natural Environment – component having regard for the protection of the natural and physical elements of the environment including natural heritage,
    - Social/Cultural Environment – component evaluating the potential effects to residents, businesses, neighbourhoods, community character, social impacts, historical and archaeological issues, and municipal development objectives,
    - Legal/Jurisdictional – consideration for potential land requirements for each alternative,
    - Economic/Financial – consideration for potential capital and maintenance costs,
    - Technical – consideration of the technical suitability of the alternative, including integration with existing infrastructure;
- Review of existing dyke profiles and potential flood line elevations based on HEC-RAS modeling results;
- Review of existing dyke structure and condition;
- Review of existing site constraints;
- Review of existing infrastructure in the area;
- Review of planning initiatives and other City documents and policies; and

- Review, if any, of previous Class EA planning solutions that could be revisited.

Given the length and varying characteristics of the West London Dyke, both the alternatives and the preferred solution for a specific segment of the dyke may not be the same everywhere along the dyke. In general, recommendations were provided for each of the eight segments reviewed; however, a few of these segments required further breakdown to address specific needs.

9.2 QUALITATIVE EVALUATION

In order to maintain consistency with other City of London Master Plan and Class Environmental Assessment projects, the subjective evaluation of each alternative was completed and ranked in accordance with the following standard system:



The decision to incorporate a qualitative evaluation system recognizes the difficulty with determining statistically relevant and accurate numerical systems in evaluating alternatives. Rather, each individual consideration is assessed separately and the preferred solution determined by means of balancing all issues.

The Master Plan and Class EA planning process recognizes that there are often many alternatives to address a particular issue or problem, and that these alternatives should be considered. Alternative solutions identified as part of the Master Repair Plan are listed as follows:

- **Alternative 1** – Do Nothing;
- **Alternative 2** – Replace with Similar Dyke (Existing Footprint);
- **Alternative 3** – Replace with New Dyke to 100 Year Standard + Freeboard; and
- **Alternative 4** – Replace with New Dyke to 250 Year Standard + Freeboard.

The following sections provide further information on each alternative.

9.3 ALTERNATIVE 1 – DO NOTHING

As with all Class EAs, alternative solutions to the project must be reviewed against the "Do Nothing" alternative. The "Do Nothing" alternative would have direct negative consequences if it was selected as the proposed alternative. As a "Do Nothing" option, the UTRCA and City of London would continue to undertake minor maintenance activities only on the existing dyke.

With regards to the concrete revetment component of the dyke, this is not considered a viable alternative as past inspections and testing have identified key problems with the integrity of the structure. In addition, the age of the structure would suggest that it has or is approaching the end of its useful life and will therefore require replacement or substantial rehabilitation within the timeline of this Master Repair Plan.

Impacts of this option to the 20-year horizon are minimal for the natural, cultural and socio-economic environments, with exception of the flood protection component. However, this is not necessarily representative as a significant portion of the dyke would eventually require repair/replacement and, therefore, the impacts to the environment would be similar to Alternatives 2, 3, and 4.

Accordingly, the "Do Nothing" alternative does not address the needs defined in the problem statement and therefore will not be carried forward for further review in this Class EA process with respect to the existing concrete segments. With regards to the existing earth berm segments and for segments located both upstream and downstream of the current dyke limits, the "Do Nothing" option will be carried forward for consideration; however, noting that potential stability issues may exist and may warrant remedial or replacement measures. Stability issues, whether or not they exist, can only be determined pending further detailed investigation.

Table 9.1 summarizes the impacts to the environment and qualitatively evaluates the alternatives.

9.4 ALTERNATIVE 2 – REPLACE WITH SIMILAR DYKE (EXISTING FOOTPRINT)

This option assumes replacement of the dyke to existing conditions and within the existing footprint, with minor flood enhancements where allowed. Essentially, this option is intended to maintain the existing dyke appearance.

With exception of the "Do Nothing" option, this option is anticipated to result in the least impact to the natural environment as it is intended to remain within the existing footprint. From a socio-economic standpoint, this alternative provides a "status quo" option which is expected to appeal to a minority of adjacent residents, based on comments received during the public consultation process. However, this option does not address the potential need for enhanced flood protection beyond the 100 year level and associated socio-economic impacts related to the increased potential for flood damage. In addition, this option may not allow for amenity

improvements such as pathway widening to areas behind the dyke due to current constraints identified. This option would also not meet the SPA policy requirements.

Impacts to the natural environment may be marginally less than Alternatives 3 and 4; however, that will be subject to the area in question and extent of subsurface work required. It is possible that work in the river may still be required along segments of the dyke due to the lack of proper staging areas to accommodate mobilization and material stockpiling, etc.

Table 9.1 summarizes the impacts to the environment and qualitatively evaluates the alternatives.

9.5 ALTERNATIVE 3 – REPLACE WITH NEW DYKE TO 100 YEAR STANDARD + FREEBOARD

This option assumes replacement of the existing dyke with a new dyke to meet the 100 year flood elevation with additional freeboard. For the purpose of conceptual planning, a freeboard of 2 feet (0.6 m) was assumed. Unlike Alternative 2, this option may result in the construction of the new dyke outside of the existing footprint to permit additional amenity and functional improvements.

However, this option does not address the potential need for enhanced flood protection beyond the 100 year level and associated socio-economic impacts related to the increased potential for flood damage. This option would also not meet the SPA policy requirements. From an economic perspective, this option is also considered the highest cost relative to flood protection provided, although the total capital cost is less than Alternative 4.

From an environmental perspective, this option is anticipated to have similar impact as Alternative 4. It is possible that work in the river is required in some areas due to the lack of proper staging areas. Land acquisition is not anticipated, but would need to be assessed in greater detail during preliminary design and based on further assessment of staging areas.

Table 9.1 summarizes the impacts to the environment and qualitatively evaluates the alternatives.

9.6 ALTERNATIVE 4 – REPLACE WITH NEW DYKE TO 250 YEAR STANDARD + FREEBOARD

This option assumes the replacement of the existing dyke structure with a new dyke structure to accommodate the flood protection and amenity improvements, with additional freeboard. As with Alternative 3, for the purpose of conceptual planning a freeboard of 2 feet (0.6 m) was assumed as per the discussion in Section 8.10 of this report. In some areas, it is anticipated a higher dyke may require a steeper slope and potential placement closer to the river to accommodate the change in grade and area behind the dyke to incorporate amenity improvements.

The largest negative impact on this option is the economic impact (highest capital cost); however, this option would better address the existing economic impacts related to flood damage. This option is also considered to provide the least impact on the social/cultural environment as it could look to implement amenity and functional improvements with flood protection, unlike Alternatives 1, and 2, and to a lesser extent Alternative 3 which may still provide amenity improvements but at reduced flood protection. Impacts to the natural environment may be marginally greater than Alternative 2; however, that will be subject to the area in question and extent of subsurface work required. It is possible that work in the river is required in some areas due to the lack of proper staging areas. Land acquisition is not anticipated, but would need to be assessed in greater detail during preliminary design and based on further assessment of staging areas.

Although this option has the highest initial (capital) cost, it is predicted to have the lowest long-term cost. The existing dyke structure is reaching the end of its useful life and will require either extensive repair or replacement. Alternatives 2 and 3 provide newer dykes, but at lower elevations which may be toppled more regularly in the future based on preliminary findings from current climate change studies unless active flood protection measures are implemented.

Table 9.1 summarizes the impacts to the environment and qualitatively evaluates the alternatives.

Figure 9.1: Qualitative Evaluation of Alternatives

Segment	Approximate Length (m)	Condition Rating	Type	Flood Elevation			Lowest Elevation (mASL)	Approx. # of Properties within Hazard Area	Est. Current Flood Damage 100 yr / 250 yr	Alternatives	Compliance with Guiding Principles		Natural Environment	Social / Cultural	Economic/Financial		Future Class EA Requirements	Technical Issues / Requirements	Preferred Alternative
				100 yr (mASL)	250 yr (mASL)	250 yr + 10% (mASL)					Flood Protection	Amenity/Functional Improvements			Estimated Capital Costs[2]	Estimated Maintenance Costs			
													-Potential impacts to the natural environment due to siting requirements	-Short-term construction related impacts including traffic, noise, access -Potential siting or routing issues, including impacts to cultural or heritage (archaeological), impacts to recreational use	-Initial cost to undertake the alternative	-Estimated maintenance and/or operational requirements	-Anticipated Class EA requirements to implement project	-Ability to implement alternative -Consideration for constructability of proposed solution, timing, potential for disruptions - Ability of the solution to suit potential regulatory requirements	Least Preferred ○ ◔ ◑ ◕ ● Most Preferred
Oxford North	300	2	Concrete Revetment with Toe (includes 250 m vegetated area to north)	236.81 to 237.03	237.50 to 237.69	238.09 to 238.26	235.06	20	$382,000 / $1,558,000	**Alternative 1**: Do Nothing	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension.	None identified as no work is proposed.	None identified as no work is proposed.	None identified.	Highest maintenance costs over the planning period due to concrete distress.	Not applicable.	Existing dyke may require replacement within 20 year period due to condition.	○ Not preferred as it does not meet the guiding principles for the dyke. Also, it is anticipated that structure may need replacement within 20 year horizon.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension.	Least impact compared to Alternatives 3 and 4.	Least impact compared to Alternatives 3 and 4 relating to construction activities.	$2,333,000 (excludes pathway)	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Work within vicinity of Oxford Street Bridge. No anticipated issues noted.	◔ This option not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway upgrades (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints and potential need to construct future pathway beneath Oxford St. Bridge, however impacts can be mitigated through best management practices.	Moderate increased impact compared to Alternative 2, but can be mitigated using best management practices.	$3,449,000 (includes pathway)	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Work within vicinity of Oxford Street Bridge. In order to accommodate amenity/functional improvements, slope of dyke may be increased. In addition, extension of the dyke to the north may be required to address the enhanced flood protection.	◑ Viable solution, however it does not provide protection to Regulatory Level. Opportunity to incorporate active flood protection measures due to proximity to nearby road for access.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including pathway upgrades (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints and potential need to construct future pathway beneath Oxford St. Bridge, however impacts can be mitigated through best management practices.	Moderate increased impact compared to Alternative 2, but can be mitigated using best management practices.	$3,687,000 (includes pathway)	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Due to limited footprint, slope of dyke would need to increase to accommodate height increase. Would need to consider impact on flood storage due to reduction in cross section area. In addition, extension of the dyke to the north may be required to address the enhanced flood protection.	● Preferred solution as it best meets the guiding principles. Impacts through construction can be mitigated through best management practices. Costs for enhancement are comparable to 100 year structure.
St. Patrick	350	2	Concrete Revetment with Toe	236.52 to 236.79	237.22 to 237.48	237.81 to 238.04	236.74	200	$3,627,000 / $9,799,000	**Alternative 1**: Do Nothing	Currently provides up to 100 year flood protection with minimal freeboard. Does not meet Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	None identified.	Highest maintenance costs over the planning period	Not applicable	Existing dyke likely to require replacement within 20 year period due to current condition.	○ Not preferred as it does not meet the guiding principles for the dyke. Existing condition of dyke would indicate that replacement versus repair is likely required within the 20 year planning period.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Provides up to 100 year flood protection. Does not meet Regulatory Flood Level requirements.	Current pathway does not meet City standards. Presence of City owned land would permit potential Butterfly/Bird Watching garden.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Minimal impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$5,403,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Construction/staging constraints.	○ This option not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including potential Butterfly/Bird Watching garden near existing park (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$5,567,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	In order to accommodate amenity/functional improvements, slope of dyke may be increased. Construction staging and access may be difficult.	◑ Viable solution, however it does not provide protection to Regulatory Level. Opportunity exists to incorporate active flood protection measures due to proximity to nearby roads for access. However, significant measures would be necessary to accommodate length of entire section.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including potential Butterfly/Bird Watching garden near existing park (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Increase in elevation may require placement of structure closer to toe.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$5,788,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	In order to accommodate increased height to 250 year level (+ freeboard), and amenity/functional improvements, increase dyke slope may be required. Would need to consider impact on flood storage due to reduction in cross section area.	● Preferred solution as it best meets the guiding principles. Significant number of properties protected by dyke in this area, therefore passive protection to 250 year level (+ freeboard) is preferable. Cost/benefit advantage over Alternative 3 is significant.
Blackfriars	260	2	Concrete Revetment with Toe	236.23 to 236.44	236.94 to 237.15	237.53 to 237.74	236.28	210	$8,959,000 / $9,993,000	**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities. Deficiencies along pathway noted that would require action.	None identified as no work is proposed.	None identified as no work is proposed.	None identified.	Highest maintenance costs over the planning period.	Not applicable.	Existing dyke likely to require replacement within 20 year period due to current condition.	○ Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Current pathway does not meet City standards. This option would not allow additional amenity/functional improvements including lookout area and pathway beneath bridge due to proximity to adjacent lands.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. No impact to Blackfriars Bridge anticipated.	$4,057,000 (excludes pathway)	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Construction/staging constraints.	○ This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4. Not preferred as structure would not meet 100 year flood protection or meet Regulatory Flood Levels.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway beneath Blackfriars Bridge and Lookout Area (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Staging requirements may call for removal of vegetation along south boundary.	Moderate impact based on construction activities, but can be mitigated using best management practices. No impact to Blackfriars Bridge anticipated.	$5,367,000 (includes pathway)	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Potential for Schedule C EA requirement due to presence of Blackfriars Bridge and potential transportation impacts.	In order to accommodate amenity/functional improvements, slope of dyke may be increased.	◑ Viable solution, however it does not provide protection to Regulatory Level. Opportunity to incorporate active flood protection measures due to proximity to nearby roads for access.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including pathway beneath Blackfriars Bridge and Lookout Area (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Staging requirements may call for removal of vegetation along south boundary.	Moderate impact based on construction activities, but can be mitigated using best management practices. No impact to Blackfriars Bridge anticipated, but likely subject to final dyke elevation.	$5,546,000 (includes pathway)	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Potential for Schedule C EA requirement due to presence of Blackfriars Bridge and potential transportation impacts.	In order to accommodate amenity/functional improvements and increase in dyke height, slope of dyke may be increased.	● Preferred solution as it best meets the guiding principles. It is anticipated that additional increase in height of ~1.5m would be sufficient to provide 250 yr + protection. Significant number of properties protected by dyke in this area, therefore passive protection to 250 year level (+ freeboard) is preferable. Cost/benefit advantage over Alternative 3 is significant.
Natural Bank	230	4	Concrete Revetment with Naturalized Toe	236.32 to 236.36	237.04 to 237.09	237.64 to 237.69	236.06	180	$8,480,000 / $9,347,000	**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	None Identified	Highest maintenance costs over the planning period.	Not applicable	None identified.	◔ Not preferred as it does not meet the guiding principles for the dyke. Invasive species in area could result in further damage to the dyke. Not preferred as it does not meet 100 year flood protection or the Regulatory Flood Level.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Current pathway does not meet City standards. This option could still allow additional amenity/functional improvements including enhanced playground area as per 2007 Master Plan Concept behind dyke.	Potential significant impact to existing vegetated area. Could require substantial clearing and grubbing, however mostly invasive species noted. Marginal impact to river. Work in river not anticipated.	Moderate impact based on construction activities, but can be mitigated using best management practices. Work in river not anticipated.	$3,271,000	No significant maintenance costs anticipated, however, if segment is to remain vegetated, minor vegetation control costs should be budgeted.	Covered by Master Repair Plan	Need to determine extent of dyke (as it is partially buried by deposition), could require significant earthworks.	◑ This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 3 or 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including enhanced playground area and river access (per 2007 Master Plan Concept).	Potential significant impact to existing vegetated area. Could require substantial clearing and grubbing, however mostly invasive species noted. Marginal impact to river. Work in river not anticipated.	Moderate impact based on construction activities, but can be mitigated using best management practices. Work in river not anticipated.	$3,487,000	No significant maintenance costs anticipated, however, if segment is to remain vegetated, minor vegetation control costs should be budgeted.	Covered by Master Repair Plan	Need to determine extent of dyke (as it is partially buried by deposition), could require significant earthworks.	◕ Viable solution, however it does not provide protection to Regulatory Level. Would negatively impact mature vegetation along the dyke face, but could be mitigated using proper planning and best management practices.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including enhanced playground area and river access (per 2007 Master Plan Concept).	Potential significant impact to existing vegetated area. Could require substantial clearing and grubbing, however mostly invasive species noted. Marginal impact to river. Work in river not anticipated.	Moderate impact based on construction activities, but can be mitigated using best management practices. Work in river not anticipated.	$3,646,000	No significant maintenance costs anticipated, however, if segment is to remain vegetated, minor vegetation control costs should be budgeted.	Covered by Master Repair Plan	Need to determine extent of dyke (as it is partially buried by deposition), could require significant earthworks.	● Preferred solution as it best meets the guiding principles. Significant number of properties protected by dyke in this area, therefore passive protection to 250 year level (+ freeboard) is preferable. Cost/benefit advantage over Alternative 3 is significant.

Segment	Approximate Length (m)	Condition Rating	Type	Flood Elevation			Lowest Elevation (mASL)	Approx. # of Properties within Hazard Area	Est. Current Flood Damage 100 yr / 250 yr	Alternatives	Compliance with Guiding Principles		Natural Environment	Social / Cultural	Economic/Financial		Future Class EA Requirements	Technical Issues / Requirements	Preferred Alternative	
				100 yr (mASL)	250 yr (mASL)	250 yr + 10% (mASL)					Flood Protection	Amenity/Functional Improvements	-Potential impacts to the natural environment due to siting requirements	-Short-term construction related impacts including traffic, noise, access -Potential siting or routing issues, including impacts to cultural or heritage (archaeological), impacts to recreational use	Estimated Capital Costs[2] -Initial cost to undertake the alternative	Estimated Maintenance Costs -Estimated maintenance and/or operational requirements	-Anticipated Class EA requirements to implement project	-Ability to implement alternative -Consideration for constructability of proposed solution, timing, potential for disruptions - Ability of the solution to suit potential regulatory requirements	Least Preferred ○ ◔ ◑ ◕ ● Most Preferred	
Labatt Park/Forks	135	3	Concrete Revetment with Toe	236.32 to 236.35	237.05 to 237.08	237.65 to 237.67	236.00	340	$22,560,000 / $24,158,000	**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	None identified	Highest Maintenance Costs over the planning period	Not applicable	Existing dyke likely to require replacement within 20 year period due to current condition.	○	Not preferred as it does not meet the guiding principles for the dyke
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Current pathway does not meet City standards. This option could not allow additional amenity/functional improvements including look out area to Harris Park as per 2007 Master Plan Concept behind dyke.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Large trees located near property line likely impacted based on existing footprint.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,347,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Construction/staging constraints.	◔	This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4. Not preferred as structure would not meet 100 year flood protection or meet Regulatory Flood Levels.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway widening and ability to incorporate look out area depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Impact to large trees located near property line may be minimized depending on placement of wall.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,476,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	In order to accommodate amenity/functional improvements, slope of dyke may be increased.	◑	Viable solution, however it does not provide protection to Regulatory Level. Opportunity to incorporate active flood protection measures due to proximity to nearby roads for access.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including pathway widening and ability to incorporate look out area depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Impact to large trees located near property line may be minimized depending on placement of wall.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,578,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Consider same type of dyke structure as Phase 1 for continuity/ connection at Rogers Ave.	●	Preferred solution as it best meets the guiding principles. It is anticipated that additional increase in height of ~1.5m would be sufficient to provide 250 yr + protection. Cost/benefit advantage over Alternative 3 is significant.
	300	4	Concrete Modular Block Wall with Geogrid (2007 - 2009 Replacement Projects)	236.23 to 236.27	236.95 to 237.00	237.55 to 237.60	236.71	-		**Alternative 1**: Do Nothing	Current structure provides up 100 year flood protection.	Amenity/functional improvements identified in 2007 construction	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Minor maintenance required, primarily along lower pathway.	Not applicable	Not applicable	◕	Viable alternative.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not meet revised Regulatory Flood Level.	Generally not applicable due to current condition of the dyke (not anticipated to need replacement within the 20 year study period). Amenities were incorporated as part of replacement phase.	Limited impact anticipated due to availability of lands for staging, etc. and setback of river to property line.	Moderate impact based on construction activities, but can be mitigated using best management practices.	$4,560,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Construction/staging constraints.	X	Not applicable. Structure constructed in 2007 and not anticipated to require replacement within 20 year planning period.
										Alternative 3: Replace w 100 yr + Freeboard	Not applicable as current modular wall provides above 100 year limit. This option would not meet Regulatory Flood Level.	Generally not applicable due to current condition of the dyke (not anticipated to need replacement within the 20 year study period). Amenities were incorporated as part of replacement phase.	Limited impact anticipated due to availability of lands for staging, etc. and setback of river to property line.	Moderate impact based on construction activities, but can be mitigated using best management practices.	$4,786,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Construction/staging constraints.	X	Not applicable. Structure constructed in 2007 and not anticipated to require replacement within 20 year planning period.
										Alternative 4: Replace with 250 yr + Freeboard	Current structure provides up to Regulatory Flood Level but does not provide up to the revised Regulatory Flood Level plus freeboard.	Generally not applicable due to current condition of the dyke (not anticipated to need replacement within the 20 year study period). Amenities were incorporated as part of replacement phase.	Limited impact anticipated due to availability of lands for staging, etc. and setback of river to property line.	Moderate impact based on construction activities, but can be mitigated using best management practices.	$5,177,000 (includes entire wall reconstruction. Cost estimate of $250,000 for raising of the existing wall)	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Construction/staging constraints.	●	Replacement not viable. Consideration given to raising of the dyke is the preferred solution.
	175	4	Natural Bank with Gabion Toe	236.10 to 236.19	236.77 to 236.91	237.32 to 237.51	236.22	--		**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified.	Not applicable.	Maintenance costs associated with vegetation control.	Covered by Master Repair Plan	Not applicable.	○	Viable alternative as amenity improvements can be integrated without dyke upgrades. Does not meet the Regulatory Flood Level, however less impacted properties in area, therefore cost benefit of raising the structure is less.
										Alternative 2: Replace w Similar Dyke (existing footprint)									X	This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Forks of the Thames Phase 4 completed. Not known whether additional amenity/functional improvements are required.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions.	None identified.	$452,000	Depends on type of dyke selected and amenity requirements. Not anticipated to be significantly higher costs than existing dyke maintenance.	Covered by Master Repair Plan	None identified.	◕	Viable solution, however it does not provide protection to the Regulatory Flood Limit. Adequate land behind dyke would make Alternative 4 more preferable.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Forks of the Thames Phase 4 completed. Not known whether additional amenity/functional improvements are required.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions.	None identified.	$514,000	Depends on type of dyke selected and amenity requirements. Not anticipated to be significantly higher costs than existing dyke maintenance.	Covered by Master Repair Plan	None identified.	●	Preferred solution as it best meets the guiding principles and assuming additional flood protection accomplished by means of berm enhancements. It is anticipated that additional increase in height of ~1m would be sufficient to provide 250 yr + protection. Cost/benefit advantage is marginal, however, due to smaller impacted area.
Wharncliffe	380	4	Natural Bank with Gabion Toe	235.83 to 236.06	236.47 to 236.75	236.98 to 237.31	235.73	1	$1,233,000 / $1,236,000	**Alternative 1**: Do Nothing	Currently provides up to 100 year flood protection with little to no freeboard. Does not meet Regulatory Flood Level requirements.	Capable of implementing amenity or functional improvements separately within the area due to its size.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Maintenance costs associated with vegetation control.	Not applicable.	Not applicable.	○	Not preferred as it does not meet the guiding principles for the dyke
										Alternative 2: Replace w Similar Dyke (existing footprint)									X	This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impacts expected as construction could proceed out of river. Minor repairs to existing gabions may be required at rivers edge.	None identified.	$4,242,000 (includes pathway)	Maintenance costs associated with vegetation control.	Covered by Master Repair Plan	May need to relocate pathway.	◕	Viable solution, however it does not provide protection to the Regulatory Limit. Adequate land behind dyke would make Alternative 4 more preferable without a significant increase in cost.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impacts expected as construction could proceed out of river. Minor repairs to existing gabions may be required at rivers edge.	None identified.	$4,376,000 (includes pathway)	Maintenance costs associated with vegetation control.	Covered by Master Repair Plan	May need to relocate pathway.	●	Preferred solution as it best meets the guiding principles and assuming additional flood protection accomplished by means of berm enhancements. It is anticipated that additional increase in height of ~1.5m would be sufficient to provide 250 yr + protection. Cost/benefit advantage is marginal, however, due to smaller impacted area.

WEST LONDON DYKE MASTER REPAIR PLAN

Segment	Approximate Length (m)	Condition Rating	Type	Flood Elevation			Lowest Elevation (mASL)	Approx. # of Properties within Hazard Area	Est. Current Flood Damage 100 yr / 250 yr	Alternatives	Compliance with Guiding Principles		Natural Environment	Social / Cultural	Economic/Financial		Future Class EA Requirements	Technical Issues / Requirements	Preferred Alternative	
				100 yr (mASL)	250 yr (mASL)	250 yr + 10% (mASL)					Flood Protection	Amenity/Functional Improvements			Estimated Capital Costs[2]	Estimated Maintenance Costs				
													-Potential impacts to the natural environment due to siting requirements	-Short-term construction related impacts including traffic, noise, access -Potential silting or routing issues, including impacts to cultural or heritage (archaeological), impacts to recreational use	-Initial cost to undertake the alternative	-Estimated maintenance and/or operational requirements	-Anticipated Class EA requirements to implement project	-Ability to implement alternative -Consideration for constructability of proposed solution, timing, potential for disruptions - Ability of the solution to suit potential regulatory requirements	Least Preferred ○ ◔ ◑ ◕ ● Most Preferred	
Cavendish East	160	3	Concrete Revetment with Toe	235.69 to 235.70	236.33 to 236.33	236.83 to 236.84	235.55	70	$4,376,000 / $4,947,000	**Alternative 1**: Do Nothing	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Highest maintenance costs compared to other alternatives over the planning period.	Not applicable	Existing dyke likely to require replacement within 20 year period due to current condition.	○	Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension or construction of pathway at top of dyke.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,280,000	No significant maintenance costs anticipated.	Covered by Master Repair Plan	Construction/staging constraints.	○	This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 3 or 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway construction depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,758,000	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Covered by Master Repair Plan	In order to accommodate amenity/functional improvements, slope of dyke may be increased.	◑	Viable solution, however it does not provide protection to the Regulatory Limit. Could potentially implement active flood control measures.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Allows opportunities for improvements including pathway construction depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,820,000	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Covered by Master Repair Plan	In order to replace dyke to 250 yr, area available for construction may result in increased slope of dyke, similar to Phase I structure (also to minimize height).	●	Preferred solution as it best meets the guiding principles for the dyke.
	240	4	Natural Bank	235.68 to 235.68	236.32 to 236.22	236.82 to 236.82	235.61	60	$487,000 / $550,000	**Alternative 1**: Do Nothing	Currently provides protection up to the 100 year flood level. Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Maintenance costs associated with vegetation control.	Not applicable	Not applicable	◔	Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)									X	This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements (signage) within the area due to its size.	Mature trees along this section, could impose constraints on construction.	None identified.	$2,486,000	Maintenance costs associated with vegetation control.	Covered by Master Repair Plan	Significant mature vegetation to address during construction.	◕	Viable solution, however it does not provide protection to the Regulatory Limit.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Capable of implementing amenity or functional improvements (signage) within the area due to its size.	Mature trees along this section, could impose constraints on construction.	None identified.	$2,707,000	Maintenance costs associated with vegetation control.	Covered by Master Repair Plan	Significant mature vegetation to address during construction.	●	Preferred solution as it meets the guiding principles. Would negatively impact mature vegetation along the dyke face, but could be mitigated using proper planning and best management practices.
Cavendish West	220	4	Natural Bank with Berms	235.54 to 235.70	236.18 to 236.33	236.69 to 236.84	234.61	--	--	**Alternative 1**: Do Nothing	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements separately within the area due to its size.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Maintenance costs associated with vegetation control.	Not applicable,	Not applicable,	◔	Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)									X	This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions. Implement best management practices.	None identified.	$1,079,000	Maintenance costs associated with vegetation control.	Covered by Master Repair Plan	None identified, however extension of the dyke may be required to address the enhanced flood protection requirements.	◕	Viable solution, however it does not provide protection to the Regulatory Level.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions. Implement best management practices.	None identified.	$1,182,000	Maintenance costs associated with vegetation control.	Covered by Master Repair Plan	None identified, however extension of the dyke may be required to address the enhanced flood protection requirements.	●	Preferred solution as only moderate increase in the dyke height is required in order to achieve Regulatory Flood Level. Sufficient space available to integrate height increase.

Notes:
1) Estimated capital cost includes construction cost, engineering costs at 12.5%, architectural costs at 2% and geotechnical/environmental costs at 1.5%.
2) Denotes total estimated costs in 2015 dollars. Refer to Table 9.2 for potential costs associated with segmenting of work.
3) X - denotes non-applicable action.

9.7 SELECTION OF THE PREFERRED ALTERNATIVE

Refer to Table 9.1 which provides a list of the preferred alternatives for each study segment. With the exception of the section from Rogers Avenue to the Queens Avenue Bridge, Alternative 4 has been identified as the preferred solution.

9.8 ANTICIPATED CAPITAL COSTS

Refer to Table 9.1 which provides the anticipated capital costs associated with the preferred alternative for each dyke segment. All capital costs are reported in 2016 Canadian dollars. Use where applicable has been made of the costs associated with the 2007 Phase 1 Replacement Structure project and the 2009 Phase 2 project. These previous costs have been adjusted to 2016 costs using the average Canadian Non-Residential Building Construction Price Index and include the following:

- Investigation costs (geotechnical and environmental);
- Construction costs;
- Architectural design costs; and
- Engineering costs, including design, tender, construction administration and post-construction services.

Table 9.1 details the construction and non-construction costs. Approval costs, including costs associated for land acquisition, if required, are not included at this time subject to further detailed review. In addition, the cost estimates provided do not include HST or other value added taxes as may be applicable over time. With regards to costs associated with potential additional Class EA commitments (finalization of Schedule C in conjunction with component of Phase 1 and 2 completed as part of this Master Plan), the following high level cost estimate should be considered in addition to the Table 9.1 costs:

- Schedule C: estimated $70,000 to $80,000.

Actual Class EA costs will also be dependent of the segment of dyke structure to be considered, as it may influence additional study/field work requirements to be completed as part of the Class EA. Estimated costs should be determined during the preliminary stage.

As noted in Section 4.10 of this report, the assessment of the dyke structure on a segment by segment basis is not intended to represent exact limits for future construction projects. Future works (involving repair or replacement) may involve either work within a segment, or overlapping of portions of segments.

9.9 RECOMMENDED IMPLEMENTATION STRATEGY

In Section 5.0, five primary drivers were described. These drivers were defined as potential reasons to implement or otherwise initiate work. The process of undertaking a specific capital upgrade project begins when a "trigger point" requiring action by the City and UTRCA has been reached. A "trigger point" is defined as when a set of circumstances occur that warrant the commencement of a capital upgrade project.

With exception of potential future pathway extensions beneath the remaining bridges which may trigger future work on its own (similar to the Phase 2 project undertaken in 2009), amenity improvements will likely not initiate significant dyke replacement or restoration projects. Conversely, public safety can, on its own, trigger the commencement of a future project if a segment of the existing dyke was to fail or be at risk of failure. With regards to flood protection enhancement, it is anticipated that future works may be subject to additional planning, securing of funds, and consensus by the City and UTRCA on the appropriate level of flood protection as part of the overall flood management strategy for the area.

Table 9.2 provides an overview of the recommended project implementation schedule for each area, and estimated cost in 2016 Canadian dollars. For the purpose of assessing costs on a comparative time basis, each cost is assumed to occur at the same time (i.e., 2016). Reference should be made to the Cost Estimation Model for variations in cost on a per segment basis subject to the proposed date of implementation. In general, the prioritization of projects is based on a review of the project drivers, noting however that several of these drivers are currently not defined but will require further coordination between the City of London and UTRCA (i.e., with respect to flood risk reduction, and funding opportunities), or internally between various City departments (coordination with functional improvement projects, transportation work, cost sharing, etc.). Accordingly, the determination of priority has been based on known existing information as presented in Table 9.1, primarily relating to the following:

- Current condition of the dyke;
- Potential to reduce overall flood damages (i.e., opportunity to reduce the number of landowners impacted by flooding, based on current flood damage reach data);
- Constructability considerations; and
- Other impacts or considerations, including coordination with other City initiatives/projects.

The actual implementation schedule may vary depending upon several items including the availability of funds, decision from the City and UTRCA on the appropriate flood protection to be provided, condition of the segment, and/or coordination with other projects or initiatives within the area, including:

- Coordination with the Blackfriars Bridge Environmental Study Report. For preliminary planning purposes, it is assumed that work along the dyke structure will be kept separate from the bridge (no impact to use or appearance);
- Coordination with future WADE projects within the area;
- Coordination with ongoing CSO program work, including but not limited to:
    - Potential future CSO facility within Cavendish area; and
    - Potential future North Thames Low Level Trunk.

Table 9.2: Recommended Project Implementation Schedule

Segment	Section	Type	Preferred Alt.	Estimated Cost[1]	Estimated EA Cost[2]	Implementation Schedule	Priority Ranking[3]
Oxford North	North of south limit of Oxford St. Bridge	Concrete Revetment / Vegetated Berm	Alt. 4	$3.7M / $2.6M[7]	N/A	10 + Years[4]	8
St. Patrick[5]	Oxford St. to St. Patrick St.	Concrete Revetment	Alt. 4	$2.8M	N/A	5 to 10 Years	4
	St. Patrick St. to Empress Ave.	Concrete Revetment	Alt. 4	$3.0M	N/A	5 to 10 Years	5
Blackfriars[6]	Empress Ave. to Blackfriars St.	Concrete Revetment	Alt. 4	$3.3M / $2.2M[7]	$70-$80K	1 to 5 Years	2
	Blackfriars St. to Cummings Ave.	Concrete Revetment	Alt. 4	$2.2M	$70-$80K	1 to 5 Years	3
Natural Bank	Cummings Ave. to Leslie St.	Concrete Revetment (Naturalized Toe)	Alt. 4	$4.6M	N/A	10 + Years	6
Labatt Park/Forks	Leslie St. to Rogers Ave.	Concrete Revetment	Alt. 4	$2.6M	N/A	1 to 5 Years	1
	Rogers Ave. to Queens Ave. Bridge	Modular Block Wall with Geogrid	Alt. 1	$250K	N/A	10 + Years (work completed in 2007/08)	---
	Queens Ave. extending south to Forks	Natural Bank with Gabions	Alt. 4	$500K	N/A	10 + Years	9 (assumed to coincide with Wharncliffe segment work)
Wharncliffe	From Forks to Wharncliffe Rd. Bridge	Natural Bank with Gabions	Alt. 4	$4.3M / $3.3M[7]	N/A	10 + Years	9
Cavendish East	Wharncliffe Rd. Bridge extending west	Concrete Revetment	Alt. 4	$2.8M	N/A	10 + Years	7
	From termination of	Natural	Alt. 4	$2.7M	N/A	10 + Years	10

Segment	Section	Type	Preferred Alt.	Estimated Cost[1]	Estimated EA Cost[2]	Implementation Schedule	Priority Ranking[3]
	concrete revetment extending west to City Works Yard	Bank/Berm					
Cavendish West	From City Works Yard extending north, then west along adjacent property limits	Vegetated Berm	Alt. 4	$1.2M	N/A	10 + Years	10

Note:

1. Order of magnitude cost estimate (-10% to +40%). Estimate includes engineering costs and costs for geotechnical/environmental investigations, but excludes Value Added Taxes. Costs for approvals are not included.
2. Estimated cost for the completion of either a Schedule A, B or C Class EA, as outlined in Table 9.1.
3. Priority ranking generally based on the current condition of dyke structure based on past reviews, with consideration for damage reach within the area protected by that segment of dyke. In some cases, potential damage reach reduction favoured implementation prior to condition rating (i.e., for segment of dyke between Leslie Street and Rogers Avenue).
4. Denotes recommendation based on current structural condition only and does not include potential for pathway construction which could alter timing for work (cost sharing with other projects/initiatives). This timeline also assumes separate construction from St. Patrick's area, although savings could be provided should portions of work be combined.
5. Segmenting of St. Patrick's area based on ensuring staging/access requirements. Could allow for potential phasing of work, should this be required due to budget constraints.
6. Denotes recommendation based on current structural condition only and does not include potential coordination of work with any Blackfriars Bridge initiatives. Assumes completely isolated work from bridge rehabilitation.
7. Initial cost includes a provision for a pedestrian underpass while the second cost excludes a provision for a pedestrian underpass.

The proposed implementation schedule reflects the general timing for the improvement to be constructed. As with any complex infrastructure project, scheduling must also allow for the completion of the following tasks:

- Additional Class EA requirements related to the individual project;
- Obtaining appropriate approvals (MNR, DFO, UTRCA, etc.);
- Undertaking geotechnical/environmental investigation;

- Preliminary Design (Engineering);
- Detailed Design (Engineering);
- Architectural Design; and
- Tendering and Contract Award.

Table 9.3 provides a general assessment of timelines associated with each of the above noted tasks.

Table 9.3: Estimated Timelines for Planning, Design and Approvals

Task	Estimated Timeline for Completion	Additional Comments
Class EA Obligations	6 to 8 months	To be identified.
Approvals	6 months	Estimated, based on anticipated levels of approvals required. Should work within river be required, additional time for obtaining approvals may be necessary.
Geotechnical/Environmental Investigation	2 months	To be undertaken following completion of Class EA obligations (or immediately should project be identified as pre-approved).
Preliminary Design	4 months	Can proceed as part of the Class EA obligations.
Detailed Design	3 months	Following completion of any Class EA obligations.
Architectural Design	3 months	To coincide with preliminary and detailed design phase.
Tendering	2 months	Based on 3 week tender close, and estimated timeline for approval by City and UTRCA (including council and board approval).
Total Estimated Timeline	15 to 17 months	Considers overlapping of certain tasks as noted.

Sketches of preliminary cross sections have been provided in Figure 9.3 to Figure 9.11. These sketches include the illustration of features such as edge of river, existing bank/revetment and existing pathway, as well as property boundaries. The 100-year, 250-year and 250-year + 10% flood elevations are superimposed on each figure, along with the preferred alternative relevant to each section (i.e., pre-cast block wall). Figure 9.1 and Figure 9.2 are provided as key maps for the cross sections outlined below.



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Figure No.
1.1

Title
NORTH BRANCH
KEY PLAN



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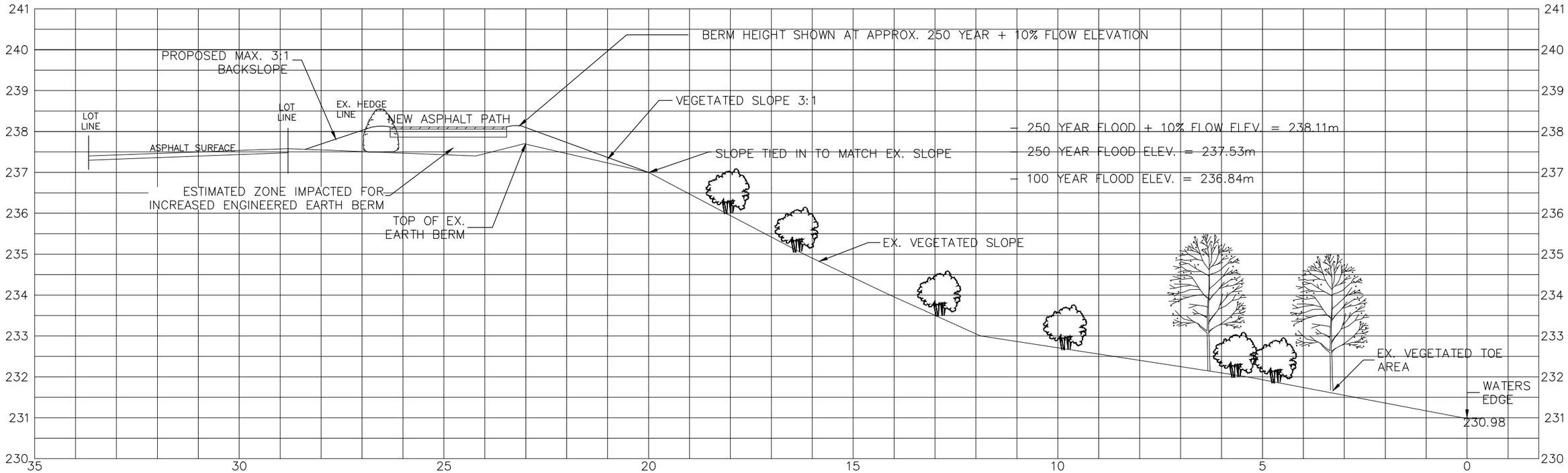
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Figure No.
1.2

Title
MAIN BRANCH
KEY PLAN

Dyke Cross Section
Section 1 - Oxford North

APPROXIMATE STATION -0+015



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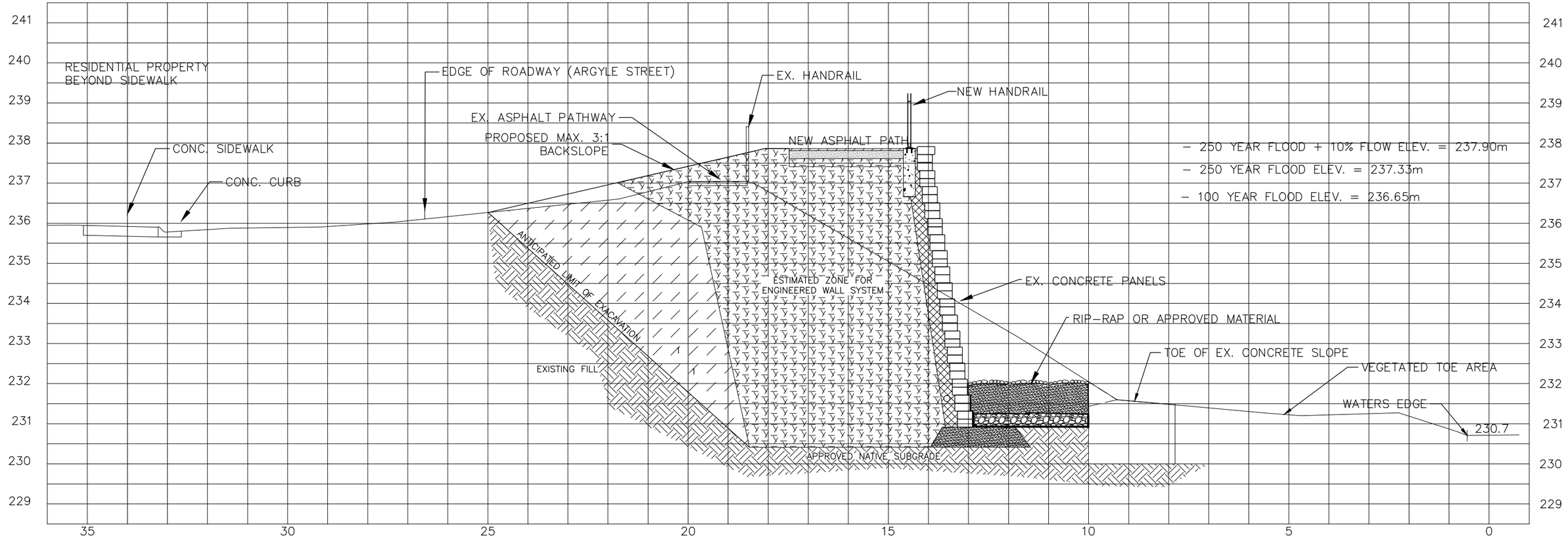
Figure No.
1.3

Title
SECTION 1 - OXFORD NORTH

Dyke Cross Section
Section 2 - St. Patrick

APPROXIMATE STATION 0+130

CONCEPTUAL WALL PLACED IN APPROX. CENTER OF EXISTING STRUCTURE. LOCATION SUBJECT TO CHANGE.



- 250 YEAR FLOOD + 10% FLOW ELEV. = 237.90m
- 250 YEAR FLOOD ELEV. = 237.33m
- 100 YEAR FLOOD ELEV. = 236.65m

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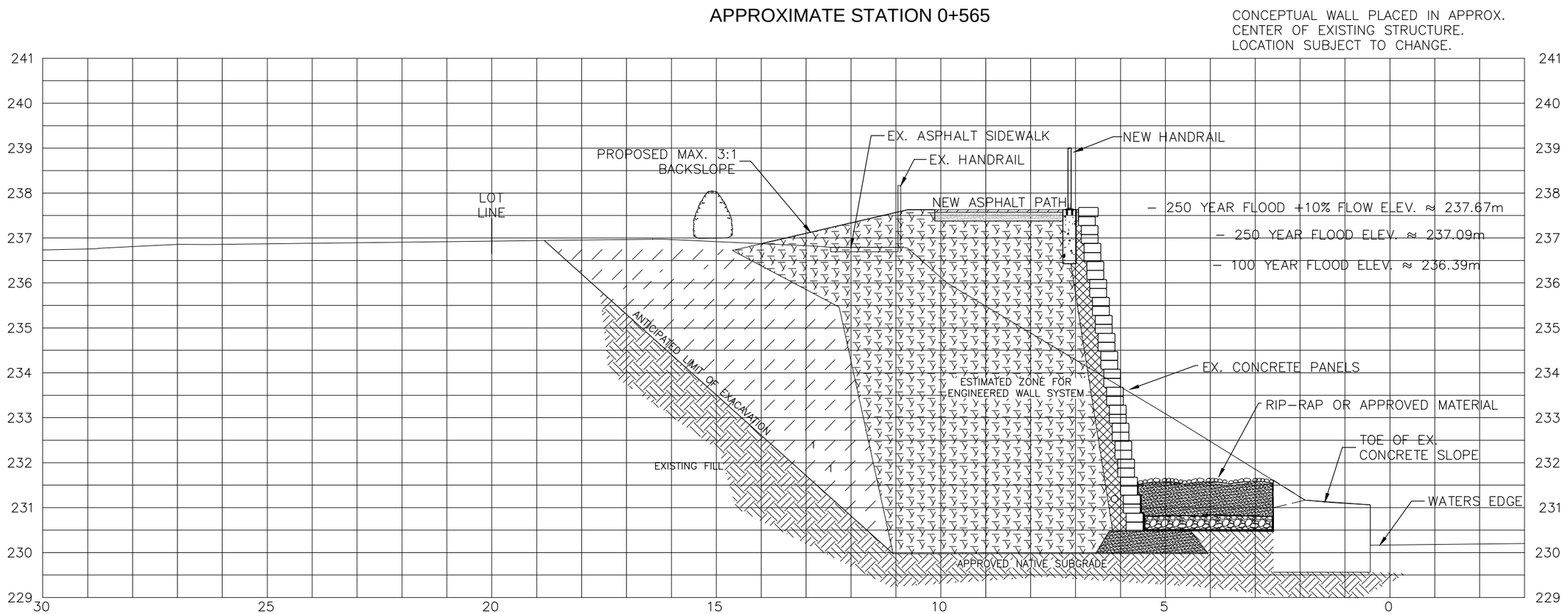
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Figure No.
1.4

Title
SECTION 2 - ST. PATRICK

Dyke Cross Section
Section 3 - Blackfriars



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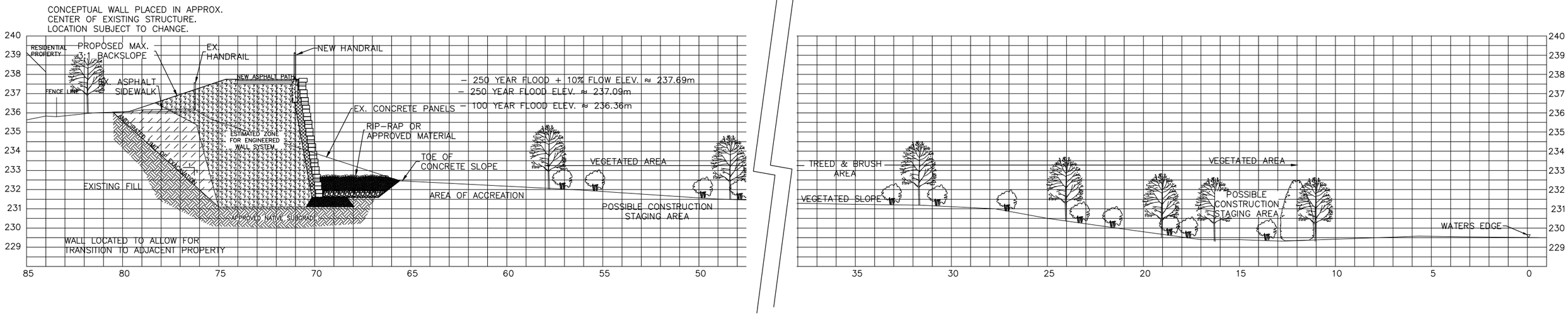
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Figure No.
1.5

Title
SECTION 3 - BLACKFRIARS

Dyke Cross Section
Section 4 - Natural Bank

APPROXIMATE STATION 0+810



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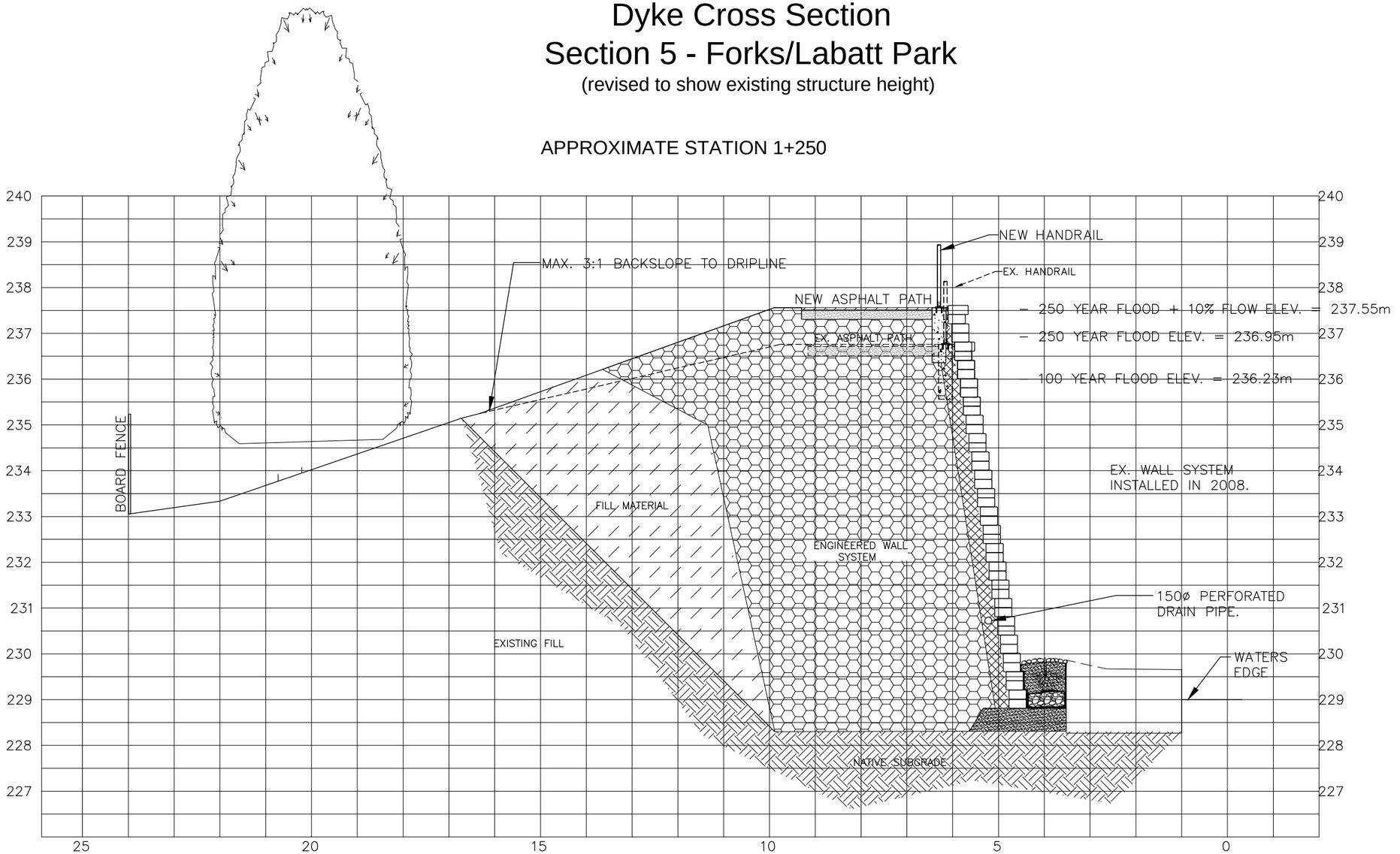
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Figure No.
1.6

Title
SECTION 4 - NATURAL BANK

Dyke Cross Section
Section 5 - Forks/Labatt Park
(revised to show existing structure height)

APPROXIMATE STATION 1+250



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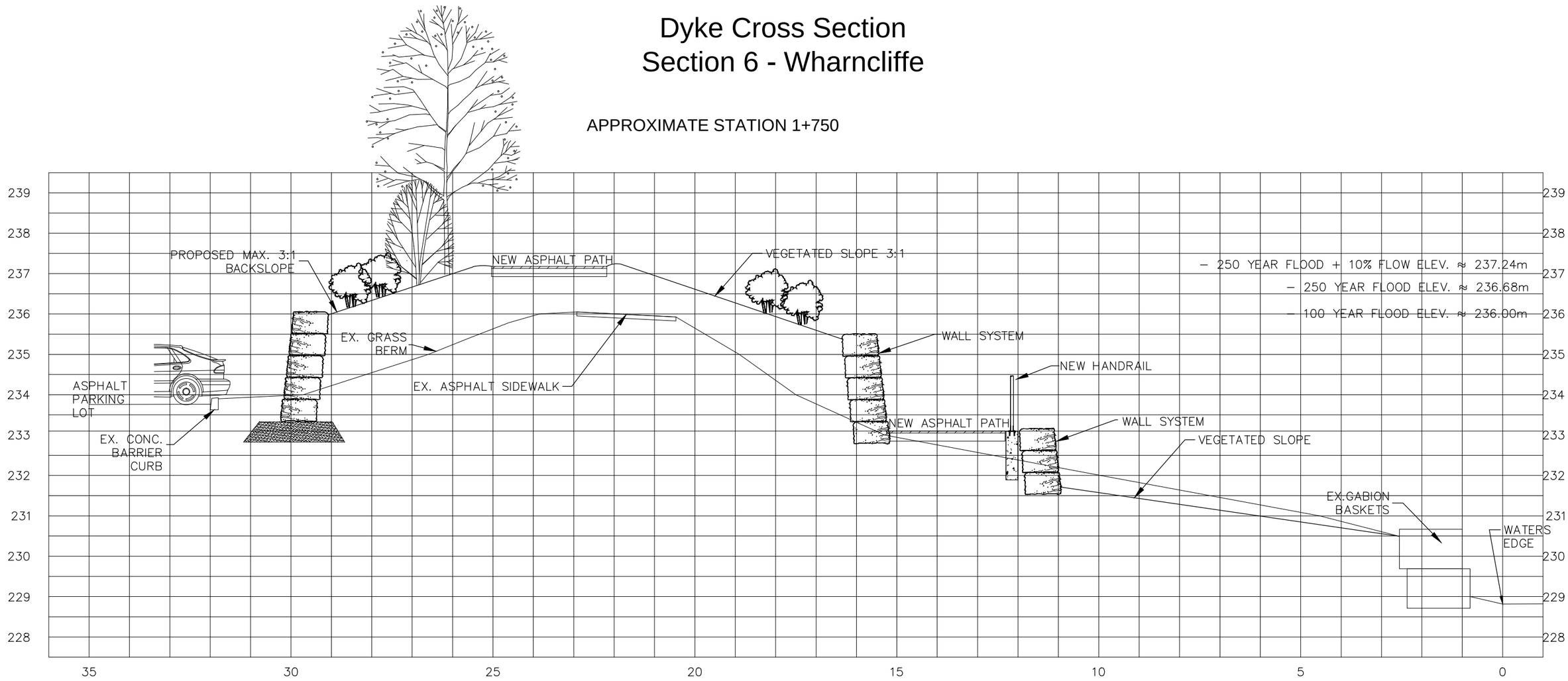
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Figure No.
1.7

Title
SECTION 5 - FORKS/LABATT PARK

Dyke Cross Section
Section 6 - Wharncliffe

APPROXIMATE STATION 1+750



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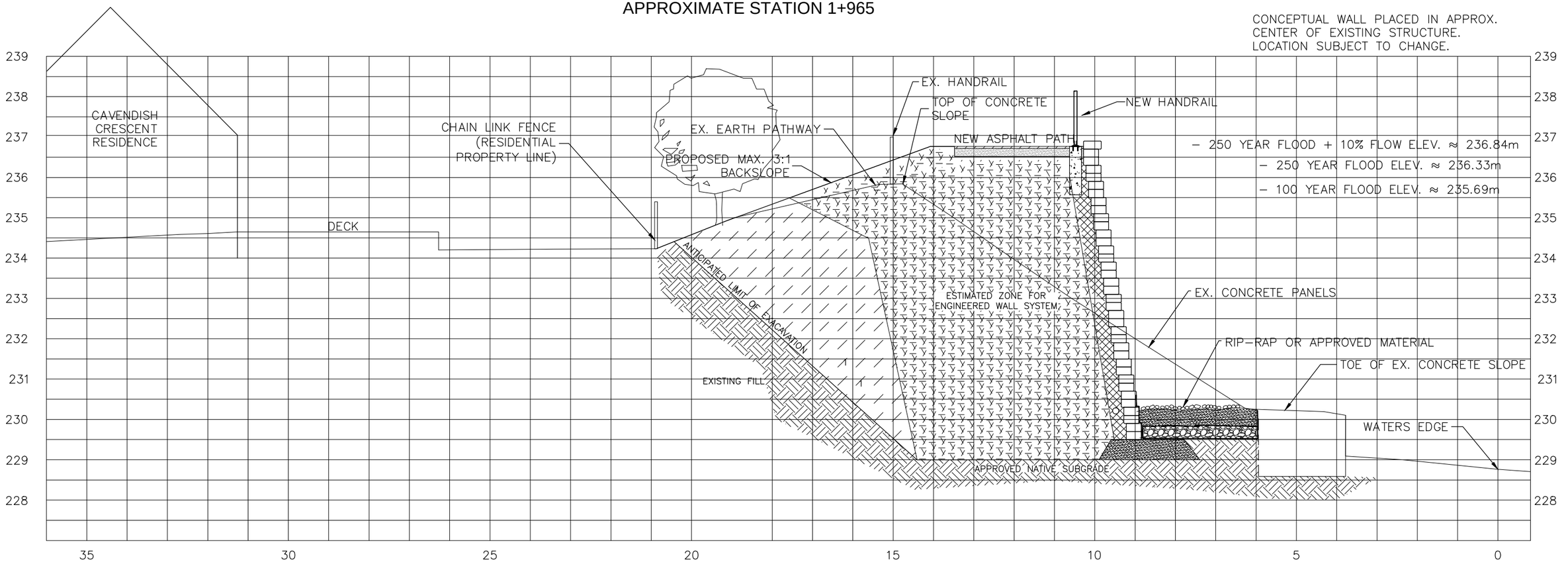
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Title
SECTION 6 - WHARNCLIFFE

Dyke Cross Section
Section 7 - Cavendish East



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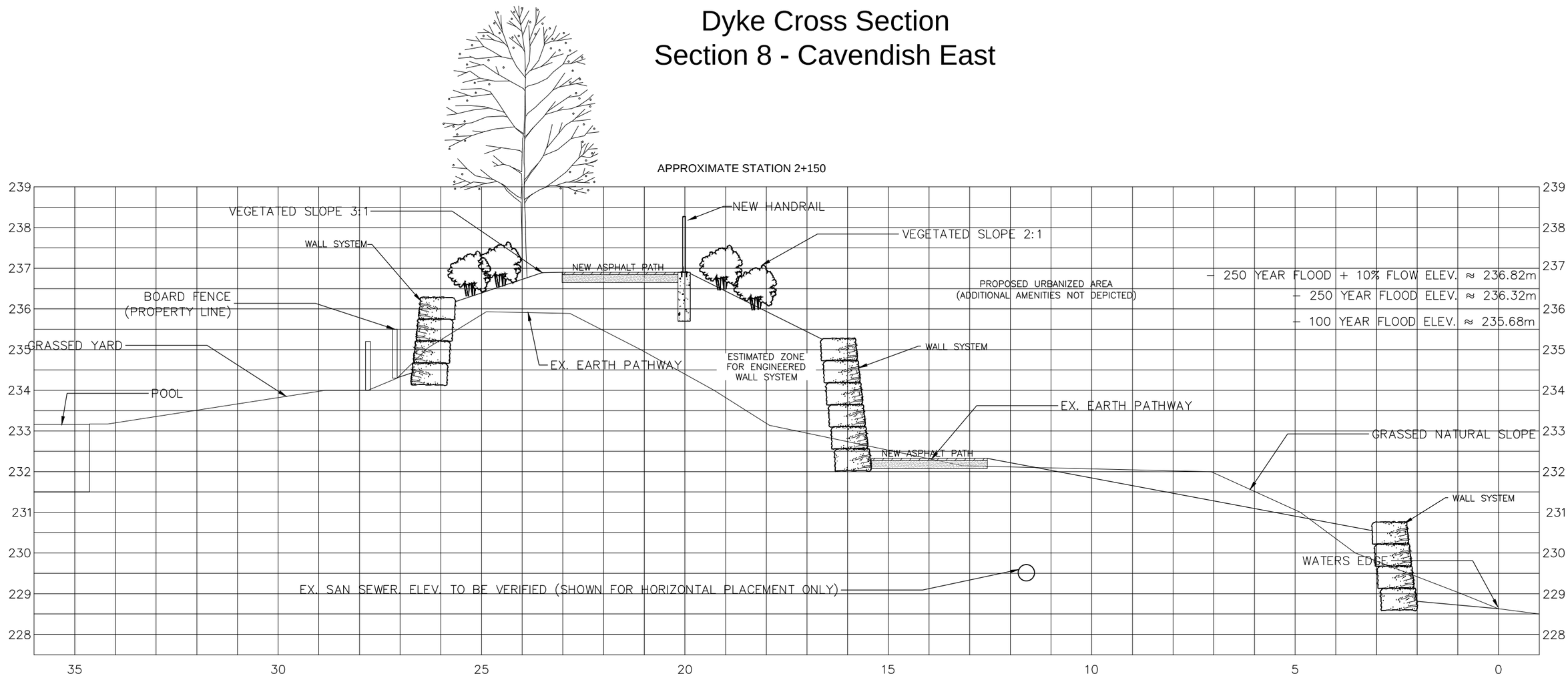
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Title
SECTION 7 - CAVENDISH EAST

Dyke Cross Section
Section 8 - Cavendish East



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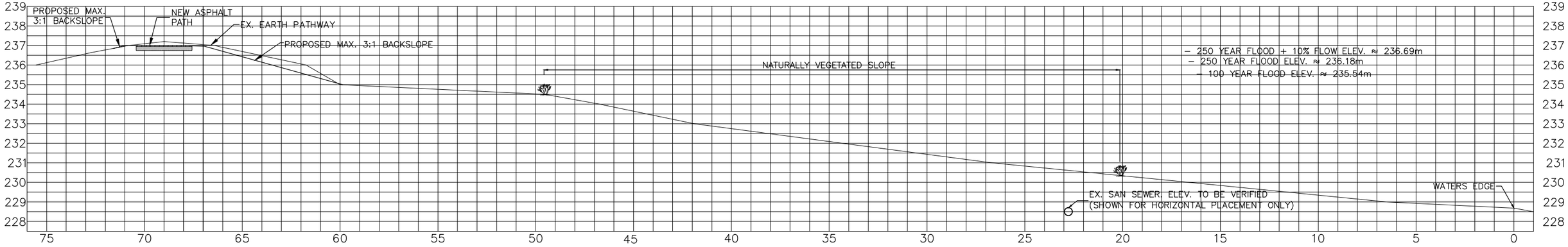
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1.10

Title
SECTION 8 - CAVENDISH EAST

Dyke Cross Section
Section 9 - Cavendish West

APPROXIMATE STATION 2+385



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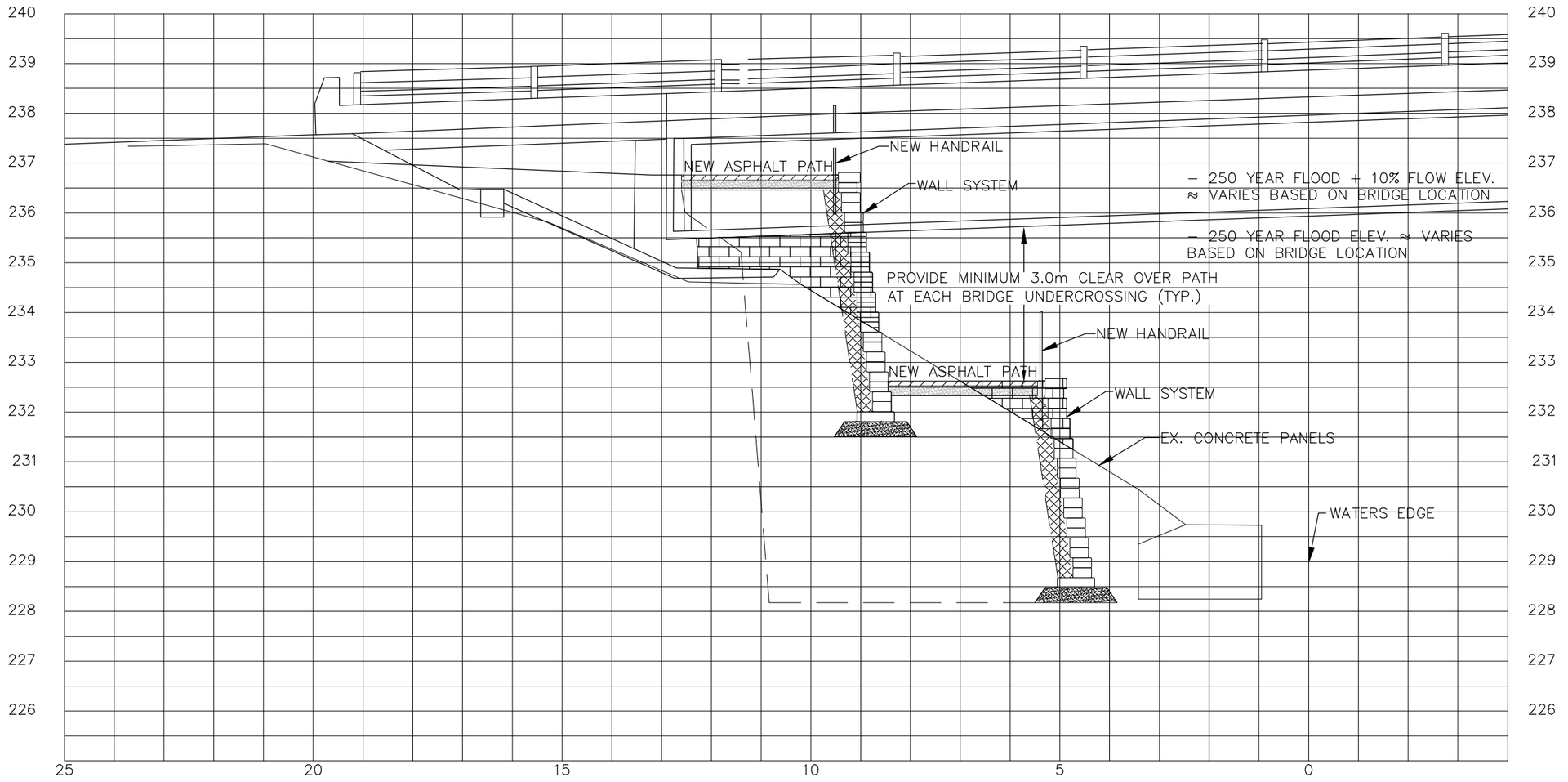
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Figure No.
1.11

Title
SECTION 9 - CAVENDISH WEST

Dyke Cross Section
Section 10 - Typical Bridge

TYPICAL SECTION FOR BRIDGE UNDERCROSSING



NOTES:
1. ILLUSTRATES TYPICAL APPROACH TO BRIDGES
2. ARCHITECTURAL CONCEPT ONLY. FINAL CONFIGURATION TO BE DETERMINED DURING DETAILED DESIGN

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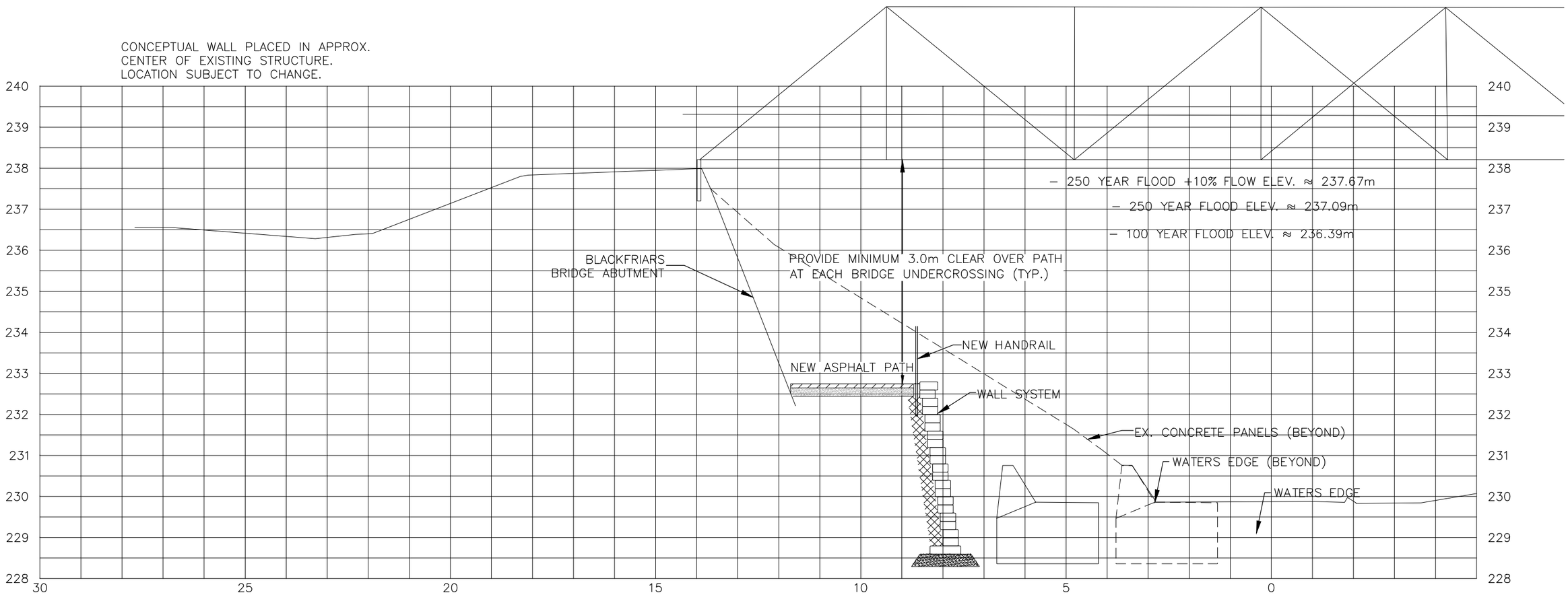
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1.12

Title
SECTION 10 - TYPICAL BRIDGE UNDERCROSSING

Dyke Cross Section
Section 11 - Blackfriars Bridge

SECTION FOR BLACKFRIARS BRIDGE UNDERCROSSING



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Figure No.
1.13

Title
SECTION 11 - BLACKFRIARS BRIDGE UNDERCROSSING

10.0 OTHER STUDIES AND MAINTENANCE REQUIREMENTS

10.1 OTHER IDENTIFIED STUDIES AND NEEDS

In addition to the capital improvements identified in this study associated with the preferred alternatives, the following additional studies and programs are recommended:

- Update and calibration of the HEC-RAS model (updated in 2015);
- Update to flood damage reach study (updated in 2015);
- Handrail repair and replacement program;
- Annual monitoring program; and
- Annual maintenance program.

The following subsections provide additional information on each recommended task.

10.2 UPDATE AND CALIBRATION OF THE HEC-RAS MODEL (UPDATED IN 2015)

The existing HEC-RAS model is a critical tool to assist the UTRCA, as the Regulatory Agency, assess appropriate design flows throughout the Thames River watershed, including flows and water levels along the West London Dyke. UTRCA completed an update of the hydraulic model for the Thames River in the City of London through the GIS based HECGeoRAS model in 2015 following review of the existing HEC-RAS model by Stantec in 2010. As with any model, its accuracy is based on the information used to develop the model and the level of calibration performed. Based on a review of the previous hydraulic model, the following recommendations were provided by Stantec in 2010:

- The Thames River design discharges should be recalculated using all available relevant data;
- Obtain surveyed channel cross sections from the downstream limit of the West London Dyke to the Byron Bridge;
- Adjust the downstream model boundary to coincide with the Byron stream gauge and use the gauge rating curve to estimate the boundary water surface elevations for each corresponding design flow. This way, the boundary condition is based on measured data, rather than calculated values with associated error that could be propagated upstream;

- The initial channel roughness prior to model calibration should be calculated using the available stream gauge rating curve data;

- Undertake model calibration. The model should be calibrated using at least two design events, both a bankfull event and a large flood event. The bankfull event should be used to verify the hydraulic roughness of the channel cross sections. The large flood event should be used to calibrate the overbank roughness values; and

- The HEC-RAS cross sections should be represented looking downstream, rather than upstream. While this does not affect the calculation results if it is performed consistently in the model, the HEC-RAS geometry editor shows the cross sections backwards when they are entered in the upstream orientation. Furthermore, the downstream cross section orientation is standard industry practice.

In updating to the HECGeoRAS model in 2015, UTRCA considered the recommendations made by Stantec.

10.3 UPDATE TO FLOOD DAMAGE REACH STUDY (UPDATED IN 2015)

As previously noted, the flood damage cost estimates provided in this Master Repair Plan was generally based on the original Flood Damage Study undertaken as part of the Glengowan Reservoir work in the 1970's and 1980's, with updates as noted by the UTRCA in 2005 to reflect different climate change scenarios. The Flood Damage Reach Study was further updated in 2015 by UTRCA.

The costs associated with potential damages attributed to breaching of the dyke is a key factor in accessing the cost-benefit of undertaking any future upgrade/replacement work. Accordingly, the City and UTRCA may want to consider an updated flood damage reach study. This study should incorporate updated information on the adjacent topography of lands protected by the dyke, along with an updated inventory on structure type. Assessment of potential sewers should also be considered. The exact methodology (i.e., standards, software, etc.) to develop flood damages could be determined subject to additional discussion between the City and UTRCA.

Previously, the damage reaches developed as part of the Glengowan study contained lands across the river and therefore damage estimates may have contained additional costs beyond damages attributed to areas behind the West London Dyke. As part of the update undertaken in 2015 by UTRCA, analysis of damages only considered structures that were behind the West London Dyke (i.e., structures on the right bank when facing downstream).

An estimated cost associated with undertaking an updated Flood Damage Study is included in Table 10.1.

10.4 HANDRAIL REPLACEMENT PROGRAM

As previously noted, a combination of steel, galvanized steel and aluminum handrail runs along the length of the West London Dyke. Based on past visual inspections, a portion of the railing is in poor condition and, with exception of the railing installed as part of the Phase 1 Replacement Structure project, the remaining railing does not meet current Ontario Building Code requirements.



Figure 10.1: Handrail Deficiency

Given the current condition of the handrail, it is recommended that the City and UTRCA consider a yearly replacement program. This program could be funded through an ongoing maintenance budget for the dyke structure, similar to the current road rehabilitation programs within the City. For continuity, the same style railing design could be implemented as was used in the 2007 Phase 1 and 2009 Pathway construction. Installation of the railing would be via a bolt-on design in order to allow for ease of removal and reinstallation as part of any subsequent repair or replacement work for the dyke. By implementing a yearly replacement program, the replacement cost would be spread over a longer period of time, reducing the initial capital cost of replacing the entire length of rail at once.

The cost of the replacement project is included in Table 10.1 and is based on replacement of existing railing on a priority basis.

10.5 ANNUAL MONITORING PROGRAM

The initial visual assessment in 2004 provided general information on the baseline condition of the dyke at that time. Subsequent studies conducted in 2005, 2006, 2010, 2011, 2012, 2013 and 2014 have provided an update on the change in condition along select sections in relation to previous reviews.



Figure 10.2: Panel Deficiency Noted During Inspection

Given the age of the West London Dyke, particularly in relation to the concrete revetment and associated infrastructure, there is a need to

undertake periodic review to confirm any changes in condition and potential impact on the future works/implementation schedule for repairs/replacement. Based on the findings from previous inspections which indicated an increase in deficiencies from past reviews, it is recommended that future inspections be carried out on an annual basis.

The estimated cost for annual inspection of the West London Dyke is provided in Table 10.1.

10.6 ANNUAL REPAIR PROGRAM

Based on the results from the annual monitoring program, areas identified for immediate repair or additional monitoring and repair should be addressed in order to extend the useful life of the dyke until full replacement can be completed. Accordingly, these repairs should be budgeted for in order to ensure that they are completed in a timely manner prior to the development of larger scale issues. It should be noted that these repairs generally reflect issues with either the dyke or pathway, but exclude replacement of the railing which would be addressed under the separate railing replacement program previously proposed.



Figure 10.3: Panel Deficiency Repair

Replacement, rather than repair of the dyke, would occur once it becomes apparent that further repair is either ineffective or cost prohibitive, or where a trigger point is reached.

Refer to Figure 10.4 which provides an illustration of dyke deficiencies based on past reviews. Table 10.1 provides an estimated annual budget to undertake repairs. It should be noted that the annual budget should be reviewed periodically to ensure that adequate budgeting is available based on the findings of future monitoring programs. Over time, it is expected that costs for the annual repair program will decrease as areas are replaced.



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Revised: 2016-02-01 By: kbuchanan

February 2016
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Stantec

Legend

- Repair Location

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2009-2015.

Client/Project

Upper Thames River Conservation Authority & City of London
West London Dyke Master Repair Plan

Figure No.

10.4

Title

Deficiencies Repaired 2012-2014

10.7 SUMMARY OF STUDY/MAINTENANCE COSTS

Table 10.1 provides an overall summary of the recommended additional studies and maintenance programs for the West London Dyke.

Table 10.1: Additional Study and Program Costs

Item	Task	Estimated Cost
Updated Flood Damage Reach Study	Field verification of land uses, area survey, and flood damage modeling.	**$180,000**
Handrail Replacement Program	Replacement of Damaged Rail with New Railing.	**$55,000**
Annual Monitoring Program	Non-Intrusive Visual Assessment Based on Inspection Protocol.	**$12,500**
Annual Repair Program	Repair of Dyke (concrete, gabions, handrail repair, etc.) excluding handrail replacement.	**$165,000**

11.0 RECOMMENDATIONS

The recommendations presented below in Table 11.1 have been summarized to provide a complete and concise list to be reviewed prior to the initiation of any subsequent preliminary and detailed design phases. In addition to capital improvements and repairs, additional studies and programs have been recommended and summarized below. Recommendations have been based on comments received during the consultation process, the evaluation of project drivers, input from both the UTRCA and the City, and the environmental and technical reviews completed for the West London Dyke.

Table 11.1: Recommendations

No.	Recommendation	Category	Section[1]
Flood Risk and Public Safety			
1	The decision on passive versus active measures will need to be assessed by the City and UTRCA based on a review of the overall flood protection planning strategy and specific constraints along the various areas of the dyke including bridge abutments and proximity to adjacent land uses.	Flood Risk Reduction	5.1.1
2	The City and the UTRCA should continue to collaborate on Climate Change initiatives in regard to the potential impacts on land use planning, land management, and flood control system adaptation in the City, specifically as it relates to the West London Dyke.	Climate Change	8.9
3	The City and the UTRCA should continue to evaluate the desired freeboard elevation in terms of both risk and social, natural and economic factors prior to preliminary and detailed design of each section.	Freeboard	8.10
4	Access to the river at key points must be reviewed as part of the City's overall risk management strategy. Social benefits will need to be reviewed in relation to risk management and overall maintenance and operational concerns as these lower areas will be exposed to more frequent flooding.	Public Safety	5.1.2 / 5.2
5	Consideration should be given to the availability of lighting as well as access when considering worker safety from the perspective of general maintenance requirements and flood response duties.	Public Safety	5.1.2
6	The City and UTRCA should review the current condition of the railing and consult with their risk management policies to confirm as appropriate course of action, particularly for areas where future work is not anticipated to proceed for some time.	Public Safety	5.2

No.	Recommendation	Category	Section[1]
Amenity Improvements			
7	Implementation of functional improvements should also consider recommendations from the Thames Valley Corridor Study, Bicycle Master Plan, 2007 Amenity Master Plan for areas along the dyke.	Functional Improvements	5.1.3
8	Additional or enhanced amenities should be considered in future designs (i.e., lookout areas, wider pathways, seating, etc.).	Amenities	8.6.2 / 8.11
9	Future replacement phases should incorporate walkway widths and grading in accordance with current City standards.	Amenities	8.6.6
10	Aesthetics must be considered in the selection of the preferred structure due to the high visibility, proximity to the downtown core, and recent City revitalization projects.	Aesthetics	8.6.7
11	Future design or rehabilitation work should eliminate the use of stairs through proper walkway transitioning.	Accessibility	5.2
12	Consideration should be given to the appropriate level of lighting to be provided based on the six factors presented within this document.	Lighting	5.2
13	Future replacement projects incorporating hard surfaces for either dyke facing, seating areas, etc., should consider potential impacts of graffiti and incorporate measures to address these (i.e., anti-graffiti coatings).	Vandalism	8.6.8
14	Consideration should be given to the potential for pedestrian underpasses under all bridges, where feasible.	Design Considerations	7.12
15	The buffer between residences and the pathway system should be maximized during all phases of design development.	Design Considerations	7.12
16	During design when possible, consideration should be given for adequate room at the top of the wall for features such as lookouts, buffers and gathering spaces.	Design Considerations	7.12
Environmental Considerations			
17	Consideration should be given for environmental improvements and should take into account the potential impact on existing habitat or introduction of habitat that could result in damage to the dyke structure, including potential for rodent burrowing under cover, etc.	Environmental Considerations	5.1.4
18	Environmental field studies and investigations should be planned and completed at the preliminary design phase of a project.	Natural Environment	6.1.3.2

No.	Recommendation	Category	Section[1]
19	Updated vegetation surveys should be completed prior to undertaking future projects (should include an assessment within the north and west extensions which were not previously included in the Dougan and Associates Vegetation Management Plan).	Natural Environment	6.1.3.3
20	Any project undertaken through this Master Repair Plan will require additional review of available information and may require field investigations to determine presence/absence of at risk species.	Natural Environment	6.1.6.3
21	Detailed natural environment mitigation and compensation measures should be further developed as the detailed design of proposed projects are finalized in consultation with appropriate regulatory agencies.	Natural Environment	6.2.7
22	Sustainable options (green design principles) should be further considered during detailed design.	Green Design	8.7
23	Opportunities for naturalization planting areas and terrestrial and aquatic habitat creation should be considered during the design phase.	Design Considerations	7.11
24	Undertake a Stage 1 and Stage 2 (if required) Archaeological Assessment prior to construction.	Social/Cultural Environment	6.2.4
25	Undertake a Heritage Impact Assessment (if required) to mitigate negative impacts on heritage resources prior to construction.	Social/Cultural Environment	6.2.3
Planning, Construction & Miscellaneous Considerations			
26	The City should consider the potential for cost sharing opportunities between City departments and/or with the UTRCA (i.e., WECI) and provincial/municipal grants or programs (i.e., stimulus programs).	Funding Opportunities / Municipal Infrastructure	5.1.5 / 8.4
27	Hydrologic or hydraulic considerations associated with the Thames River may warrant the need for future improvements.	Other Project Drivers	5.1.6
28	Consideration during design should be given to potential constructability issues such as access for construction vehicles, available staging area, and adequate room to physically construct the structure.	Constructability	8.5
29	Future phases should involve additional investigations to determine the extent of potential contaminated soils and allowances required for removals during subsequent work.	Legacy Issues	8.3

No.	Recommendation	Category	Section[1]
30	The City and UTRCA should undertake a continuous review of functional, operational, and safety issues related to future detailed designs, such as slope stability, physical constraints, etc.	Functional, Operational and Safety Issues	8.6
31	Initiation of future individual projects should involve a review of Class EA and legislation requirements.	Permits and Approvals	8.8
32	Future work should be in coordination with other projects or initiatives within the area including the Blackfriars Bridge Class EA, WADE projects, and CSO program work.	Project Triggers	9.9
Studies			
33	The UTRCA HEC-RAS model should be updated and calibrated as new information becomes available (updated in 2015).	Other Studies	10.2
34	Continue to update the Flood Damage Reach Study as new information becomes available, including updated inventory on structure type as well as assessment of potential sewers (updated in 2015).	Other Studies	10.3
35	The City and UTRCA should implement a handrail repair and replacement program.	Other Studies	10.4
36	The City and UTRCA should continue to undertake an annual dyke monitoring program.	Other Studies	10.5
37	The City and UTRCA should continue to undertake an annual dyke maintenance program.	Other Studies	10.6

Notes:

1. *Reference to applicable section within the Master Repair Plan document.*

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Appendix 1.1

2007 Amenity Master Plan

West London Dyke Flood Control Structure Master Plan

UPPER THAMES RIVER
CONSERVATION AUTHORITY

London
CANADA



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Executive Summary

Introduction

The purpose of the Master Plan is to set out design recommendations, which are intended to guide detailed design development for the various phases of the West London Dyke and Thames Valley Parkway upgrade and replacement. Preparation of the Master Plan was undertaken after careful examination of existing conditions and findings gathered through a consultation process.

Background

The West London Dyke and Thames Valley Parkway upgrade and replacement has come about because of structural deficiencies in the dyke itself, as identified in 2005. Thus, it is necessary to bring this flood control structure up to current technical standards.

The current dyke structure in the location between Queens Avenue and Rogers Avenue only protects against the 1:100 year flood event, while regulations require that the flood control structure protect against the 1:250 year flood event.

Public input was solicited at a Public Information Centre meeting held on May 25, 2006. A design option review, which outlined how each design alternative ranked within several categories, was also conveyed to the public during the meeting. Public input from this meeting was incorporated into the final preliminary design report.

After consideration and evaluation of various alternatives, it was determined that a near-vertical, pre-cast reinforced earth system was the preferred alternative for Phase 1 of the replacement as it best met requirements relating to pathway integration, aesthetics, ability to provide required flood protection and constructability due to existing site constraints.

Context

The West London Dyke study area reaches from the Oxford Street Railway Bridge, south along the west side of the Thames River, to Cavendish Park. Descriptions of the dyke and pathway system have been broken down into four distinct sections, Oxford Street to Blackfriars Bridge, Blackfriars Bridge to Labatt Park, Labatt Park to Wharncliffe Road and Wharncliffe Road to Cavendish Park.

Design Charrette

Representatives from adjacent neighbourhood associations, the arts community, Friends of Labatt Park, users of the Thames River, and City and Council representatives were invited to a Design Charrette, held on November 21, 2006. A total of 14 representatives participated in the

charrette. The primary issues, concerns and ideas that were most commonly shared or generated the most discussion at the Design Charrette were developed into recommendations. Ideas and themes regarding the wall/face of dyke pathway, lighting and site furnishings river access vegetation and landscaping Blackfriars neighbourhood Labatt Park transition of old dyke structure to new dyke structure were developed into recommendations.

Design Guidelines

Design Guidelines have been prepared to provide guidance for detailed design of the West London Dyke and Thames Valley Parkway redevelopment, extending from Oxford Street to Cavendish Park. Subjects discussed include vision, areas of use, wall structure, natural environment, heritage, safety, access to river and gateways.

Area of Use

The four distinct areas along the West London Dyke have been identified as having different uses: Oxford Street to Blackfriars Bridge; Blackfriars Bridge to Labatt Park; Labatt Park to Wharncliffe Road; and Wharncliffe Road to Cavendish Park. The dyke and the land surrounding it has many uses for people, which include biking, running, walking, fishing, sitting, bird watching, playing, commuting and dog walking. Improvements for these uses and expanding the range of uses are important and necessary, but certain sections are better suited for particular activities.

Wall Structure

The wall structure will have the most visual impact upon the area because of its sheer vertical size. Creating an aesthetically pleasing and interesting view from the east side of the river has been identified as a major consideration, as well as creating continuity throughout the structure and creating interest from across the river. The selection of wall material should be based on the overall vision for the dyke. An interesting, aesthetically pleasing culturally significant structure should be created by the use of banding, plantings and lighting.

The transition should continue the theme of natural looking materials, native plant material, and discreet, informal design. The use of a third material for the transition would make it stand out, act as a buffer between residences and pathway users and would move attention away from the sharp contrast between the old and new wall.

Natural Environment

The naturally vegetated areas along the riverbank and the native trees existing at the top of the wall are significant to the character of the dyke. The trees give shelter from the wind, shade from the sun, homes for wildlife, and provide a colourful and varied backdrop through the four seasons. Existing significant vegetation must be preserved and protected.

An attempt should be made to plant native aquatic material at the toe of the dyke structure that will soften hard surfaces and stabilize soils. An effort should be made to create habitat for

aquatic and terrestrial life along the edge of the river where conditions allow for self-sustaining habitat.

An urban tree management program should be implemented to document trees of significance, identification of areas in need of maintenance, and plantings and/or removals.

Native plant material should be used throughout to create continuity and protect the natural environment, but varying layouts can identify the intended use. Year round form and colour should be taken into consideration at the planting design stage. Planting should also be used to emphasize significant views.

There is an opportunity to expand the existing interpretive signage program to incorporate information on natural systems and natural heritage in the area. Trail information signage should also be incorporated throughout the trail system.

Several significant views were identified as having connections with the river and natural heritage. These views should be preserved and enhanced.

The opportunity for users to participate in passive recreation activities was established as an important attribute of the trail system. Activities such as sitting, reading, people watching, bird and butterfly watching and walking are all considered types of passive recreation.

Heritage

The West London Dyke and the surrounding area have a strong historic character. The dyke replacement is an opportunity to create a place, which provides information on the area's rich history while meeting the current needs of users. It was determined that the area's character should be preserved through the use of historic site lighting and furnishings, expanding of the existing interpretive signage program for the dyke and pathway system and enhancement of significance view along the dyke and pathway system. Creating a controlled view into Labatt Park from the pathway, with interpretive signage about its role in the City's History, would bring an interesting element to the dyke replacement and create further visibility to the Park. This baseball park has a long-standing history in London of which many City residents are unaware.

Safety

The existing pathway system crosses five major streets, without any form of traffic control to give users the right-of-way. As the pathway is redeveloped, its design should be consistent with City of London Standard Multi-Use Pathway to improve circulation, safety, and create continuity.

The existing lighting system is not consistent and leaves dark patches due to the presence of overgrown vegetation or a lack of light posts and fixtures. A well-lit pathway will encourage people to make use of it during evening hours. In the evening hours lighting will not only create continuity, but will have a direct impact on the safety of the pathway system.

Existing vegetation and proposed planting should adhere to CPTED (Crime Prevention Through Environmental Design) principles.

A reduction in vandalism can be achieved through appropriate lighting and site design. CPTED principles should be considered during design development in order to reduce occurrences of vandalism. Vandal-resistant site furnishings are available and should be used wherever possible.

Access to the River

Access to the river is very important to users, whether it is just to be near the edge to look into the water or to fish, feed the geese or canoe. Access currently provided at Cummings Avenue, the Kiwanis Senior's Centre and at Cavendish should be preserved and enhanced. The area north of the Blackfriars Bridge has been suggested as a possible location for access to the river by alterations to the design of the wall structure.

Gateways

Gateways have been identified on the concept plan at various locations where the pathway system intersects major roadways. These specific nodes have the opportunity to identify where the pathway system connects with major streets, while being aesthetically pleasing.

Implementation

General recommendations and Phase 1 recommendations detailed in the design guidelines section are provided for implementation during various phases of the redevelopment.

General Recommendations

The general recommendations found below detail how to specifically implement design recommendations, which apply to all phases of development.

- Options for creating a functional and interesting dyke layout and structure should be investigated during each Phase of the redevelopment and accordingly be detailed in each set of tender documents;
- Confirm the suitability of naturalization plantings at the toe of the dyke for potential environmental enhancement throughout all phases of development;
- Investigate opportunities for naturalization planting areas for environmental enhancement during design development;
- Investigate opportunities for terrestrial and aquatic habitat creation during design development;
- Seating should be incorporated into the pathway system at regular intervals throughout all phases of redevelopment;
- Lighting and furnishing design, including signage, should consider design guidelines and be determined through design development;
- Significant views / lookout locations should be identified and confirmed at the site design scale, during design development for each phase of redevelopment;

- Investigate opportunities to implement pedestrian underpasses under all bridges within the study area where appropriate;
- Lighting design for all phases of the redevelopment should have consistent lighting types and levels to increase safety and should be adjusted to suit adjacent land uses;
- CPTED principles when preparing planting plans for all phases of redevelopment;
- CPTED principles should be considered for all phases of redevelopment to reduce the occurrences of vandalism and increase safety for its users;
- Investigate all opportunities during each phase of the redevelopment to provide access to the river for a broad range of activities.
- Functionality and aesthetics should be key design considerations for any transitions in all phases of development;
- The buffer between residences and the pathway system should be maximized during all phases of design development;
- The wall layout determined through the design development stage should consider both technical requirements and the recommendations given in the design guidelines regarding shape and composition. Where possible it should be varied to create interest and give adequate room at the top of wall for things such as lookouts, buffers and gathering spaces;
- Public input should be solicited for each phase of the dyke replacement.

Phase 1 Recommendations

The recommendations outlined in this section are specific to implementation of Phase 1 of the dyke and pathway replacement.

- The wall material selection should be investigated and selected during detailed design for Phase 1 of the redevelopment based on functional capability as well as aesthetic appeal, and be specified in the tender documents;
- Detailed design for Phase 1 of the redevelopment should look at the functionality and aesthetics of the transition specifically;
- The urban tree management program should be initiated as soon as possible, so that an approach for all phases can be reached prior to construction of Phase 1;
- A native plant list should be prepared during design development for Phase 1 and be consistent through future phases of redevelopment;
- Site lighting and furnishings including seating, trash receptacles, railing and interpretive signage are to be vandal resistant, detailed during the detail design stage and be included in the tender documentation for Phase 1;
- Investigate opportunities to create a lookout and interpretive area in front of Labatt Park;
- Ensure all lighting has full cut-off optics, is documented during design development and is included in the tender documents for Phase 1;
- Consistent and identifiable gateways should be designed for all major roadway crossings and be included in the tender documents for Phase 1.

West London Dyke Flood Control Structure Master Plan

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1.0 Introduction

1.1 PURPOSE

This Master Plan sets out design recommendations, which will guide detailed design development for the various phases of the West London Dyke and Thames Valley Parkway upgrade and replacement. Preparation of the Master Plan was undertaken after careful examination of existing conditions and findings gathered through the consultation process.

The Master Plan report format is structured as follows:

- Overview of the background leading to the initiation of the Master Planning process for the West London Dyke;
- Goals and objectives;
- Description of the existing context to provide readers with an understanding of the current conditions, opportunities and constraints;
- Summary of the design charrette which was held to obtain input and design ideas from key stakeholders;
- Recommendations and design guidelines relating to various components of the West London Dyke and adjacent pathway system, such as wall structure, activity / use areas, natural environment, heritage features and interpretation, safety, access, etc.
- Implementation recommendations and process.

1.2 BACKGROUND

The West London Dyke is primarily an engineered structure, which protects life and property during periods of extreme river flows. According to the Upper Thames Conservation Authority (UTRCA), construction of the West London Dyke began in the 1880s, with extensions, reinforcements and height increases occurring at least twice by the early 1900s. The dyke was raised in sections west of Queens Avenue after the 1937 flood and before another major flood in 1947. Despite the fact that the flood of 1937 overtopped portions of the dyke, it has and continues to serve a critical flood control function as well as being an integral component of the City's recreational pathway system.

In 2004, a 'condition assessment' of London's flood control structures identified a need for repairs to sections of the dyke, with the highest priority being in the area north of Queens Avenue. However, in 2005 while undertaking the initial stages of the concrete repair program for the West London Dyke between the Queens Ave Bridge and Rogers Ave, it was determined that this section needed to be replaced rather than repaired due to structural deficiencies. A

preliminary design process was then undertaken by Stantec Consulting Limited to determine the type of replacement structure best suited to the technical and regulatory requirements for this section of the dyke. The current dyke structure in this location only protects against the 1:100 year flood event, while regulations require that the flood control structure protect against the 1:250 year flood event (Fig. 1.1, pg. 1.2). Public input was solicited at a Public Information Centre meeting held on May 25, 2006. An introduction to the history of the dyke and background information on how the design alternatives had been arrived at were presented. A design option review, which outlined how each design alternative ranked within several categories, was also conveyed to the public during the meeting. Public input from this meeting was incorporated into the final preliminary design report. After consideration and evaluation of various alternatives, it was determined that a near-vertical, pre-cast reinforced earth system was the preferred alternative for phase 1 of the replacement as it best met requirements relating to pathway integration, aesthetics, ability to provide required flood protection and constructability due to existing site constraints.

In addition to the functional flood protection requirements, a number of other major design considerations were addressed in the preliminary design report including the need to minimize impacts on the environment, maintain / enhance recreational use of the dyke, and consider aesthetics given the high visibility of the structure and its proximity to the downtown core. A conceptual illustration of the phase 1preferred alternative is shown below. Additional information regarding the technical investigation and other alternatives that were evaluated is provided in Appendix A.

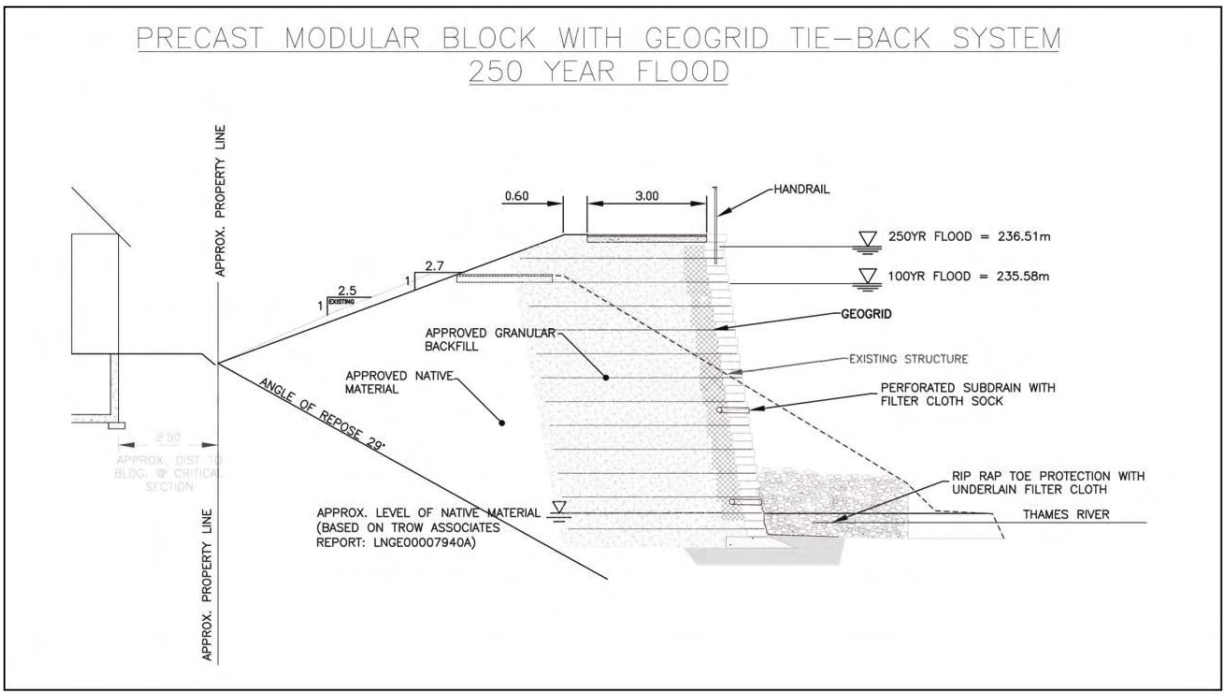


Fig. 1.1 Cross-section of proposed dyke solution for Phase 1 of development.

Benefits of the selected alternative for Phase 1 identified through the evaluation included the following:

- It can be built to either the 1:100 or 1:250 Regulatory Flood Level within the available footprint;
- Various aesthetic options (colour, texture and block size) are available for the modular blocks, allowing for greater design flexibility;
- Near vertical face allows for construction of pathway to City standards for width, while also maintaining appropriate slope to adjacent property lines;
- Constructability and staging of construction are considered easier than some other options considered;
- No curing time is required for pre-manufactured products, as would be required for a poured in place structure;
- It is the least cost option.

Other benefits include:

- More efficient use of limited publicly owned space;
- More flexibility with the use of space at the top of the dyke i.e. planting, multi-use pathway system;
- The pathway can be moved further away from private residences allowing for enhanced neighbour privacy;
- Potential for ecological enhancement at the toe of the dyke structure;

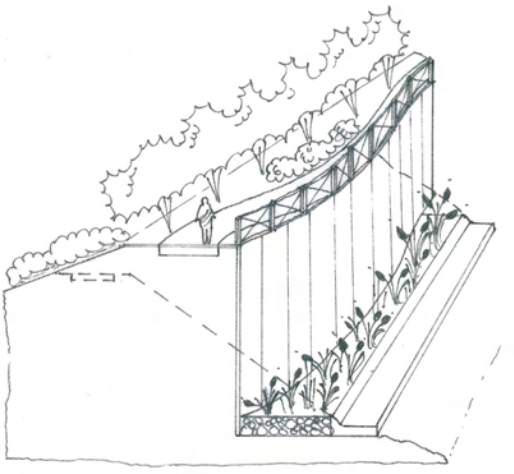


Fig. 1.2 Isometric sketch of what proposed pathway might look like.

- New design will allow for pathway to move under bridge structures;
- Improved aesthetics, as existing damaged site furnishings and materials will be replaced.

Although the initial section of the dyke requiring replacement extends from the Queens Avenue Bridge to Rogers Avenue, it is anticipated that over a period of years, additional sections will also need to be replaced. The pathway at the top of the dyke will then also need to be replaced with appropriate integration and transitions made between the existing and new path systems. The UTRCA, City and Stantec recognized that the dyke replacement program presented a unique opportunity to look at long-term design options for the Thames Valley Pathway system in this area. Approval was given by the City of London and UTRCA for Stantec to prepare a Conceptual Master Plan for the section of the dyke and pathway extending from Oxford Street

to Cavendish Park so that design enhancements for the dyke and pathway system could be considered during the detailed engineering design for the flood control structure.

1.3 GOALS AND OBJECTIVES

Specific goals and objectives of the design enhancement program, as established in the staff report to the Environment and Transportation Committee to seek approval for the project are as follows:

Goal - Optimize the aesthetic and functional contribution that replacement of the dyke can provide to the surrounding landscape.

Objectives and Principles

- Meet functional requirements as a flood control structure;
- Not significantly increase cost or approval time frame for Phase 1;
- Incorporate linkages to ensure continuity and accessibility to City's trail and pathway system;
- Take advantage of public viewpoints and access to river's edge to encourage public use;
- Complement Forks of Thames parkland and open space enhancements;
- Incorporate aesthetic enhancements through variety in form and texture;
- Provide an attractive interface with land uses to west;
- Accommodate opportunities for re-naturalization at river's edge, where feasible.

1.4 MASTER PLAN DEVELOPMENT

Key steps taken in the development of this Master Plan include the following:

- On-site field visits and photo documentation to gain an in-depth appreciation of the dyke and pathway system and to identify opportunities and constraints;
- Review of existing cultural and historical material;
- Preparation of preliminary design concepts for discussion purposes;
- Organized and held a Design Charrette with key stakeholders;
- Preparation of the draft Master Plan;
- Circulated draft document for comments;
- Finalized Master Plan Document.

2.0 Context

The subject area reaches from the Oxford Street Railway Bridge, south along the west side of the Thames River, to Cavendish Park. A context map (Fig. 2.4) can be found on page 2.2. Descriptions of the dyke and pathway system have been broken down into four distinct sections and can be found below.

2.1 OXFORD STREET TO BLACKFRIARS BRIDGE

The dyke and pathway system between Oxford Street and Blackfriars Bridge abuts a mixture of residential and park space. This section of path and dyke has quite an open character with more expansive views to both Blackfriars Bridge and Oxford Street and the railway bridges (Fig. 2.1, pg. 2.1), as well as to the east side of the river which is quite heavily treed directly across (Fig. 2.2, pg. 2.1). The pathway is particularly narrow in this section. There is little vegetation at the base of this section of dyke, with the exception of the area directly adjacent to the Oxford Street Bridge. This fact, combined with generally more open views, results in the existing dyke structure being very visible from the pathway and from the Oxford Street Bridge.



Fig. 2.1 View North towards Oxford Street Bridge.

2.2 BLACKFRIARS BRIDGE TO LABATT PARK

The area between Blackfriars Bridge and Labatt Park is adjacent to residential land use. Characteristics along this section of the pathway range from fairly open views that highlight Blackfriars Bridge as a focal point, to relatively narrow sections shaded by trees and shrubbery on both sides, creating a more intimate experience (Fig. 2.3, pg. 2.1). A number of extremely



Fig. 2.2 View North-East from Blackfriars Bridge.



Fig. 2.3 View North on pathway between Leslie Street and Carrothers Avenue.

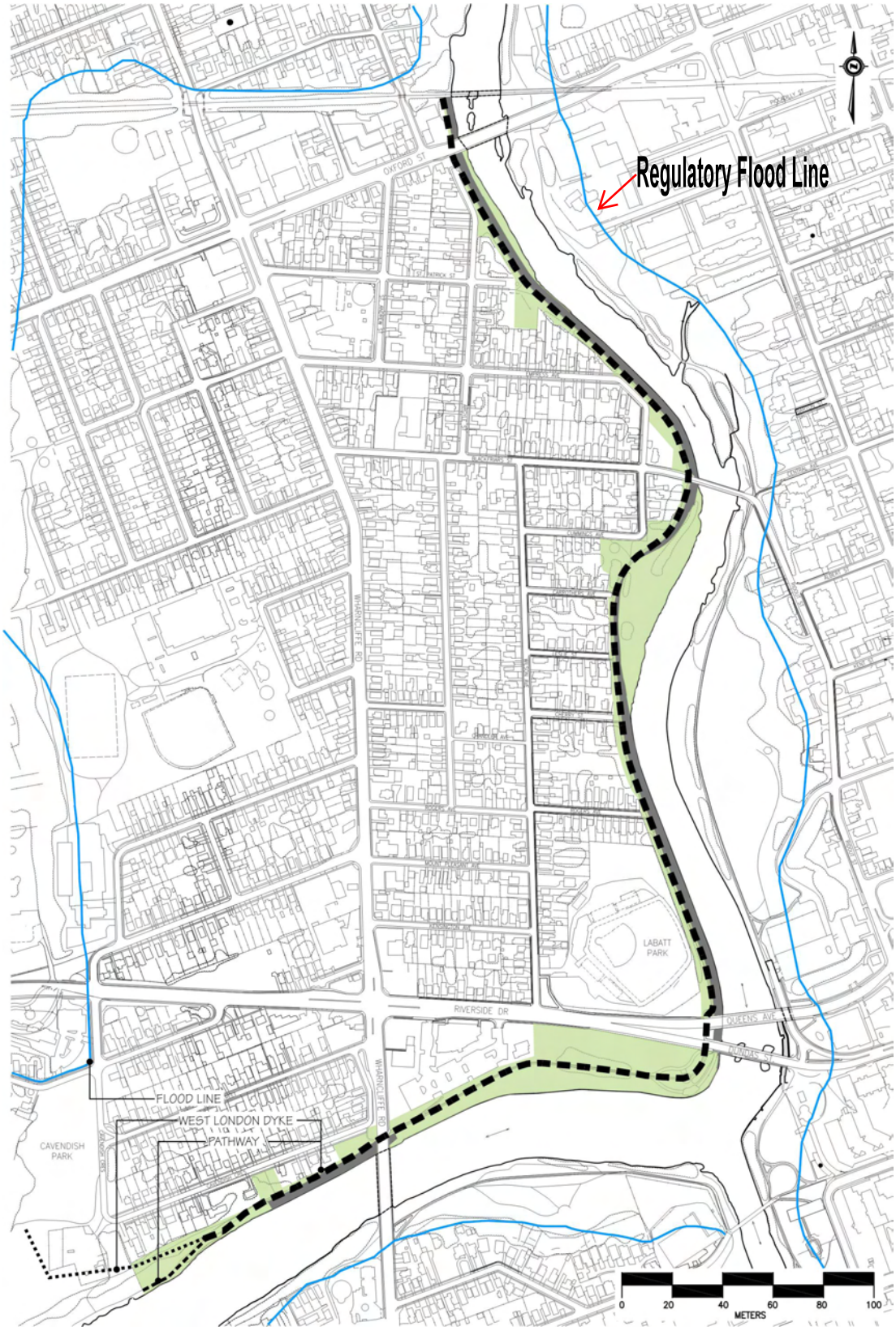


Fig. 2.4 Context Map – dyke and pathway extend from Cavendish Park to the Oxford St. railway bridges.

old cottonwood trees are situated along the west side of the pathway, primarily between Labatt Park and Leslie Street, shading both the pathway and residences. The path in this section is slightly narrower than the City's standard width of 3 metres, and access via stairs or ramps exist at all abutting streets. Sections of the railing along the pathway are in relatively poor condition and do not meet current standards (Fig. 2.6, pg. 2.7). They are interspersed by old cast iron streetlight bases (Fig. 4.12, pg. 4.8), which have an attractive design and historical pedigree, but are generally in poor repair (rusting, chipped paint, broken fronts) and tend to be used for garbage.

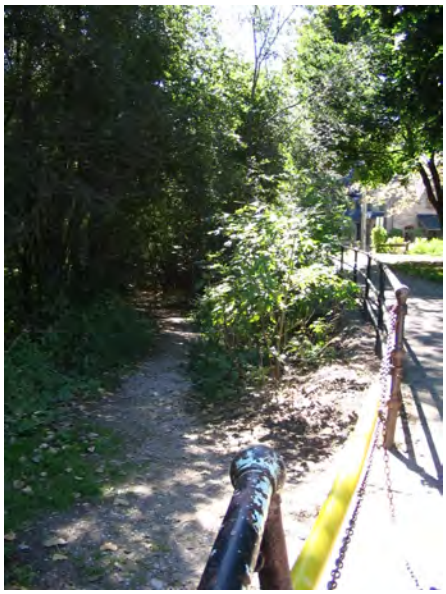


Fig. 2.5 Access to the river at the bend in Cummings Avenue.

There is a significant amount of vegetation at the base of the dyke along the section between Leslie Street and Blackfriars Bridge (Fig. 2.5, pg. 2.3), and much of the dyke in this area is only faintly visible. A small, relatively hidden, informal access path to the river is situated approximately one block south of Blackfriars Bridge. In general, this section of the pathway and dyke presents a softer, more natural edge along the river due to the mix of vegetation along both the west side of the path and the base of the dyke. A small playground is located at the bend in Cummings Avenue.

The section of pathway between Leslie Street and Labatt Park offers views into Harris Park and conversely is very visible from Harris Park (Fig. 4.3, pg. 4.6, Fig. 4.23, pg. 4.11). Events occurring in Harris Park tend to draw crowds of onlookers to this section of pathway.

2.3 LABATT PARK TO WHARNCLIFFE ROAD

The area between Labatt Park and Wharncliffe Road abuts Labatt Park and the open space surrounding the Kiwanis Senior's Centre. Labatt Park is North America's oldest operating baseball park and is a historical feature along the pathway. The baseball park is obscured from the dyke and pathway system by a cedar hedge (Fig. 2.6, pg. 2.3) except for one small gap in the hedge.



Fig. 2.6 View North on pathway. Cedar hedge outside Labatt Park to the left.

The City of London is in the process of extending the Forks of the Thames development into its fourth phase, which will be located on the west side of the river, south of the Queens Avenue and Dundas Street bridges. The West London Dyke pathway will pass through this space and is identified on the Master Plan Concept (Fig. 4.1, pg. 4.2).

The hard structure gives way to a natural edge between the Dundas Street and Wharncliffe Road bridges (Fig. 2.7, pg. 2.4). Pathway connections across the two bridges are currently at grade and include both ramps and stairs.

2.4 WHARNCLIFFE ROAD TO CAVENDISH PARK

The stretch from Wharncliffe Road to Cavendish Park is the only portion with an unpaved pathway. This section of path has a more natural character, given the vegetation and pathway surface (Fig. 2.8, pg. 2.4). This section runs next to a residential area, which leads into Cavendish Park and the Cavendish Nature Trail (Fig. 2.9, pg. 2.4). The crossing at the Wharncliffe Bridge is also at grade (Fig. 4.26, pg. 4.12).



Fig. 2.7 Pathway East of Kiwanis Senior's Centre, looking West to the Wharncliffe Road Bridge.



Fig. 2.8 Unpaved pathway, view East towards Wharncliffe Road.



Fig. 2.9 View West into Cavendish Park and the start of the Nature Trail.

3.0 Design Charrette

3.1 PURPOSE

The Project Team (UTRCA, The City of London and Stantec Consulting Ltd.) felt it was important to involve key stakeholders in the Master Plan process, not only to keep them informed, but more importantly to obtain the benefit of their creativity and insight into specific issues and concerns. Representatives from adjacent neighbourhood associations, the arts community, Friends of Labatt Park, users of the Thames River, and City and Council representatives were invited to a Design Charrette, held on November 21, 2006. A total of 14 representatives participated in the charrette and assisted in:

- Confirming goals and objectives;
- Identifying opportunities, needs, issues and concerns;
- Sharing ideas for the design of the dyke and pathway system;
- Providing feedback on three preliminary concept plans;
- Creating and refining design concepts.

3.2 PROCESS

The design team prepared for the Charrette by reviewing background information, completing site walks and preparing design concepts. At the Charrette, the design team introduced the project by explaining the purpose of the Charrette, giving an overview of background information and a photo-tour of the study area. An opportunity for discussion was given to allow the group to identify preliminary opportunities and challenges. Three preliminary design concepts were then presented to stimulate responses, help generate additional ideas and/or form a basis for further plan refinement. The three concepts were intended to present a range of general options / themes and visual examples. The next section outlines key findings from the Charrette.

3.3 RESULTS

The Charrette generated a great deal of discussion from those in attendance. The primary issues, concerns and ideas that were most commonly shared or generated the most discussion are listed below:

- Importance of considering the view of the wall from across the Thames River, as the dyke is a big, tall expanse of retaining wall;
- Need to create interest on the wall face;

- Need for longevity of the design and materials and need for a “template for the design vocabulary”;
- Timing, sequence and location of future replacement sections and the implications on transition areas and overall continuity;
- Retention and preservation of mature trees and existing vegetation at the top and bottom of the dyke structure;
- Consideration of wildlife habitat on / along dyke structure and opportunities to maintain or create habitat;



Fig. 3.1 Brainstorming session during the West London Dyke Design Charrette.

- Impacts of the project on the adjacent neighbourhood, particularly as it relates to zoning and future development potential/threats in the Blackfriars neighbourhood as a result of the increase in height;
- Concern that economics was the driving factor in the selection of the dyke replacement alternative;
- Phase I is a very visible section and aesthetics should be a primary consideration;
- The need for access to the river for both humans and wildlife;
- The retention/enhancement of significant views;
- The need/opportunity to preserve and enhance natural and cultural heritage in the area.

3.4 DESIGN IDEAS

The following is a summary of some of the ideas and themes that came out of the individual group discussions. A detailed summary of Charrette results, specifics on individual group discussions and copies of the three preliminary concepts are provided in Appendix B. Refer to Appendix C for responses to issues.

Wall / Face of Dyke

- Build the new structure “for the ages”;
- Limit number of materials used and utilize natural or natural-looking materials;
- Product selected should be relatively neutral, available long term and have a large module with texture and depth;

- Create interest on the wall – potential ideas included 'breaking up' the wall both vertically and horizontally, adding colour or texture banding in the wall to depict significant flood events, designing the wall so that the bottom half is angled and top half vertical;
- Incorporate planting at the toe of slope;
- Add steps / sloped wall sections for wildlife to access the river.

Pathway

- Minimize footprint of pathway, maintain existing width;
- Discourage active recreation / gathering places adjacent to residential areas;
- West of Wharncliffe maintain footpath – do not pave.

Lighting and Site Furnishings

- Install lighting on the river side of the walkway and direct light downwards so it doesn't affect residences;
- Add more benches, sitting areas and trash receptacles;
- Uplight the wall at night to add interest;
- Select site furnishings that can withstand vandalism.

River Access

- Do not add formal docks between Oxford Street and Queens Avenue, but maintain pedestrian access to the river;
- Add steps / sloped wall sections for wildlife to access the river;
- Enhance access to the river at appropriate locations.

Vegetation and Landscaping

- Extremely important to preserve and minimize impact on existing trees and vegetation;
- Implement an Urban Tree Management Program;
- Utilize native vegetation for new planting



Fig. 3.2 Brainstorming session during the West London Dyke Design Charrette.

areas;

- Incorporate planting at the toe of slope to enhance natural elements and create habitat;
- Retain, emphasize and augment natural environment at and near Cavendish;
- Plant more native vegetation between Blackfriars and Oxford to create more open and closed views for interest.

Blackfriars Neighbourhood

- Preserve the sense of individual/unique residential neighbourhood through Blackfriars area – keep intimate;
- Maintain/provide access from all streets, but not necessarily ramped access at all connections;
- Replicate or reuse historical elements such as the streetlight bases and railing;
- Implement historical interpretive signage / plaques at key locations.

Labatt Park

- At Labatt Park maintain the ‘wall of green’ with one open vista;
- Locate an interpretive signage feature or plaque near gap in the hedge.

Transition of Old Dyke Structure to New Dyke Structure

- Add a ‘lookout’ at the end of Rogers Ave. to ease the transition zone – maintain ‘lookout’ when next section is installed;
- Consider cantilevered viewing areas to help with transition.

4.0 Design Guidelines

The Design Guidelines have been prepared to provide guidance for detailed design of the West London Dyke and Thames Valley Parkway redevelopment, extending from Oxford Street to Cavendish Park. Examples and illustrations are provided to help give direction, but are not intended to presuppose specific design solutions, materials or products that are to be determined during the detailed design stages. The Master Plan Concept is provided on the following page (Fig. 4.1).

This section discusses the following subjects:

- Vision;
- Areas of use;
- Wall structure;
- Natural environment;
- Heritage;
- Safety;
- Access to the river;
- Gateways.

4.1 VISION

The vision statement below was prepared after examination of existing site conditions and the results of the consultation process. The vision will be achieved through implementation of the design guidelines.

The West London Dyke is directly connected with both the culture and environment of the Forks of the Thames area in London. The natural processes of the river have been intertwined with culture throughout the City's history and they continue to play a part in everyday lives. In addition to the obvious need for improved flood control, the vision for the West London Dyke is to preserve the natural environment, historic character and cultural connections to the river, while creating a usable, attractive and distinct place within the City.

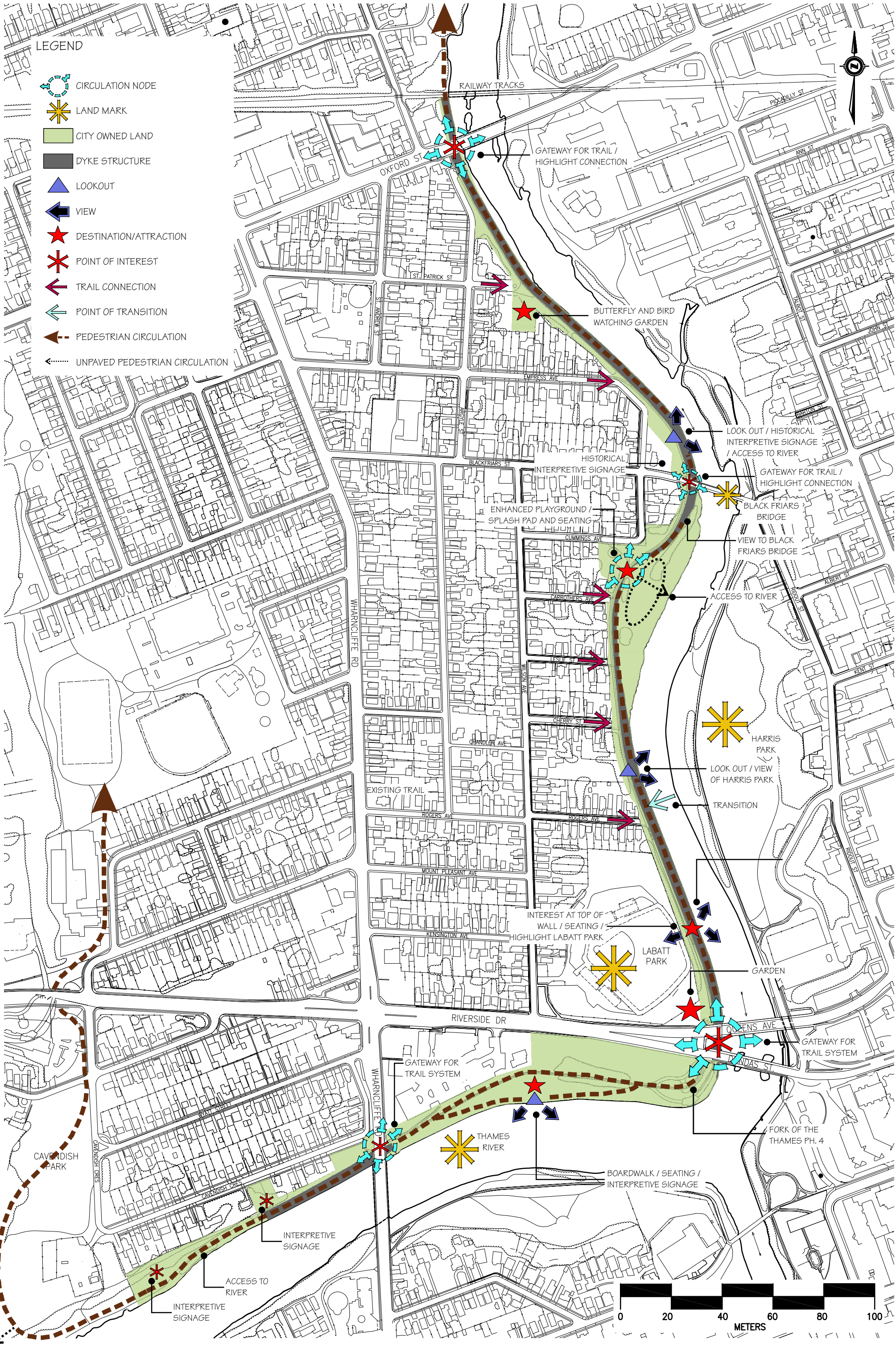


Fig. 4.1 Master Plan Concept

4.2 AREAS OF USE

The dyke and the land surrounding it has many uses for people, which include biking, running, walking, fishing, sitting, bird watching, playing, commuting and dog walking. Improvements for these uses and expanding the range of uses are important and necessary, but certain sections are better suited for particular activities. Four distinct areas along the West London Dyke have been identified as having different uses and are listed below:

1. Oxford Street to Blackfriars Bridge
2. Blackfriars Bridge to Labatt Park
3. Labatt Park to Wharncliffe Road
4. Wharncliffe Road to Cavendish Park

4.2.1 Oxford Street to Blackfriars Bridge

The top of the dyke between Oxford Street and Blackfriars Bridge abuts a mixture of residential and park space. The areas adjacent to open space have been identified as having potential as gathering spaces. Access to the river and variations in the wall structure are desirable. Areas, which are in close proximity to houses, should be sensitive to such uses and minimize the potential for activities that would generate excessive noise or impact resident privacy.

4.2.2 Blackfriars Bridge to Labatt Park

The section between Blackfriars Bridge and Labatt Park abuts only residential land use. Because of the limited space and close proximity to houses this section should keep much of its existing character. The following points describe the items that can help achieve this.



Fig. 4.2 Playground at Cummings Avenue.

- Maximize the landscape buffer to residences;
- Minimize the number of gathering spaces and locate gathering spaces away from residential buildings / in higher visibility areas;
- Use of natural looking materials is preferred where it is practical and feasible;
- Implement informal native planting;
- Preserve existing trees.

The only existing gathering space is a small playground located at the bend in Cummings Avenue (Fig. 4.2, pg. 4.3). Serving an expanded use for play would make better use of this space.

4.2.3 Labatt Park to Wharncliffe Road

The portion of the dyke and pathway system between Labatt Park and Wharncliffe Road has been identified as a section that suits higher use because it runs next to Labatt Park and the open space around the Kiwanis Senior's Centre. As mentioned previously, the pathway will pass through Phase 4 of the Forks of the Thames project. As the Forks of the Thames will have a very different character and appearance from the dyke, the West London Dyke and Thames Valley Parkway redevelopment can be an extension of what will be high volume usage and should cater to people with a variety of interests. Look outs, gardens, interpretive and seating areas should be incorporated. Where the hard structure gives way to a natural edge, access to the river is desirable, but the existing edge condition should be preserved (Fig. 4.6, pg. 4.5).

4.2.4 Wharncliffe Road to Cavendish Park

The area between Wharncliffe Road and Cavendish Park is the only portion with an unpaved pathway. This section abuts a residential area and the pathway leads into Cavendish Park and the Cavendish Nature Trail. The paved pathway should blend into the open space system making the required community linkages and support the recommendations of the recreational routes of the City of London Bicycle Master Plan. Unpaved side trails will be maintained in this area to preserve the character of the natural space (Fig. 4.29, pg. 4.14).

4.3 WALL STRUCTURE

The West London Dyke structure is primarily an engineered structure to protect life and property during periods of extreme river flows. As such there are many technical considerations, which determine its functional design. Therefore, the design concept presented in this section is intended to complement the overall design and not to take precedence over functional considerations. The wall structure will have the most visual impact upon the area because of its sheer vertical size. Creating an aesthetically pleasing and interesting view from the east side of the river has been identified as a major consideration, as well as creating continuity throughout the structure and creating interest from across the river (Fig. 4.3, pg. 4.4).

4.3.1 Wall Material

The wall material should be selected based on the overall vision for the dyke replacement. The material must have a natural appearance and give the greatest chance for long-term availability to ensure continuity throughout the phases of the structure replacement process. To create this natural look, large, gray, roughly textured blocks that resemble natural stone are preferable. The use of large wall blocks/modules rather than small will also help to reduce the perceived scale of the wall. Wall material selection should also consider how



Fig. 4.3 View west from Harris Park towards dyke.

evenly each material weathers to ensure a natural appearance as it ages. Figures 4.4 and 4.5 (pg. 4.5) show examples of the type of pre-cast wall material that is being considered for Phase 1 of the redevelopment. Because the dyke will be replaced in phases there is a possibility that the same wall material will not be available at such time that the next section is ready for construction. Accordingly, it is strongly suggested that sections are replaced in sequence to give the appearance of a seamlessly constructed structure or else replaced in sections allowing for logical termination points, i.e. bridges, natural edge areas, etc.



Fig. 4.4 Pre-cast wall material.



Fig. 4.5 Pre-cast wall material.

4.3.2 Creating Interest

Creating an interesting, aesthetically pleasing and culturally significant structure is key to achieving the vision for the dyke. The wall should be visually varied, horizontally and vertically. Horizontal and/or vertical banding, possibly to indicate significant flood levels, could be considered. Planting at the toe of the slope would shorten the wall visually and give some softness to the hard structural components (Fig. 4.7, pg. 4.5). The use of lighting on the wall face would give interest at night, but lighting should not shine directly on water, so it does not adversely affected wildlife. The application of shape and form to create interest should be strongly considered in the context of technical requirements of the wall construction. A smooth, natural curve to the wall (Fig. 4.6, 4.7, pg. 4.5), creating platforms at the top of wall or closer in elevation to the water would accomplish this (refer to Section 4.7, pg. 4.13). Large shade trees, plantings, railings and lighting will give interest and texture to the top of the wall and offset its overall dominance.



Fig. 4.6 Natural curve observed in existing structure.

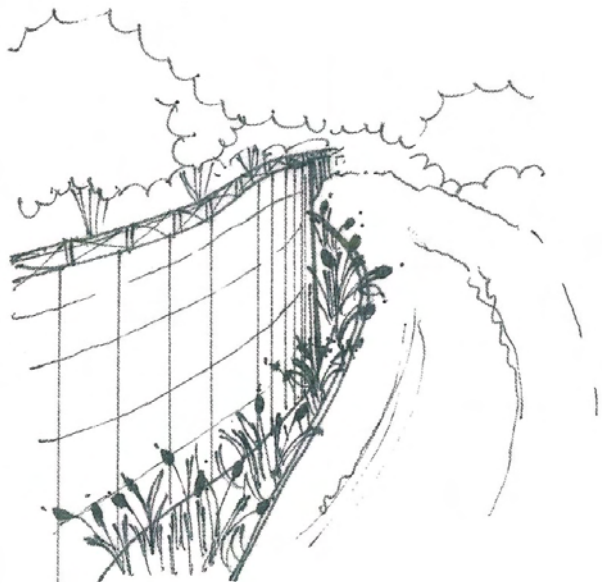


Fig. 4.7 Curved wall gives varying amounts of space between wall and toe structure.

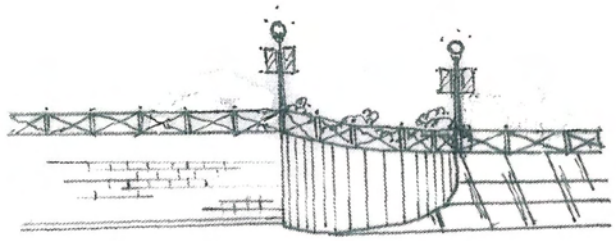


Fig. 4.8 Sketch illustrates integration of old and new wall structure.

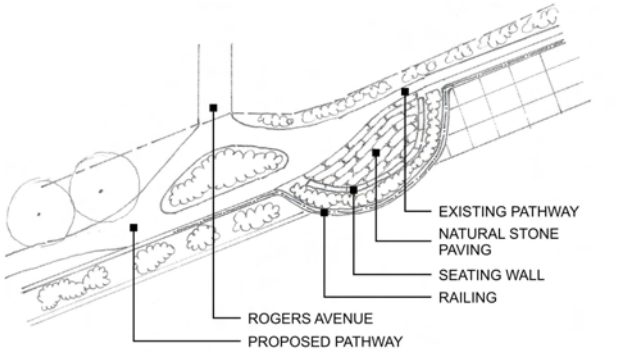


Fig. 4.9 Concept sketch of transition (plan view).

4.3.3 Transition

The transition is the point where the first phase of reconstruction ends and must meet the existing structure. Again, it is important that an aesthetically pleasing, semi-permanent solution be implemented. The change in grades and pathway alignment, and change to the shape of the structure presents a challenge for design development. The transition should continue the theme of natural looking materials, native plant material, and discreet, informal design. As the transition is at the end of Rogers Avenue, the view from the street must be appealing and the view of the trees on the other bank should be obscured as little as possible. The shape of the transition shown in the concept sketch above (Fig. 4.8 and 4.9, pg. 4.6) offers more of a buffer between residences and pathway users and allows viewers of events in Harris Park to step off the pathway. Introducing a third wall material for the transition would make it stand out and would move attention away from the sharp contrast between the old and new wall.

4.4 NATURAL ENVIRONMENT

The naturally vegetated areas along the waters edge and the native trees existing at the top of the wall are significant to the character of the dyke. The trees give shelter from the wind, shade from the sun, homes for wildlife, and provide a colourful and varied backdrop through the four seasons. Existing significant vegetation must be preserved and protected. Where appropriate the shape of the wall and/or pathway alignment should be altered to save trees of significance.

4.4.1 Environmental Enhancement

An attempt should be made to plant native aquatic material at the toe of the dyke structure that will soften hard surfaces and stabilize soils. Vegetation will introduce itself by means of erosion and deposition, so establishing desirable, non-invasive native species is valuable. An effort should be made to create habitat for aquatic and terrestrial life along the edge of the river where conditions allow for self-sustaining habitat. It is important to preserve and enhance all existing natural edges for this reason (Fig. 4.10, pg. 4.7). If these remaining natural edges become unstable, bioengineering should be considered as a method of stabilization. Management of vegetation to remove invasive species will go a long way to reestablishing native plant diversity.

4.4.2 Urban Tree Management

Through the consultation process it was determined that there is a need for an urban tree management program. There should not only be documentation of trees of significance, but also identification of areas in need of maintenance, plantings and/or removals.



Fig. 4.10 Natural edge condition between Dundas Street and Wharncliffe Road.

4.4.3 Plant Design

Informal, natural plantings are suited for areas of lower use, particularly where the site borders on residential land use. Areas identified as gathering spaces should make use of more formal plantings to create emphasis. Native plant material should be used throughout to create continuity and protect the natural environment, but varying layouts can identify the intended use. Year round form and colour should be taken into consideration at the planting design stage. Planting should also be used to emphasize significant views. The creation of these views is discussed further in Section 4.4.5 and 4.5.3.

4.4.4 Signage

There is an opportunity to expand the existing interpretive signage program to incorporate information on natural systems and natural heritage in the area. Refer to section 4.5.2 (pg. 4.10) where the interpretive signage program is discussed further. Trail information signage should also be incorporated throughout the trail system. Suitable locations for signage are identified on the Master Plan Concept (Fig. 4.1, pg. 4.2).

4.4.5 Views

Several significant views were identified as having connections with the river and natural heritage. These views should be preserved and enhanced. They have been identified in Section 4.5.3 (pg. 4.10) along with suggestions for preservation and enhancement.

4.4.6 Bird and Butterfly Garden

The opportunity for users to participate in passive recreation activities was established as an important attribute of the trail system. Activities such as sitting, reading, people watching, bird and butterfly watching and walking are all considered types of passive recreation. A portion of the small open space at the end of St. Patrick Street is currently used as a community garden (Fig. 4.1, pg. 4.2). It seems natural that this area be expanded to incorporate a seating area and a garden that attracts birds and butterflies (Fig. 4.11, pg. 4.8). This would serve as a destination along the pathway.



Fig. 4.11 Highbush Cranberry – native shrub with berries that are liked by birds.

4.5 HERITAGE

The West London Dyke and the surrounding area have a strong historic character. The most significant features to recognize are the existing Dyke itself, the Thames River, Labatt Park and Blackfriars Bridge. In addition, Eldon House and the Old Courthouse are important heritage buildings in the area. The dyke replacement is an opportunity to create a place, which provides information on the area's rich history while meeting the current needs of users.

4.5.1 Lighting and Site Furnishings

Through the consultation process it was determined that site lighting and furnishings should be consistent with the dyke's strong links to cultural heritage. The existing light post base design should be used as inspiration for new light posts (Fig. 4.12, pg. 4.8). Figure 4.13 (pg. 4.8) shows the historic style of post and fixture found in front of the Nancy Campbell Institute and fits with the character of the post base.



Fig. 4.12 Historic light base incorporated into existing dyke railing.



Fig. 4.13 Historic light post in front of Nancy Campbell (London, ON).

Figure 4.15 (pg. 4.9) illustrates what the proposed light post might look like. All furnishings should be durable, vandal resistant and cohesive with the area's cultural heritage. The existing railing was also recognized as significant to the identity of the dyke (Fig. 4.14, pg. 4.9). This railing should be used as inspiration for the new railing design (Fig. 4.16, pg. 4.9) that will meet safety codes. In addition, trash receptacles, additional benches and more consistent lighting are needed. Figures 4.17 and 4.18 (pg. 4.9) show site furnishings that are consistent with the historic style of the light post, light base and railing. The use of public art within destination areas or incorporating art within site furnishing design should be considered.



Fig. 4.14 Existing dyke railing.



Fig. 4.15 Light post sketch.

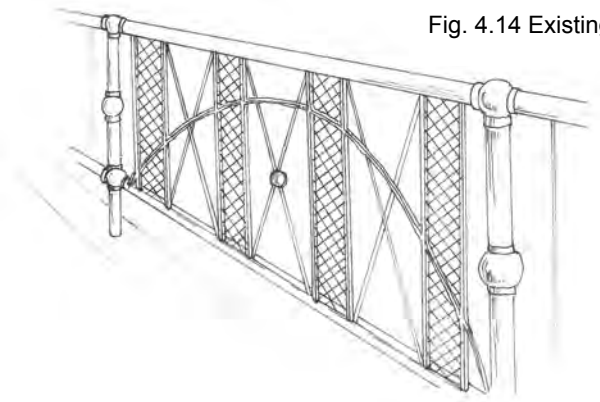


Fig. 4.16 Railing sketch.



Fig. 4.17 Wrought iron bench in Victoria Park (London, ON)



Fig. 4.18 Bollard in Victoria Park (London, ON).

4.5.2 Signage

An interpretive signage program for the dyke and pathway system exists and it is seen to be an inherent element to incorporate into and expand on in such a culturally rich area. The content of the existing interpretive signage program should be carried through, but it is suggested that a new format and unique appearance be implemented throughout the dyke and pathway system. This altered signage program should be in keeping with site lighting and furnishings, be durable, unique in appearance and vandal resistant. Consideration should be given to incorporating signage into the design of site elements, i.e. railings and pavement. Unique signage will assist in establishing the distinct character of the dyke. Suitable locations for interpretive signage are identified on the Master Plan Concept (Fig. 4.1, pg. 4.2). As noted in Section 4.4.4 (pg. 4.7) trail information signage is valuable and should be incorporated throughout the pathway system as well.

4.5.3 Views

It was determined that views of significance along the dyke and pathway system have direct links with cultural and natural heritage in the area. Significant views are identified below, along with suggested approaches to preserve/enhance these views.

- View of the Wharncliffe Road Bridge, Thames River and the Fork of the Thames from Kiwanis – marked by lookout, seating area and interpretive signage (Fig. 4.10, pg. 4.7);
- View of Dyke structure and Thames River from the Queens Avenue Bridge – implement attractive wall structure and a discrete, aesthetically pleasing transition (Fig. 4.19, pg. 4.10);
- View of the Queens Avenue Bridge and the Fork of the Thames from outside of Labatt Park – look out and interpretive signage to remark on significant features (Fig. 4.20, pg. 4.10);



Fig. 4.19 West side of dyke, looking North from the Queen St. Bridge.



Fig. 4.20 View of Queens Avenue Bridge and the Fork of the Thames.

- View into Labatt Park – allow controlled view into the park, mark with interpretive signage and seating area (Fig. 4.21, pg. 4.11);
- View of Harris Park – look out and interpretive signage to allow users to stop along pathway (Fig. 4.22, Fig 4.23 pg. 4.11);
- View of Blackfriars Bridge from the South – should not be obscured (Fig. 4.24, pg. 4.11);
- View of Blackfriars Bridge from the North – look out and interpretive signage to mark point of significance (Fig. 4.25, pg. 4.11).



Fig. 4.21 View into Labatt Park, through cedar hedge, from pathway.



Fig. 4.22 View of river and Harris Park from dyke.



Fig. 4.23 View into Harris Park from top of dyke.



Fig. 4.24 View of Blackfriar's Bridge from South.



Fig. 4.25 View of Blackfriar's Bridge from North.

4.5.4 Labatt Park

This baseball park has a long-standing history in London that many residents are unaware of. Creating a controlled view into the Park from the pathway, with interpretive signage about its role in the City's History, would bring an interesting element to the dyke replacement and create further visibility to the Park. Fig. 4.21 (pg. 4.11) shows the break in vegetation that inspired the idea. This location provides an opportunity to create a gathering space that is a destination along the trail. The line of cedars that shield the park from those on the pathway has been identified as a positive element because it creates an intimate feel, and natural appearance. This green backdrop should be a component in the proposed design whether it is preserved or reintroduced.

4.6 SAFETY

Improved site features and pathway system improvements will increase the number of users. With this increase, improved safety becomes a very necessary consideration. Circulation, visibility, lighting and vandalism are among those items that must be addressed.

4.6.1 Circulation

The existing pathway system crosses five major streets, without any form of traffic control to give users the right-of-way. Not only is this dangerous, but it is inconvenient for pathway users. Access under the bridges would increase safety for pedestrians and cyclists and improve circulation for those who choose to use the pathway functionally as a green method of transportation. A continuous path encourages users, especially cyclists, to make use of a pathway system because of its convenience. For the reasons noted above, implementing pathways under each bridge should be given serious consideration. The existing pathway also varies in width and material. As the pathway is redeveloped, its design should be consistent with City of London Standard Multi-Use Pathway to improve circulation, safety, and create continuity.



Fig. 4.26 View West to the Wharncliffe Road crossing.

4.6.2 Lighting

As noted earlier, lighting can aid in creating continuity and cultural connections with the dyke system in the daylight. In the evening hours lighting will not only create continuity, but will have a direct impact on the safety of the pathway system. A well-lit pathway will encourage people to make use of it during evening hours. The existing lighting system is not consistent and leaves dark patches due to the presence of overgrown vegetation or a lack of light posts and fixtures. The dyke system requires consistent lighting throughout. The use of full cut-off optics will help decrease light pollution to adjacent areas. Light post placement and the use of housing shields should be given careful consideration when adjacent to residential areas.

4.6.3 Vegetation

Vegetation can play a role in how safe a pathway system is and how safe users perceive it to be. Existing vegetation and proposed planting should adhere to CPTED (Crime Prevention Through Environmental Design) principles.

4.6.4 Vandalism

The existing dyke and pathway system has been subject to numerous acts of vandalism over the years (Fig. 4.27, pg. 4.13). A reduction in vandalism can be achieved through appropriate lighting and site design. CPTED principles should be considered during design development in order to reduce occurrences of vandalism. Vandal-resistant site furnishings are available and should be used wherever possible.



Fig. 4.27 Existing signage has been badly damaged by vandals.

4.7 ACCESS TO THE RIVER

It was identified that access to the river is very important to users, whether it is just to be near the edge to look into the water or to fish, feed the geese or canoe. Although the river can be more readily accessed from the east side of the river there are still several existing access points. Access is provided at Cummings Avenue (Fig. 2.5, pg. 2.7), the Kiwanis Senior's Centre (Fig. 2.7, pg. 2.8) and at Cavendish (Fig. 4.29, pg. 4.14) and should be preserved/enhanced as described below. It becomes challenging to provide access when the wall structure exists.

4.7.1 Cummings Avenue

Access to the water is currently available, but not encouraged at Cummings Avenue. As noted previously, the natural vegetation in this area should be preserved and maintained. A wood chip path or gravel path should be provided to encourage users to stay on the path, and to reduce soil compaction and damage to plant material. Steps should be taken during design development to ensure that the water's edge is protected from pedestrian traffic. Access to cyclists should be restricted to protect the natural area from damage. Providing seating at the water's edge would allow for sitting, reading and fishing and should be incorporated.

4.7.2 Blackfriars Bridge

The area north of the bridge has been suggested as a possible location for access to the river by alterations to the design of the wall structure. This area has more room to work with than many other locations along the dyke.

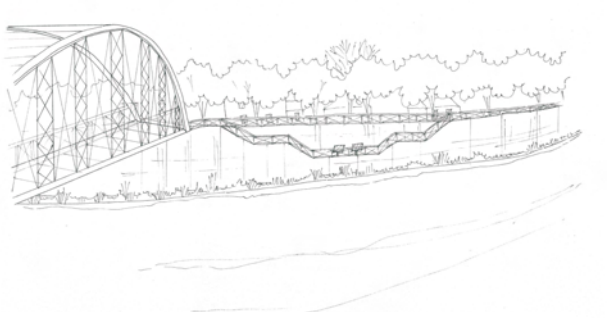


Fig. 4.28 Sketch illustrating possible outlook at Blackfriars bridge.

Figure 4.28 (pg. 4.13) illustrates this concept.

4.7.3 Kiwanis Senior's Centre

The stretch between the Queens Avenue Bridge and the Wharncliffe Bridge currently gives access to the river and has a natural edge condition. This natural edge should be maintained but this section has been identified as a place that would suit higher usage. There is potential for a discreet and unobtrusive boardwalk and lookout with seating and interpretive signage. Implementing a dock into the lookout for canoes and kayaks would expand the number of recreational activities in the area. Seating would allow for reading, people-watching and observing wildlife.



Fig. 4.29 Pathway looking West towards Cavendish Park.

4.7.4 Cavendish

There is currently access to the river between Cavendish Park and east to where the hard structure of the dyke begins (Fig. 4.29, pg. 4.14). This natural edge condition should remain in its present state or be enhanced. The existing edge gives an opportunity for fishing.

4.8 GATEWAYS

Gateways have been identified on the concept plan at various locations where the pathway system intersects major roadways. These specific nodes have the opportunity to identify where the pathway system connects with major streets, while being aesthetically pleasing. The gateways should be in keeping with the aesthetic of the pathway system and dyke redevelopment initiatives. As these connections are where many pedestrians and cyclists enter the pathway, these are ideal locations for trail information signage.

5.0 Implementation

The following notes outline how the recommendations detailed in the design guidelines section should be implemented during various phases of the redevelopment.

5.1 GENERAL RECOMMENDATIONS

The general recommendations found below detail how to specifically implement design recommendations, which apply to all phases of development. All recommendations, which apply, should be addressed during each phase of development.

- Options for creating a functional and interesting dyke layout and structure should be investigated during each Phase of the redevelopment and accordingly be detailed in each set of tender documents;
- Confirm the suitability of naturalization plantings at the toe of the dyke for potential environmental enhancement throughout all phases of development;
- Investigate opportunities for naturalization planting areas for environmental enhancement during design development;
- Investigate opportunities for terrestrial and aquatic habitat creation during design development;
- Seating should be incorporated into the pathway system at regular intervals throughout all phases of redevelopment;
- Lighting and furnishing design, including signage, should consider design guidelines and be determined through design development;
- Significant views / lookout locations should be identified and confirmed at the site design scale, during design development for each phase of redevelopment;
- Investigate opportunities to implement pedestrian underpasses under all bridges within the study area where appropriate;
- Lighting design for all phases of the redevelopment should have consistent lighting types and levels to increase safety and should be adjusted to suit adjacent land uses;
- Consider Crime Prevention Through Environmental Design (CPTED) principles when preparing planting plans for all phases of redevelopment;
- CPTED principles should be considered for all phases of redevelopment to reduce the occurrences of vandalism and increase safety for its users;

- Investigate all opportunities during each phase of the redevelopment to provide access to the river for a broad range of activities.
- Functionality and aesthetics should be key design considerations for any transitions in all phases of development;
- The buffer between residences and the pathway system should be maximized during all phases of design development;
- The wall layout determined through the design development stage should consider both technical requirements and the recommendations given in the design guidelines regarding shape and composition. Where possible it should be varied to create interest and give adequate room at the top of wall for things such as lookouts, buffers and gathering spaces.
- Public input should be solicited for each phase of the dyke replacement.

5.2 PHASE 1 RECOMMENDATIONS

The recommendations outlined in this section are specific to implementation of Phase 1 of the dyke and pathway replacement. Each item should be addressed during design development.

- The wall material selection should be investigated and selected during detailed design for Phase 1 of the redevelopment based on functional capability as well as aesthetic appeal, and be specified in the tender documents;
- Detailed design for Phase 1 of the redevelopment, should look at the functionality and aesthetics of the transition specifically;
- The urban tree management program should be initiated as soon as possible, so that an approach for all phases can be reached prior to construction of Phase 1;
- A native plant list should be prepared during design development for Phase 1 and be consistent through future phases of redevelopment;
- Site lighting and furnishings including seating, trash receptacles, railing and interpretive signage are to be vandal resistant, detailed during the detail design stage and be included in the tender documentation for Phase 1;
- Investigate opportunities to create a lookout and interpretive area in front of Labatt Park;
- Ensure all lighting has full cut-off optics, is documented during design development and is included in the tender documents for Phase 1;
- Consistent and identifiable gateways should be designed for all major roadway crossings and be included in the tender documents for Phase 1.

6.0 Conclusion

The West London Dyke and Thames Valley Parkway upgrade and replacement has come about because of structural deficiencies in the dyke itself, as identified in 2005. Thus, it is necessary to bring this flood control structure up to current technical standards. The dyke replacement gives the rare opportunity to create a dyke and pathway system that preserves and enhances the natural environment, historic character and cultural connections to the river, while improving safety and usability, and establishing an attractive and identifiable place within the City of London.

The process in developing the Master Plan document has involved:

- Review of background information including, technical investigation and PIC process;
- Review of site conditions and photo documentation;
- Analysis of existing conditions;
- Development of preliminary goals and objectives;
- Preparation of design concepts;
- Information gathering from key stakeholders during the design charrette process;
- Identification of primary issues, concerns and ideas generated at the charrette;
- Development of a vision and design guidelines for the dyke and pathway system;
- Refinement of the Master Plan Concept;
- Preparation of specific recommendations for implementation of design guidelines.

As noted in Section 1.2, a condition assessment identified that the portion of the dyke in the most need of replacement was between the Queens Avenue Bridge and Rogers Avenue. A preferred alternative was selected for Phase 1 of the redevelopment after careful evaluation of design alternatives. Specific benefits of the wall design selected for Phase 1 include more efficient use of public space and more flexibility in uses at the top of dyke, replacement of damaged site furnishings, the potential for pathways under existing bridges and for ecological enhancement at the top and toe of the dyke structure. Design recommendations need to be applied to Phase 1 to ensure that a cohesive dyke and pathway system is achieved.

The design guidelines and implementation recommendations within this document are intended to guide detailed design and to create continuity throughout all phases of the redevelopment. It is imperative that public consultation be solicited with each phase of the redevelopment. Through the creativity and insight of the community and the design team the vision for the West London Dyke and Thames Valley Parkway can be achieved.

West London Dyke Flood Control Structure Master Plan
Appendix A

Introduction

The West London Dyke runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the main branch to the west of the Wharncliffe Road Bridge.

Construction began on the West London Dyke in the 19th century in order to minimize flood damage in the West London area which was prone to flooding. Historical records indicate that portions of the earth embankments which form the underlying support of the current dyke structure generally consists of material deposited from street sweepings and excess soil from excavation work.



Fig –1 Photo from the 1930's showing the concrete Dyke being formed.

Beginning in the mid 1910's, the City began to undertake reconstruction of the dyke system to include additional placement of fill and a concrete facing as a means of additional protection against erosion. However, it wasn't until after the 1937 flood that the present concrete facing material was placed.

The City of London owns the dyke structure and undertakes minor maintenance activities. Through an agreement with the Upper Thames River Conservation Authority (UTRCA), the UTRCA undertakes major maintenance activities.

Background

In 2004, Stantec Consulting Ltd. undertook a condition assessment of flood control structures within the City of London including the West London Dyke. Approximately 350 m of the dyke structure from the Queens Avenue Bridge to Rogers Avenue was identified as being the highest priority for repair.

In April 2005, Stantec undertook an investigation to determine the requirements to repair this area of the dyke. Based on the investigation that included coring of the structure and geotechnical review by a soils consultant, it was concluded that this section of the dyke has come to the end of its useful life. Therefore, it needs to be replaced rather than repaired.

General Information

Existing Structure - The current dyke can generally be described as a gravity structure consisting of earth fill with a poured in place concrete facing supported by a concrete toe. Large precast concrete blocks are also located along sections of the toe within the river to add additional support and to minimize erosion.

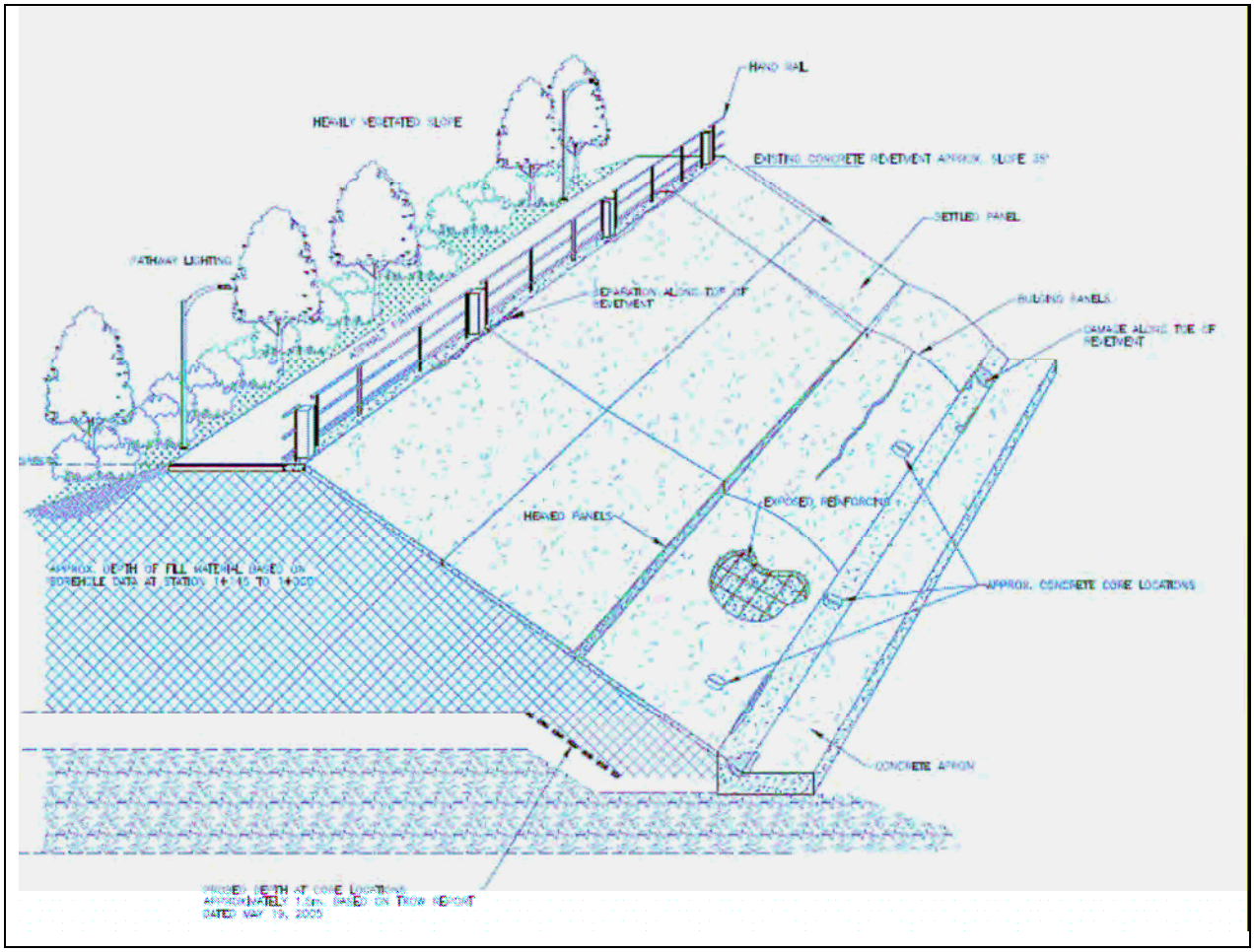


Fig –2 Typical cross section of the existing West London Dyke in the study area

Current Flood Protection -The section in the study area at present provides the lowest level of flood protection compared to other portions of the West London Dyke. In general, the elevation of the dyke is between the Regulatory Flood Line (1:250 year flood) and the 1:100 year flood event. On average, the structure is approximately 0.7 m below the Regulatory Flood Line within the project area.

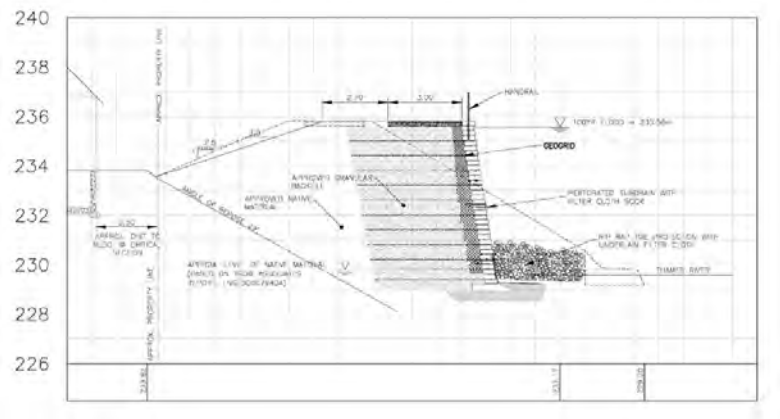
Preliminary Engineering

Major Design Considerations

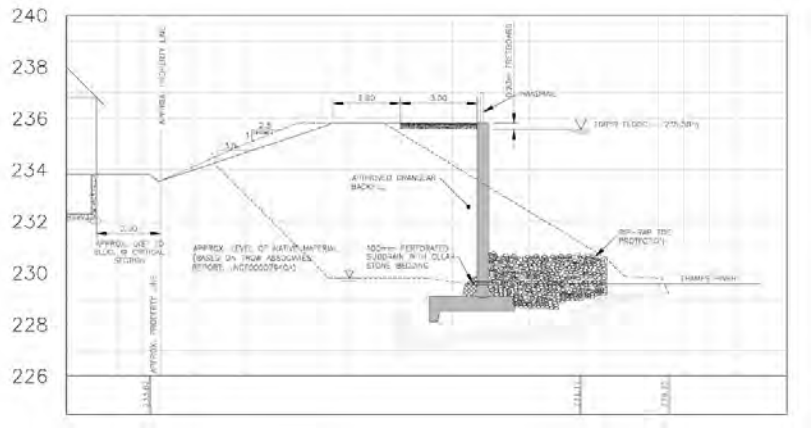
- Provide flood protection to at least the 1:100 year flood level as presently provided and if practical/economical to the 1:250 year flood level;
- Minimize impacts on environment (therefore replacement structure is to be within the existing dyke footprint);
- Provide a design that can work in restricted areas of the dyke within project area and in other segments of the West London Dyke requiring future replacement;
- Given the cost, complexity and potential inconveniences during construction, the major components of the replacement dyke structure should be designed for a life expectancy of 75 years;
- Maintain/enhance recreational use of the dyke;
- Incorporate a pathway structure from the bottom of the Queens Avenue Bridge to the top of the dyke structure; and
- Given the high visibility of the structure and its proximity to the downtown core, aesthetics to be considered in the selection of the preferred structure.

Design Alternatives for Replacement of the Dyke - A tabular decision matrix listing the various options for replacement of the dyke structure was prepared (see display board). In total, eleven (11) design alternatives were submitted for review by the City and UTRCA. Based on the decision matrix developed four alternatives were shortlisted for further review. These are:

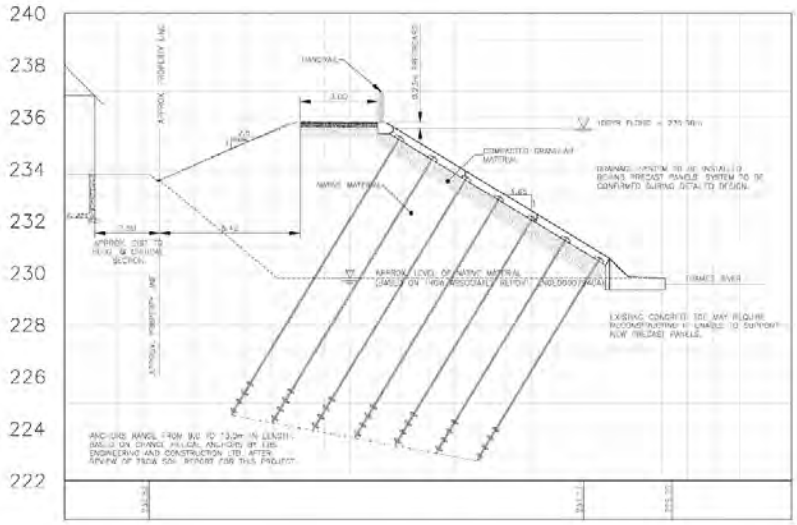
Option A: Pre-cast reinforced earth system;



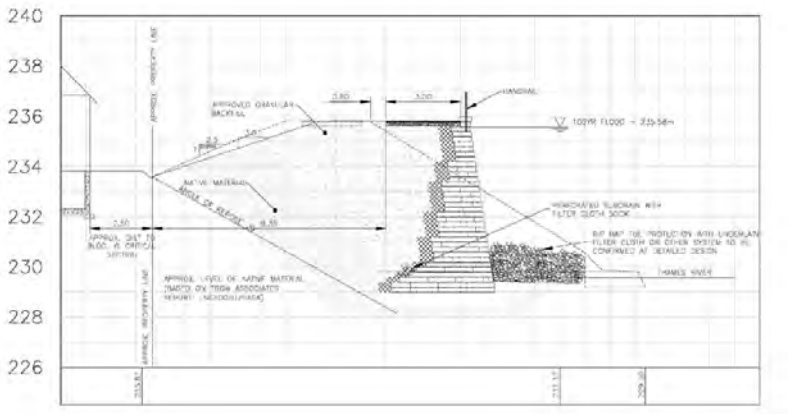
Option B: Reinforced concrete cantilever wall (retaining wall);



Option C: Pre-cast concrete Revetment; and



Option D: Pre-cast concrete modular block structure.



Shortlisted Design Option Review - The following were considered in undertaking a comparative analysis of the shortlisted options:

- Capital Cost;
- Aesthetics;
- Function (including the potential to integrate a pedestrian pathway from beneath the bridges to the top of dyke);
- Constructability; and
- Durability.

Table 1 summarizes the rankings for the shortlisted options:

Table 1 – Ranking of Options

OPTION	A	B	C	D	Weight
Construction Cost*	$2,100,000	$2,900,000	$4,200,000	$2,500,000	* Based upon a structure to meet the 1:100 year flood
Cost **	20.0	14.5	10.0	16.8	20
Aesthetics	10.0	2.5	5.0	10.0	10
Function	5	10	2.5	5	10
Constructability	10	5	2.5	10	10
Durability	5	10	2.5	5	10
Total Score	50.0	42.0	22.5	46.8	60
Ranking	1	3	4	2	

** Ranking based on inverse ratio of the cost of option divided by the lowest cost option. 1:100 year used as basis as Option C cannot be built to 1:250 year.

Option A was selected as the preferred alternative design by the City of London and UTRCA as it best met the requirements for the project, including consideration for cost, provision of adequate pathway integration, aesthetics, ability to provide either the 100 or 250 year flood level and general constructability issues given the site constraints previously identified. The City of London and UTRCA have decided to have the dyke built to the 250 year flood level.

Other Considerations

Pathway Integration - The City is considering providing a pedestrian connection along the west bank of the Thames River in order to minimize pedestrian crossings of Queens Avenue and Riverside Drive in this area. Two options (continuous and zigzag) were developed to integrate a pathway from beneath the Queens Avenue Bridge to the top of the dyke. The continuous pathway was selected as the preferred design. The final decision on the pathway will be based upon funding availability and subject to additional investigation to determine the integration of the pathway in the vicinity of the bridge supports and to work completed as part of the Phase IV of the Forks of the Thames Phase Revitalization Project.

Class Environmental Assessment - This project falls under the jurisdiction of the *Municipal Class Environmental Assessment, Municipal Engineers Association June 2000* process, as the City of London is the Proponent. The project falls under the category of a Municipal Water and Wastewater Project; as a Stormwater Management Project. Based upon a review of the project schedules, this project should be considered a Schedule A (pre-approved) project. This schedule best fits with this project's work scope which is to replace approximately 350 m of the West London Dyke as it has come to the end of its useful life and needs to be replaced rather than repaired.

Approvals - This project may require various permits from local, provincial and federal agencies. Verification as to the required approvals will be subject to the completion of detailed design.

Total Project Cost

The project cost estimate to complete this project is presented in Table 2. This includes replacement to the 1:250 protection level and the inclusion of the pedestrian pathway (in the project area).

Table 2 –Project Cost Estimate

Description	Replacement Dyke	Pedestrian Pathway	Total
Construction (1:250 year protection)	$2,300,000	$220,000	$2,520,000
Detailed Design & Contract Administration (10.5% of Construction)	$241,500.00	$23,100.00	$151,200
Soils and Material Testing (1% of Construction)	$23,000.00	$2,200.00	$25,200
Subtotal	$2,564,500	$245,300	$2,809,800
Contingency (20% of Subtotal)	$512,900	$512,900	$561,960
Total	**$3,077,400**	**$294,360.00**	**$3,371,760**

Comments

Comments are welcome and may be directed to:

Rick Goldt, C.E.T.
Supervisor, Water Control Structures
Upper Thames River Conservation Authority
1424 Clarke Rd.
London ON N5V 5B9
Tel: (519) 451-2800 x244
Fax: (519) 451-1188
Email: goldtr@thamesriver.on.ca

Scott Mathers, B. A. Sc., (Eng)
Wastewater and Drainage Engineering
Environmental and Engineering Services
Department, City of London
300 Dufferin St., Room 910
London, ON N6A 4L9
Tel: (519) 661-2500 x5472
Fax: (519) 661-2355
Email: smathers@london.ca

THE CORPORATION OF THE CITY OF LONDON
UPPER THAMES RIVER CONSERVATION AUTHORITY
NOTICE OF PUBLIC INFORMATION CENTRE

The West London Dyke is 2374 m long and runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the main branch to the west side of the Wharncliffe Road Bridge. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities.

In 2004, the UTRCA undertook a condition assessment of Thames River dykes within the City including the West London Dyke. Approximately 350 m of the dyke north from the Queens Avenue Bridge were identified as being the highest priority for repair. This portion was originally built in the 19th century in order to minimize flood damage in the West London area with the present concrete revetment dating to the 1930s.

In 2005 while undertaking the initial stages of a concrete repair program on this section, the UTRCA and the City concluded that a significant portion of this section had come to the end of its useful life and needed to be replaced rather than repaired. Therefore, a preliminary design report was undertaken by an engineering consultant to assist the City and the UTRCA to determine:

- The requirements for the performance of a replacement structure;
- The required life expectancy of the replacement structure; and
- The recommended replacement structure to be used.

The City and the UTRCA have received a draft preliminary design report and based on its findings have arranged for a Public Information Centre. This event is an opportunity for interested persons to learn more about this project and to provide input and comment to the City and the UTRCA. The Public Information Centre details are as follows:

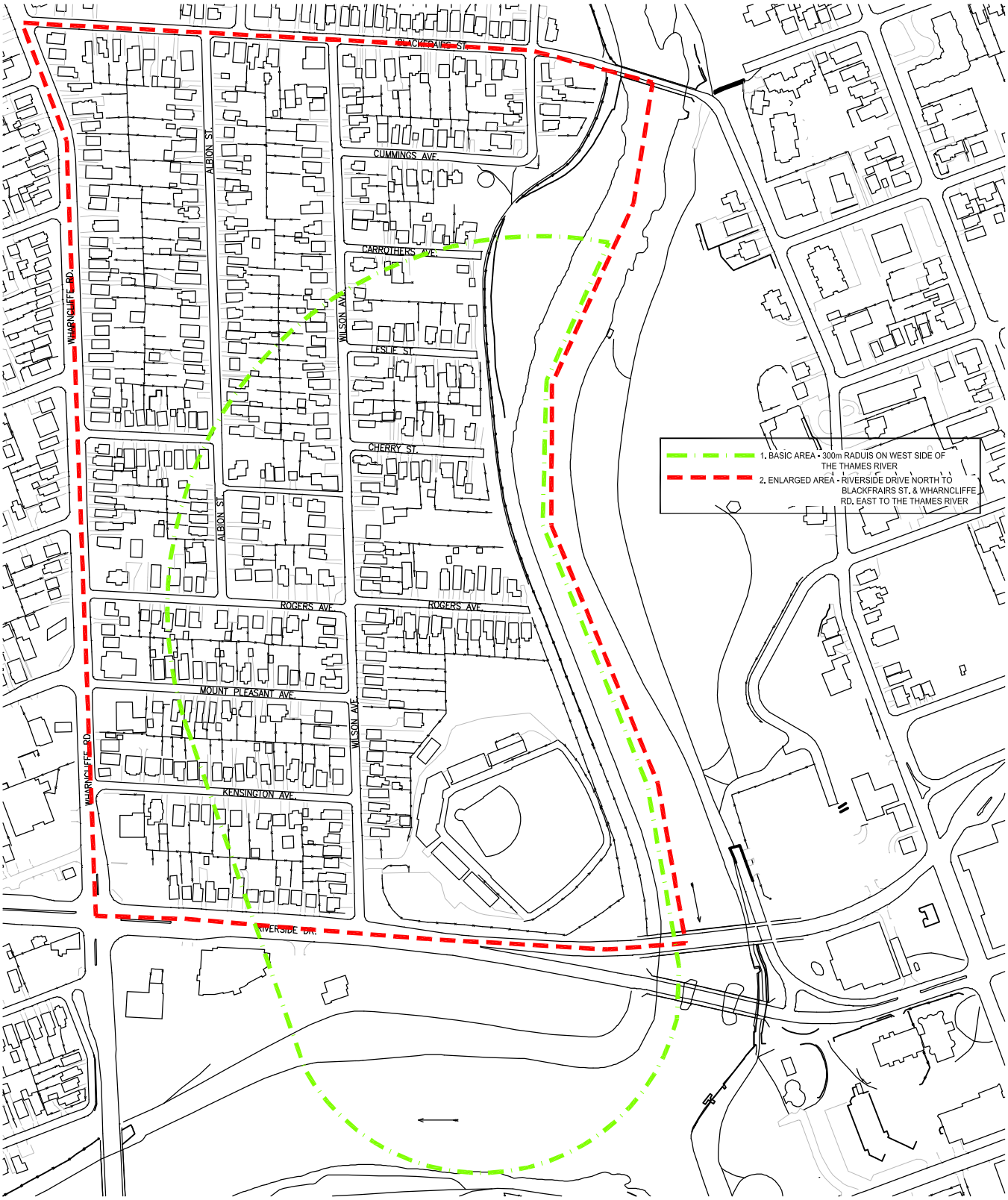
Date: Thursday May 25, 2006
Time: 4:30– 8:30 p.m.
Location: Kiwanis Community Centre, 78 Riverside Drive

Inquiries are welcome and may be directed to:

Rick Goldt, C.E.T.
Supervisor, Water Control Structures
Upper Thames River Conservation Authority
1424 Clarke Rd.
London ON N5V 5B9

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Scott Mathers, B. A. Sc., (Eng)
Wastewater and Drainage Engineering
Environmental and Engineering Services
Department, City of London
300 Dufferin St., Room 910
London, ON N6A 4L9
Tel: (519) 661-2500 x5472
Fax: (519) 661-2355



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ORIGINAL SHEET – ANSI A

Stantec Consulting Ltd.
171 Queens Avenue
London ON Canada
N6A 5J7
Tel. 519.645.2007
Fax. 519.645.6575
www.stantec.com

Client/Project
UTRCA
WEST LONDON DYKE REVETMENT

Figure No.
2.0

Title
PROPOSED AREA OF MAIL OUTS/ HAND DELIVERY OF NOTICES

Send PIC Notice to:

Martyn Curtis, Fish Habitat Biologist
Department of Fisheries and Oceans
201 N. Front Street, Suite 703
Sarnia, ON N7T 8B1

Suzanne Shea, Navigable Waters Protection Officer
Transport Canada – Marine
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Neal Ferris
Ministry of Citizenship, Culture & Recreation
Archaeology & Heritage Planning
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London, ON N6E 1L3

Dan Elliott
Area Supervisor/Officer in Charge
Aylmer District
Ministry of Natural Resources
353 Talbot Street West

Ron Griffiths, Environmental Assessment Coordinator
Ministry of Environment
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Erick Boyd, Municipal/Planning Advisor
Ministry of Municipal Affairs and Housing
Regional Operations Branch
2nd Floor 659 Exeter Road
London, ON N6E 1L3

Allan Van Damme, Manager of Engineering
London Hydro Inc.
111 Horton Street
London, ON N6A 4H6

West London Dykes
May 16, 2006

Information Centre Notice sent to the following organizations:

Advisory Committee on the Environment, City of London
Carolinian Canada
Ducks Unlimited, London Chapter
Environmental and Ecological Planning Advisory Committee, City of London
Friends of Oxbow Creek
Friends of Sifton Bog
Friends of the Coves
Friends of Dingman Creek
Global Action Plan for the Earth
London Canoe Club
London Sport Fishery Association Limited
McIlwraith Field Naturalists
Middlesex Western Rowing Club
Natural Outdoor Activity Heritage Conservation Club
Ontario Federation of Anglers and Hunters, Zone J
Thames Region Ecological Association
Thames River Anglers Association
Thames Valley Trail Association
Tri County Bass Masters
Urban League of London
Western Ontario Fish and Game Protective Association

London
CANADA

UPPER THAMES RIVER
CONSERVATION AUTHORITY

West London Dyke Replacement Project
(Queens Ave Bridge to Rogers Ave)

Public Information Centre
Thursday, May 25, 2006

Attendance Sheet

Name	Address	Affiliation (Homeowner, etc.)
John Tyrrell	Presenter	Stantec
Jeff Green	11 Napier St	Homeowner
Jason Jordan	1-60 Blackfriars St	Renter
Pat Donnelly		City of London
J.E. Johnston	10 Carrothers Ave	Homeowner
ANDRÉ LAURIN	98 Wilson Ave	Homeowner
GLADYS RAMSAY	115 WHARNCLIFFE RD N	Homeowner
Christine Andreae	6 St. Patrick St.	Homeowner
Grace Hoekstra	77 Albion St	owner
Tom Copeland	300 Dufferin	City of Ldn.
Sarah Copeland	38 Ski Valley Cres.	London.
KIRTLEY JARVIS	11 ROGERS AVE	LONDON
Nancy Martin	14 Rogers Ave	London
DONNA ROWN	14 ROGERS AVE	LONDON

London
CANADA

UPPER THAMES RIVER
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Thursday, May 25, 2006

Attendance Sheet

Name	Address	Affiliation (Homeowner, etc.)
Larry + Linda Mines	3 Leslie St.	Homeowners
Andy Anderson	49 ALBION ST.	"
NANCY McCURDY	10 NAPIER ST	✓
Gord/McCurdy	10 NAPIER ST	✓
LARRY WILLIAMS	12 CHANNEL CT	✓
Shirley + John Clement	2 Carruthers Ave.	✓

West London Dyke Flood Control Structure Master Plan
Appendix B



West London Flood Control Structure
Design Charrette Summary

December 15, 2006

West London Flood Control Structure
Design Charrette Summary

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1.0 Design Charrette Invitation / Attendance Summary

INVITED	ATTENDED
Friends of Labatt Park	Stephen Harding, Art Lierman
Blackfriars Neighbourhood Association	Chris Pehlke. Shirley Clement, Jan Delaney, Bruce Dunn
North Talbot Community Association	Gene DiTrolio
Riverforks Community Organization	Kevin Curtis-Norcross
City of London Director of Planning	Rob Panzer
Urban League of London	Jack Groom
London Arts Council	John Nicholson
River Project Art Group	Kevin Bice
London Canoe Club	Simon Tanner
Thames River Heritage Group	Tara Tchir (UTRCA)
City of London Heritage Planner	Unable to attend due to illness
Kiwanis Seniors Centre	Unable to attend
Thames River Anglers Association	No response
Oxford Park Resident's Association	No one available or interested
Downtown Neighbourhood Association	Association is no longer active
Mayor, All Councillors and Controllers	None

1.1 PROJECT TEAM

- **UTRCA** – Rick Goldt
- **City of London Parks Planning** – Andrew Macpherson, David Antonson
- **City of London EESD** – Scott Mathers
- **Stantec** – Robin Campbell, Haley Sadler, John Tyrrell, Dan Weagant, Maureen Zunti

2.0 Group Discussion of Opportunities, Challenges & Needs

(Prior to Group Workshop / Brainstorming Session)

- Consider the view from the Thames River looking up at the wall – it's a big, tall expanse of retaining wall
- Possibly add a pattern or combine materials to create interest in the wall face
- Retain/preserve mature trees and existing vegetation at the top and bottom of the dyke structure
- Concerns relating to the timing replacement of the wall continuation including the transition zone and creating overall continuity
- Impacts of the project to the adjacent neighbourhoods and London
- Is it possible for the 'floodplain' zoning to be removed from the Blackfriars area if the wall is installed at a 250yr. storm height?
- Add curves to the wall profile to 'soften' the overall appearance
- Think of the entire project as a whole and build the wall to last forever
- Consider wildlife that lives in and around the dyke structure – possibly maintain and/or create habitat
- Be aware of the root systems of new vegetation
- At the toe of slope plant and create habitat
- What is the modularity of the retaining wall system? How big is the block?
- Is a natural wall material an option?
- Don't favour the vertical wall option as it is not aesthetically pleasing
- Don't base decision on economics
- The wall option presented is not 'naturalizing' the river and limits access to the river
- Try to emphasize the river and natural environment and minimize focus on the wall
- Phase I is a very visible section and aesthetics should be a primary consideration

3.0 Summary of Individual Group Design Ideas

3.1 WALL

- Build the new structure for the ages
- Limit number of materials used
- Utilize natural materials
- Do not cap wall by overlapping/overhanging top coping layer
- Break up the wall both vertically and horizontally – grades?
- Add interest to the wall
- Important to select a product that is relatively neutral but available long term
- Consider options for wall structure, i.e. bottom half angled and top half vertical
- Use big wall blocks with texture and depth – regular concrete colour
- Possibly add banding in the wall to depict significant flood events and/or elevations
- Add steps / sloped wall sections for wildlife to access the river
- Incorporate planting at the toe of slope

3.2 PATHWAY

- Minimize footprint of pathway, maintain existing width
- Encourage active recreation only on other side of river
- Use 'grills' in cantilevered viewports to allow views down to the river
- West of Wharncliffe maintain footpath – do not pave

3.3 LIGHTING AND SITE FURNISHINGS

- Install lighting on the river side of the walkway
- Direct light downwards so it doesn't affect residences
- Add more benches and trash receptacles
- Improve lighting
- Uplight the wall at night to add interest
- Vandalism concerns
- Don't need concrete slabs under benches
- Consider more contemporary site furnishings
- Blend lighting with the adjacent land uses – not too bright beside neighbourhoods
- Add sitting areas

3.4 RIVER ACCESS

- Do not add formal docks between Oxford and Queen Street
- Add steps / sloped wall sections for wildlife to access the river
- Enhance access to the river

3.5 VEGETATION AND LANDSCAPING

- Preserve
- Implement an Urban Tree Management Program
- Manage vegetation – remove invasive species and enhance native vegetation
- Utilize native vegetation for new planting areas
- Minimize impact to existing trees
- Preserve vegetation – Cottonwoods significant
- Incorporate planting at the toe of slope
- Enhance natural elements/habitat
- Limit access to natural area at edge of river opposite Carrothers Ave. – maintain as walking/nature trail
- Use native plantings
- Retain, emphasize and augment natural environment at and near Cavendish
- Plant more native vegetation between Blackfriars and Oxford to create more open and closed views for interest

3.6 BLACKFRIARS NEIGHBOURHOOD

- Preserve the sense of individual/unique residential neighbourhood through Blackfriars area – keep intimate
- Maintain/provide access from all streets, but not necessarily ramped access at all connections
- Don’t want significant change – like the area as is
- Proposed 3.0m wide pathway seems excessive through this area
- Replicate or reuse historical elements incl. light bases and railing
- Implement historical interpretive signage – plaques

3.7 LABATT PARK

- At Labatt Park maintain the ‘wall of green’ with one open vista
- Locate an interpretive signage feature – plaque

3.8 TRANSITION OF OLD WLD TO NEW WLD

- Add a 'lookout' at the end of Rogers Ave. to ease the transition zone – maintain 'lookout' when next section is installed
- Consider cantilevered viewing areas to help with transition

3.9 SIGNAGE

- Implement historical interpretive signage at key locations

3.10 OVERALL / GENERAL COMMENTS

- Create a template for the design 'vocabulary'
- Build the new structure for the ages
- Limit number of materials used
- Vandalism concerns
- Utilize natural materials
- Don't like 'bump-out' idea

4.0 Summary of Comments Received via E-Mail and Fax

Comments Provided by: Nancy Martin and Donna Renn, Ted Halwa, Stephen Harding, Art Lierman, Shirley and John Clement, Kirtley Jarvis and Judy Bryant

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- Reflect importance and prominence of the first section to be replaced in the design
- Concerns relating to the timing of replacement of the wall continuation including the transition zone and creating overall continuity
- Inventory of trees should be conducted to identify heritage trees
- Consider planting larger replacement trees to mitigate sudden loss of large trees
- Add garbage receptacles and regular pick up by City
- Keep vehicles off pathway
- Is it necessary to increase the height of the wall?
- Reproduce light posts with historic light bases
- Provide a plaque with historic information about Labatt Park at the break in the cedar hedge
- Create platforms or balconies off pathway for spectators at events – cantilevered
- More benches and space for temporary seating
- Make use of gravel as a choice of material in harmony with the river
- Naturalize banks – Use bioengineering for slope stabilization where possible
- Use cast iron lamp posts, keep with 1930's look for site furnishings
- Create easy access from pathway to river
- Preserve trees (Mulberry) and provide signage to identify those that are significant
- Install interpretive signage and plaques
- Highlight Eldon House, the old courthouse, Blackfriar's Bridge and Labatt Park as heritage features along pathway
- Pathway in itself is a heritage feature that links these areas
- Recognize pathway as a significant environmentally friendly, low cost, clean method of transportation
- Do not use design used at the Fork of the Thames (railings, hard surfaces, gabions, armour stone, paved surfaces, splash pad), keep trail as a restful oasis of quiet
- Select a wall material that looks like large blocks of stone
- Consider a cast iron/wrought iron replica of railing that meets safety codes
- Use shadows as a consideration in selecting a railing material
- Make use of Robert Greene's Saw Edge Roadway style within design
- Will historic artifacts be preserved during construction?
- Consider design in keeping with Forks of the Thames renewal
- Design competition for railing design?
- Make it a Riverside Sculpture project (list St. Peters' Riverside Sculpture Project in Sunderland England) – sculpted railings and lamp posts, raised seating

- Of the 4 proposals “solution A” is the most ugly. The vertical wall is intimidating to look at and dangerous to boaters
- The Thames status as a Heritage River has not been given much consideration.
- The proposal does not promote habitat enhancement. This should be a key element
- UTRCA concerns about endangered species were dismissed by Stantec's engineer
- The proposal does not facilitate access to the river from the walkway. This also makes rescue of people from the river is difficult
- The process has been seriously flawed by not having wide participation from the public or on going discussion in the media. The Creative City approach has not been applied in this process
- The proposal appears to have been chosen on cost (cheapest) and as the easiest to implement from the engineering perspective.
- I felt the charrette avoided dealing with the big picture: how the embankment would appear from Harris Park or from a vantage point on the Queens Ave. bridge
- The consultant did not present any concept drawings that show how solution “A” or the other proposals would actually look as part of the landscape. They had several months to prepare them

5.0 Group Comments on Next Steps

- Organize comments/notes/results of this meeting and circulate to all participants
- Continue consultation with stakeholders
- Bring the proposed MasterPlan back to this group for review and comment prior to submitting to City Council
- Bring photos and brochures for possible wall options to stakeholders for their review and input
- Bring 3D view of the new WLD and old WLD wall including transition area to the stakeholders for their review and input
- Emphasize common themes including:
    - No manicured spaces
    - Maintaining existing pathway width

6.0 Workshop/Brainstorming Session - Group 1

Group Members: Art Lierman, Jack Groom, Kevin Curtis-Norcross, Rob Panzer and Maureen Zunti

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LIGHTING

- Light should be directed downwards
- Consider reducing number of light standards
- Consider uplighting on wall to focus on specific features
- Don't have too much light shining down on river (for wildlife reasons)

WALL

- Wall should have texture and variation – consider colour or banding variation to show historical flooding events, or have sections of wall protrude a little more (e.g. – 6") to depict flood events
- Wall module should be large for scale of overall dyke and should offer relief and shadow play
- Important to select a product that is relatively neutral but available long term
- Consider some tiered areas / sloped sections (see sketch) to help wildlife access to and from the river and/or for pockets to plant vegetation/shrubbery

LABATT PARK

- Retain treed backdrop along the path adjacent to Labatt Park – need to "reinvigorate" cedar hedge along Labatt Park
- If replacement of cedar hedge is necessary, they should continue to be evergreens
- Keep a small opening to view Labatt Park as currently exists, with a small lookout/"pausing moment" on inside (Labatt Park side) of path for people to take a look inside
- Don't make gap in hedge any bigger
- Locate an interpretive feature / plaque beside gap to inform people about history of park

RIVER ACCESS

- Retain access to River near Blackfriars Bridge – improve it slightly, but don't formalize it too much – path should continue to be gravel / mulch, not paved
- Add interpretive signage along access to river to educate about natural environment, river, native vegetation
- Should have "understated, natural access to river, but a little more awareness of access to river"
- Access point to river should have a structure to restrict cyclists from using it
- Should also have an access to river between Queens and Wharncliffe – should also be more of a naturalized access

NATURAL ENVIRONMENT / VEGETATION

- Retain vegetation along river near Blackfriars Bridge and augment with larger native specimens along pathway
- Toe structure should incorporate plantings such as grasses, willows, shrubbery that can withstand flooding, but will provide additional wildlife habitat
- Increase naturalization between Queens and Wharncliffe
- Cavendish is a “gem” – should be left natural – phase asphalt path to a more natural path surface as you get to Cavendish Park
- Build on the natural amenities along the path

ACCESS TO NEIGHBOURHOOD

- Access is required from all streets to pathway system, but pick and choose most appropriate / logical points where mobility access is most suitable
- Don’t need ramps at every street connection

GENERAL

- Retain the sequence of open and closed views along the pathway, as currently exists between Queens and Blackfriars
- Viewpoints along path should be on outside (river side) of trail, except for beside Labatt Park where they should be inside (beside Labatt Park / viewing gap in hedge) to maximize views and vistas and enhance safety
- Between Oxford and Blackfriars, could pull the path slightly away from the edge of the dyke and add some native plantings to help create more open and closed views for interest as it is currently quite open
- Create safe pedestrian/cyclist ‘loops’/connections across Wharncliffe to other side of river, preferably under the bridge
- Install signs identifying various walking loops, with distances, landmarks, points of interest
- Place water fountains along the pathway
- Need some viewing areas / seating areas – consider cantilevered sections at top of wall for seating / viewing – would also assist with transition between old and new wall sections
- Consider a grille / grid for surface of cantilevered viewpoints rather than concrete, so can stand and look down right over top of river and to minimize concrete
- The railing is a critical element
- Pathway has its own unique personality – need to retain is character and continuity, but also needs to integrate with other parts of path system – consider using one element (e.g. – lights, railing, materials, street furnishings) the same as exists on path system across river along the new dyke section to provide cohesiveness
- Don’t ‘over design’ or make area something it is not (i.e. – trying to curve wall, path, etc. too much) – focus on simplicity, quality and emphasis on natural environment.

7.0 Workshop/Brainstorming Session - Group 2

Group Members: Kevin Bice, Gene D'Trolio, Shirley Clement, Rick Goldt and Haley Sadler

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(all comments relate to the Blackfriars area)

- Preserve the sense of individual/unique residential neighbourhood through Blackfriars area – keep intimate
- Minimize footprint of pathway, maintain existing width
- Minimize hard surfaces i.e. don't need concrete slabs under benches
- Transition point a major concern – important to look at all possibilities to make the transition smooth and look attractive
- Improve lighting, but don't over light near residences
- Preserve existing vegetation and natural look - Cottonwoods significant
- Replace any trees removed – use native species
- Implement an Urban Tree Management Program
- Manage all vegetation – remove invasive species and enhance native vegetation
- Maintain natural area at edge of river opposite Carrothers Ave. as walking/nature trail
- Add more benches and trash receptacles – vandal resistant
- Implement discrete historical interpretive signage at major connections
- Encourage active recreation on East Side of river and more passive on West side
- Don't like 'bump-out' idea
- Do not add formal docks between Oxford and Queen Street
- Consider options for wall structure, i.e. replacement wall has bottom half angled and top half vertical
- View from Blackfriar's residences to the river is important
- Maintain/provide access from all streets, but not necessarily ramped access at all connections
- Implement ramps at connections that are as natural and discrete as possible
- Consider allowing residents to maintain plant material at connection points
- Incorporate colour and texture into the wall – something distinctive to create interest
- Sloped structure makes the wall more visible

8.0 Workshop/Brainstorming Session - Group 3

Group Members: Chris Pehlke, Jan Delaney, John Nicholson, Simon Tanner, Tara Tchir, John Tyrrell and Dan Weagant

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- Different stretches of the study area demand different approaches
- What is needed is an approach/visual treatment
- Natural materials
- Lighting on River side of pathway – breaks up railing
- Keep it simple : Do it well
- Interpret/apply building code – be as flexible as possible (railing)
- Can wall be visually broken up, and how?
    - Split the wall in two?
    - Transition path by slope
    - Set a template for the design 'vocabulary'
    - Build for the ages
    - Limit the materials
    - Use natural materials for the wall if possible
    - Do not change stretch of path from Wharncliffe Rd. to Cavendish Park
- Do not 'cap' wall with overlapping/overhanging ledge

9.0 Workshop/Brainstorming Session - Group 4

Group Members: Bruce Dunn, Stephen Harding (left early), David Antonsen, Scott Mathers and Robin Campbell

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(all comments relate to the Blackfriars area)

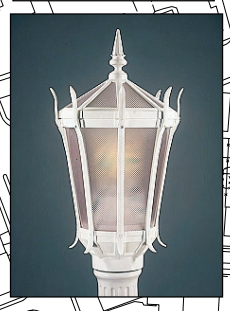
- 'The Blackfriars section of pathway is a unique and wonderful entity that should be maintained and preserved'
- Don't want significant change – like the area as is
- Possibly add phone/call boxes into the lamp bases – is a good safety feature but shouldn't be a focal point
- Remember that Blackfriars is a residential community
- Path should be accessible to everyone – maintain access to path from all streets, but not all need ramps, possible just two
- Don't overdo a theme and make the pathway 'hokey'
- Proposed 3.0m wide pathway seems excessive from Oxford to Queens Ave.
- Minimize path width to save as much vegetation as possible
- Blackfriars is an important historical community – preserve a significant amount of what's there
- Use the existing character of the area and maintain/enhance it
- Like general thoughts presented on Concept 1
- Would like to maintain/reuse existing railing – don't like aluminum railing at the Forks of the Thames
- Vandalism and destruction of amenities is a concern
- How does the City plan to discourage graffiti on the wall?
- Plant toe of slope if possible – what will survive?
- Is it possible to add vines to the wall to soften the overall appearance and deter graffiti?
- Like the old lamp bases – possibly replicate or reuse
- If not being reused find a creative/artistic use for existing elements
- Wall build-out should continue from the starting point and not be undertaken in miscellaneous pieces/sections
- There are different areas or sections of pathway in the overall study area – the same treatment may not apply to all, but restoration, naturalization and focus on historical elements is important to the Blackfriars community
- Implement historical interpretive signage that is in keeping with the character/theme of the neighbourhood – like the blue and bronze heritage building plaques

- Have signage identify historical features and events – maintain the signage so that it is not a vandalized eye-sore
- Don't like standard City of London signs (eg. Harris Park made of weathering steel)
- Don't make this section of the path the same as the Forks of the Thames – this is a neighbourhood with homes directly adjacent to the pathway, it is important to protect the quality of life for the Blackfriars residents
- Encourage passive recreation on this section of pathway
- At Labatt Park the cedar hedge is part of the overall character
- No 'bump-outs' along the dyke – not in keeping with the tone of the neighbourhood
- Regular consultation with the neighbourhood is imperative during the design process

CONCEPT OBJECTIVES

- TO PRESERVE/RESTORE ELEMENTS OF THE EXISTING PATHWAY SYSTEM, INCLUDING EXISTING TRAIL CONNECTIONS, TREES, NATURAL RIVERS EDGE
- TO REPLICATE HISTORIC FEATURES ALONG PATHWAY SYSTEM
- TO PROVIDE INFORMAL ACCESS TO THE RIVER
- TO PROVIDE HISTORICAL INTERPRETIVE SIGNAGE ALONG THE TRAIL
- TO PROVIDE OPPORTUNITIES FOR PASSIVE RECREATION, SUCH AS WALKING, READING, BIRD WATCHING, FISHING
- TO SELECT A ROUGH NATURAL LOOKING WALL MATERIAL AND CREATE A NATURAL LOOKING TRANSITION









HISTORIC LIGHT BASE

LIGHT POST - NANCY CAMPBELL

LEGEND

- CIRCULATION NODE
- LAND MARK
- CITY OWNED LAND
- LOOKOUT
- VIEW DIRECTION
- DESTINATION/ATTRACTION
- POINT OF INTEREST
- TRAIL CONNECTION
- POINT OF TRANSITION
- PEDESTRIAN CIRCULATION
- UNPAVED PEDESTRIAN CIRCULATION
- PEDESTRIAN CIRCULATION BARRIER
- TRAIL BARRIER

RAILWAY TRACKS

OXFORD ST

PICCADILLY ST

ANN ST

ST. PATRICK ST

GARDEN / SEATING / BIRD WATCHING





NATIVE VEGETATION

EMPRESS AVE

BRUCE ST

BLACKFRIARS ST

HISTORICAL INTERPRETIVE SIGNAGE

LOOK OUT

BARTON ST

BLACK FRIARS BRIDGE

CENTRAL AVE

EXISTING PLAYGROUND

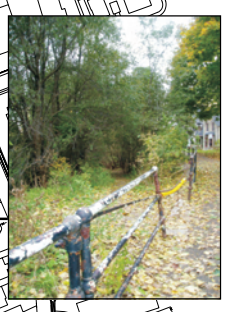
CUMMINGS AVE



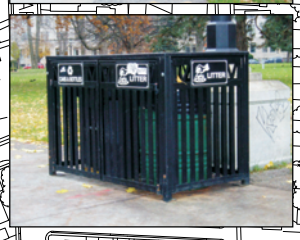


CARROTHERS AVE

ACCESS TO RIVER



TEST ST



WILSON AVE

CHERRY ST

INTERPRETIVE SIGNAGE / CALL BOX





HANDLER AVE



ROGERS AVE

VICTORIA PARK SITE FURNISHINGS





HISTORIC RAILING



EXISTING TRAIL

DYKE STRUCTURE



HISTORICAL INTERPRETIVE SIGNAGE / LOOK OUT

NATURAL STONE PAVING



SIGNAGE

LABATT PARK

HISTORICAL INTERPRETIVE SIGNAGE / SEATING

INTERPRETIVE SIGNAGE

RIVERSIDE DR

QUEENS AVE

LINDAS ST

FOREST CITY KIWANIS SENIORS CENTER

WHARNCLIFFE RD



CAVENDISH PARK

CAVENDISH CRES

THAMES RIVER

FORK OF THE THAMES PH. 4

LOOKOUT / ACCESS TO RIVER

INTERPRETIVE SIGNAGE





NATURAL RIVERS EDGE

0 20 40 60 80 100

METERS

West London Dyke Flood Control Structure Design Charette

Concept 1 - November 2006

Stantec

CONCEPT OBJECTIVES

- TO CREATE CONTINUITY WITH THE SURROUNDING LANDSCAPE
- TO CREATE AN INTERESTING VIEW FROM ACROSS THE RIVER
- TO PROVIDE FORMAL ACCESS TO THE RIVER
- TO HIGHLIGHT LABATT PARK AS A CITY LANDMARK
- TO CREATE INTEREST ALONG THE PATHWAY SYSTEM BY IDENTIFYING SIGNIFICANT TRAIL CONNECTIONS
- TO SELECT A WALL COLOUR AND TEXTURE THAT CREATES CONTINUITY

LEGEND

- CIRCULATION NODE
- LAND MARK
- CITY OWNED LAND
- LOOKOUT
- VIEW DIRECTION
- DESTINATION/ATTRACTION
- POINT OF INTEREST
- TRAIL CONNECTION
- POINT OF TRANSITION
- PEDESTRIAN CIRCULATION
- UNPAVED PEDESTRIAN CIRCULATION
- PEDESTRIAN CIRCULATION BARRIER
- TRAIL BARRIER

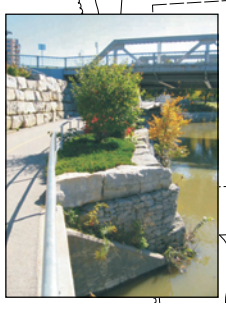


TYPICAL SIGNAGE FROM EAST SIDE OF RIVER





SITE FURNISHINGS AT THE FORK OF THE THAMES



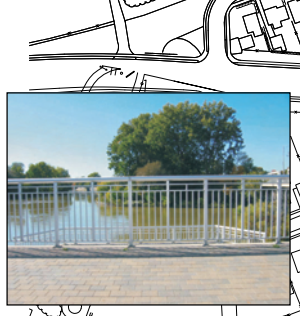


MATERIALS USED AT THE FORK OF THE THAMES





DISTINCT VEGETATION TO HIGHLIGHT AREAS OF INTEREST




TYPICAL RAILING - FORK OF THAMES

DOCK - FORK OF THAMES




WALL PRODUCT





LABATT PARK

RAILWAY TRACKS

GATEWAY FOR TRAIL / HIGHLIGHT CONNECTION

EXISTING COMMUNITY GARDEN / IMPROVE SEATING AREA

INTEREST AT TOP OF WALL / SEATING

GATEWAY FOR TRAIL / HIGHLIGHT CONNECTION

GARDEN / HIGHLIGHT CONNECTION

LOOKOUT / SEATING AREA / FISHING DOCK

STAIRS ONLY / VEGETATED SLOPE

INTEREST AT TOP OF WALL / SEATING / HIGHLIGHT CONNECTION

HARRIS PARK

STAIRS ONLY / VEGETATED SLOPE

INTEREST AT TOP OF WALL / SEATING / HIGHLIGHT LABATT PARK

LABATT PARK

GATEWAY FOR TRAIL SYSTEM

GATEWAY FOR TRAIL SYSTEM

FORK OF THE THAMES PH. 4

FORK OF THE THAMES

LOOKOUT / SEATING AREA / FISHING DOCK

BLEND PATHWAY INTO NATURAL AREA

CAVENDISH PARK

OXFORD ST

ST. PATRICK ST

ST ANDREW ST

EMPRESS AVE

BLACKFRIARS ST

CUMMINGS AVE

CARROTHERS AVE

LESLIE ST

CHERRY ST

ROGERS AVE

MOUNT PLEASANT AVE

KENSINGTON AVE

WILSON AVE

WHARNCLIFFE RD

RIVERSIDE DR

QUEENS AVE

DUNDAS ST

ALBERT ST

KENT ST

JOHN ST

JARVIS ST

CAVENDISH CRES

0 20 40 60 80 100

METERS

West London Dyke Flood Control Structure Design Charette

Concept 2 - November 2006

Stantec

CONCEPT OBJECTIVES

- TO CREATE A DISTINCTIVE AND IDENTIFIABLE TRAIL SYSTEM
- TO CREATE AN INTERESTING VIEW FROM ACROSS THE RIVER
- TO ENHANCE THE TRAIL SYSTEM WITH THE USE OF INTERPRETIVE SIGNAGE ABOUT SURROUNDING LAND USES, THE RIVER AND THE TRAIL SYSTEM
- TO CREATE A SECONDARY PATHWAY THAT FOLLOWS THE RIVERS EDGE BETWEEN THE FORKS AND THE WHARNCLIFFE BRIDGE TO GIVE ACCESS TO THE RIVER AND CREATE INTEREST
- TO PROVIDE A SAFE TRAIL SYSTEM WITH REGARDS TO CALL BOXES, CAMERAS AND LIGHTING

LEGEND

- CIRCULATION NODE
- LAND MARK
- CITY OWNED LAND
- LOOKOUT
- VIEW DIRECTION
- DESTINATION/ATTRACTION
- POINT OF INTEREST
- TRAIL CONNECTION
- POINT OF TRANSITION
- PEDESTRIAN CIRCULATION
- UNPAVED PEDESTRIAN CIRCULATION
- PEDESTRIAN CIRCULATION BARRIER
- TRAIL BARRIER

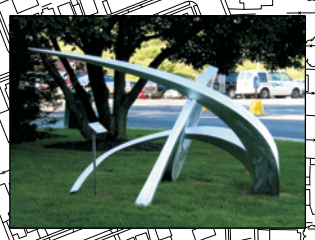
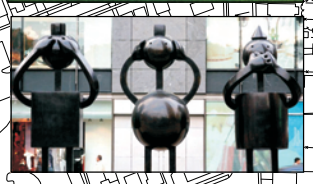


OTTAWA, ONTARIO


LIGHT WITH BANNER ARM




LIGHTING

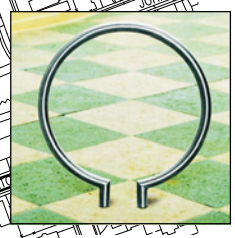


PUBLIC ART



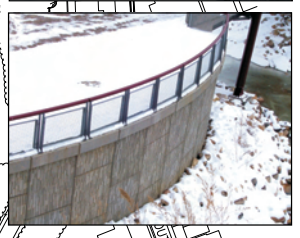







SITE FURNISHINGS




SASKATOON, SASKATCHEWAN





INTERPRETIVE/DIRECTIONAL SIGNAGE





PAVING



BOARDWALKS




RAILINGS



CALL BOXES

West London Dyke Flood Control Structure Design Charette

Concept 3 - November 2006

Stantec

West London Dyke Flood Control Structure Master Plan
Appendix C

Response to Issues

ISSUE	RESPONSE
Wall	
▪ Is a natural wall material possible?	▪ A natural wall material has not been recommended after review of the technical findings in previous studies because of its irregularity in form, which would allow water to permeate and compromise the integrity of the structure
▪ The proposed wall is not 'naturalizing' to the river	▪ Recommendations outline ways to soften the hard structure, which includes a wall layout that has natural curves and allows for plantings at the top and bottom of the wall
▪ The proposed wall limits access to the river	▪ Permissible access to the water is currently limited and although people access the river from the slope of the existing structure it is a safety concern and has likely played a part in the deterioration of the structure and railing ▪ Recommendations identify the importance of providing safe access to the water and the master plan concept indicates specific locations where access should be considered
▪ Try to emphasize the river and natural environment and minimize the focus on the wall	▪ The vision and associated recommendations have outlined the natural environment as key to the character of the dyke ▪ Recommendations outline ways that the natural environment can be preserved and enhanced
▪ Phase 1 is a very visible section and aesthetics should be a primary consideration	▪ The vision and guidelines indicate the importance of creating a usable, attractive and unique dyke and pathway system that enhances natural and cultural heritage
▪ Utilize natural materials	▪ Recommendation indicate that natural materials should be used where possible, especially in feature areas ▪ It is recommended that the wall structure should have a natural, rough appearance ▪ The pathway system will be constructed from asphalt as is the City standard for multi-use pathways

▪ Do not cap wall by overlapping/overhanging top coping layer	▪ The recommendations do not address this comment specifically because it is something to be determined during design development and in part will be determined by technical requirements ▪ Recommendations indicate that interest be created with the wall structure and layout, and that the wall have a rough natural appearance
▪ Consider options for wall structure - break up the wall both vertically and horizontally	▪ The basic wall structure for Phase 1, as a single faced vertical structure, was determined through a previous design process ▪ Recommendations indicate that variations in the wall structure should be considered for all phases of design to create interest and provide for a variety of activities
▪ Use big wall blocks with texture and depth and a regular concrete colour	▪ Recommended that the wall material appear as close to natural stone as possible
▪ Incorporate planting at the toe of wall	▪ Recommended that planting be incorporated at the toe of the wall where technically feasible
▪ Be aware of the root systems of proposed vegetation	▪ This item will be dealt with during design development
▪ Consider wildlife that lives in and around the dyke structure - add steps / sloped wall sections for wildlife to access the river	▪ Opportunities for human access have been identified where considered most appropriate, and will also serve the needs of wildlife in those areas ▪ Recommendations for plantings at toe of wall will provide additional refuge and habitat for wildlife.
▪ Creation of wildlife habitat	▪ Recommended that this be considered during design development through use of native plant species and plantings at toe of slope.
Pathway System	
▪ Encourage active recreation only on other side of the river	▪ Recommended that the pathway and dyke system provide for a variety of activities, encouraging both passive and active recreation, to encourage City wide use
▪ Use ‘grills’ in cantilevered view areas to allow views down to the river	▪ This comment is not addressed specifically or discussed within the recommendations ▪ Viewing areas in appropriate locations have been suggested and that these viewing areas be designed to fit with the character of the dyke and provide for various activities, such as views of the river

▪ Do not pave the pathway West of Wharncliffe Road	▪ Recommended that paving continue past Wharncliffe Road, but that paving end with the hard structure to transition the multi-use pathway system into the Cavendish Park Nature Trail
▪ Limit the number of materials used	▪ The recommendations do not specifically address this comment ▪ Recommendations indicate that natural materials should be used and materials used should be consistent throughout the dyke and pathway replacement
Lighting and Site Furnishings	
▪ Add more benches and trash receptacles	▪ It is recommended that there is a need for more benches and trash receptacles
▪ Up-light the wall at night to add interest	▪ Recommended that lighting be considered as a method of adding interest to the wall
▪ Vandalism is a concern	▪ Vandalism is identified as a concern and recommendations are given to reduce occurrences of vandalism
▪ Reduce hard surfaces - don't need concrete slabs under benches	▪ Recommended that hard surfaces are minimized in areas other than gathering spaces ▪ Installation of concrete under benches is a City standard for universal accessibility and to reduce occurrences of theft and vandalism
▪ Consider more contemporary site furnishings	▪ Contemporary site furnishings were considered (as can be seen in Concepts 2 and 3) ▪ The vision for the dyke with regards to the strong historic character of the area directed design recommendations for furnishings
▪ Add sitting areas	▪ Recommendations incorporate additional gathering/sitting spaces along the pathway system
River Access	
▪ Enhance natural elements / habitats	▪ Included in recommendations
▪ Limit access to natural area at edge of river opposite Carrothers Ave. – maintain as a walking/nature trail	▪ Recommended that access to the river be established opposite Carrothers Ave. because of current use despite railing blocking access ▪ Recommended that actions be taken to protect the area from soil compaction and erosion

Vegetation and Landscaping	
▪ Retain, emphasize and augment natural environment at and near Cavendish Park	▪ Recommended that natural river's edge be preserved and enhanced and that vegetation be managed ▪ Recommended that interpretive signage about the natural environment be located in this area
▪ Plant more native vegetation between Blackfriars and Oxford to create more open and closed views	▪ Recommendations identify significant views to be preserved/enhanced ▪ Vegetation may be used as a means of enhancing views during design development
Blackfriars Neighbourhood	
▪ Provide access from all streets, but not necessarily ramped access at all connections	▪ Recommended that ramped access be implemented at all street connections for universal accessibility
▪ Replicate or reuse historical elements including light bases and railings	▪ Recommended that existing light bases and railings be used as inspiration for proposed design
▪ Implement historical interpretive signage	▪ Recommended that interpretive signage commenting on natural and cultural heritage be used throughout study area
▪ At Labatt Park maintain the 'wall of green' with one open vista	▪ Recommended that a controlled view into the Park be considered during design development and that the green backdrop has been identified as significant
▪ Locate an interpretive signage feature at Labatt Park	▪ Included in recommendations
Transition	
▪ Consider cantilevered viewing areas to help with transition	▪ Recommendations made regarding transition areas – specific form of transitions will be determined at detailed design stage, based on site context
Overall / General Comments	
▪ Create a template for the design 'vocabulary'	▪ Design guidelines relating to materials, site furnishings, native plantings and other components are intended to provide the 'design vocabulary' to create a consistent and visually attractive feature as dyke replacement proceeds
▪ The wish for the entire project to be considered as a whole	▪ The master plan document identifies the extent of the project area, lays out the vision and design recommendations to achieve this vision, and specific actions to take during implementation

▪ Concern that the view of the vertical wall structure from across the river will be a massive, imposing, unattractive expanse of retaining wall	▪ Recommendation to create variation in form, shape and texture to create interest within the wall structure ▪ Recommendation to incorporate plant material at the base and top of the wall to soften the hard structure
▪ Importance of preserving/minimizing impact on existing plant material at the top and bottom of the dyke and preserving significant trees – implement an urban tree management program	▪ Recommendation to implement an urban tree management program and to adjust wall location where possible to save significant trees ▪ Recommendation to replace any vegetation lost with plant material that is deemed to suitable ▪ Recommendation to preserve/restore all plant material at the bottom of the wall
▪ Concern with creating continuity in the wall structure because of the intention to replace in sections	▪ Recommendation to replace sections in sequence to give the greatest chance for continuity, but technical requirements may out-way appearance ▪ Recommendation to consider weathering and longevity of company and product when selecting wall material



Appendix 2.1
Contact List

West London Dyke Master Repair Plan
Distribution List

Interest	Agency	Title	First Name	Last Name	Department	Title
Provincial Contacts						
Provincial	Infrastructure Ontario	Mr.	Peter	Reed	Planning	
Provincial	Ministry of Natural Resources and Forestry	Ms.	Andrea	Fleischhauer	Aylmer District	District Planner
Provincial	Ministry of Natural Resources and Forestry	Ms.	Heather	Riddell	Aylmer District	District Planner
Provincial	Ministry of Natural Resources and Forestry	Mr.	Mike	Stone	Guelph District	District Planner
Provincial	Ministry of the Environment and Climate Change	Mr.	Craig	Newton	Southwestern Region	Regional Environmental Assessment Coordinator
Provincial	Ministry of the Environment and Climate Change	Ms.	Emilee	O'Leary	Southwestern Region	Regional Environmental Assessment Coordinator
Provincial	Ministry of the Environment and Climate Change	Ms.	Angela	Whiteley	Southwest Regional Office	District Supervisor
Provincial	Ministry of the Environment and Climate Change				Environmental Assessment & Approvals Branch	Director
Provincial	Ministry of the Environment and Climate Change					Minister of the Environment and Climate Change
Provincial	Ministry of Community and Social Services				South West Regional Office	
Provincial	Ministry of Research and Innovation					
Provincial	Ministry of Research and Innovation				Business Development	
Provincial	Ministry of Municipal Affairs and Housing	Mr.	Bruce	Curtis	Community Planning and Development	Manager
Provincial	Ministry of Agriculture, Food and Rural Affairs	Mr.	Drew	Crinklaw	Southwestern Ontario	Rural Planner
Provincial	Ministry of Transportation	Ms.	Dawn	Irish	Transportation Planning Branch	Manager, Environmental Policy Branch
Provincial	Ministry of Transportation	Mr.	Phil	Hutton	Design and Contract Standards Office	Manager
Provincial	Ministry of Economic Development, Employment, & Infrastructure	Ms.	Karen	Maxwell	Infrastructure Policy and Planning Division	Assistant Deputy Minister
Provincial	Ministry of Health and Long-Term Care	Mr.	Tony	Amalfa	Environmental Health Policy & Programs	
Provincial	Ministry of Tourism, Culture and Sport	Ms.	Laura	Hatcher	Culture Services Unit	Manager
Local Government						
Local	City of London	Mr.	John	Braam	Administration	Managing Director - Environmental & Engineering Services & City Enginee
Local	City of London	Mr.	John	Lucas	EES - Administration	Director - Water and Wastewater
Local	City of London	Mr.	Edward	Soldo	EES - Roads and Transportation	Director of Roads and Transportation
Local	City of London	Mr.	Art	Zuidema	Administration	City Manager
Local	City of London	Mr.	Terrance	Grawey	Development and Compliance Services	Manager , Development Services & Planning Liason
Local	City of London	Ms.	Cathy	Saunders	City Clerk's Office	City Clerk
Local	City of London	Mr.	Scott	Mathers	Environmental and Engineering Services	Manager Stormwater Management Unit
Local	City of London	Mr.	Chris	McIntosh	Environmental and Engineering Services	Environmental Services Engineer
Local	City of London	Ms.	Jennie	Ramsay	Development and Compliance Services	Development Services and Engineering Liaison
Local	City of London	Mr.	Gregg	Barrett	Planning - Long Range Planning and Research	Manager of Long Range Planning and Research
Local	City of London	Ms.	Jackie	Martin	City Clerk's Office	ACE Committee Secretary
Local	City of London	Ms.	Anna	Hopkins	Elected Officials/Councillor's Office	Ward 9 Councillor
Local	Municipality of Central Elgin	Mr.	Donald	Leitch		CAO/Clerk
Local	Municipality of Central Elgin	Mr.	Lloyd J.	Perrin		Director of Physical Services
Local	Municipality of Middlesex Centre	Ms.	Michelle	Smibert		CAO
Local	Municipality of Middlesex Centre	Ms.	Stephani	Troyer-Boyd		Clerk
Local	Municipality of Middlesex Centre	Mr.	Brian	Lima	Public Works and Engineering	Director, Public Works and Engineering
Local	Municipality of North Middlesex	Ms.	Shirley	Scott		Clerk
Local Contacts						
Middlesex	Middlesex-London Health Unit	Mr.	Wally	Adams	Environmental Health & Chronic Disease Prever	Manager-Environmental Health
Middlesex	Middlesex-London Health Unit	Dr.	Christopher	Mackie		Medical Officer of Health
London	London Police Services	Sgt.	Ryan	Scrivens		
Local	Hydro One	Mr.	Paul	Dill		
Rogers/Londor	Rogers Cablesystems Utilities Coordinating Committee	Mr.	Ted	Feeney		
Bell/London	Bell Canada	Mr.	Jeff	Holmes	Access Network Facilities	
London	Union Gas	Mr.	Taylor	Jones		Construction Project Manager
Local	Thames Region Ecological AssociationC/O Grosvenor Lodge	Mr.	Paul	Bolaga		
Local	Advisory Committee on the Environment, City of London		Betty	Mercier		Committee Secretary
Local	Carolinian Canada					Grosvenor Lodge
Local	Ducks Unlimited - London Chapter					
Local	Environmental and Ecological Planning Advisory Committee, City of London		Heather	Lysynski		Committee Secretary

West London Dyke Master Repair Plan
Distribution List

Interest	Agency	Title	First Name	Last Name	Department	Title
Local	Friends of Oxbow Creek	Ms.	Eva	Bright		
Local	Friends of Sifton Bog	Ms.	Rosemary	Dickinson		
Local	Friends of the Coves Subwatershed Inc					
Local	Friends of Dingman Creek		Eli	Westeinde		
Local	Global Action Plan London					
Local	London Canoe Club					
Local	London Sport Fishery Association Limited					
Local	McIlwraith Field Naturalists		Gail	McNeil		
Local	Middlesex Western Rowing Club					
Local	Natural Outdoor Activity Heritage Conservation Club	Mr.	Todd	Sleeper		
Local	Ontario Federation of Anglers and Hunters, Zone J					
Local	Thames River Anglers Association					
Local	Thames Valley Trail Association					
Local	Urban League of London	Mr.	Stephen	Turner		
Local	London Cycling Advisory Committee	Ms.	Jackie	Martin		Committee Secretary
Local	Western Ontario Fish and Game Protective Association	Mr.	Stan	Gibbs		
Conservation Authority Contact						
Local	Upper Thames River Conservation Authority	Mr.	Mark	Snowsell	Hydrology & Regulatory Services Unit	Land Use Regulations Officer
Aboriginal Contacts						
Provincial	Southern First Nations Secretariat	Mr.	Paul	Schisler	-	Manager Technical Services
Local	Chippewas of the Thames	Chief	Leslee	White-Eye	-	Chief
Local	Chippewas of the Thames	Ms.	Rolanda	Elijah	Lands and Resources	Director
Local	Chippewas of the Thames	Ms.	Mary	Alikakos		Consultation Coordinator
Local	Oneida Nation of the Thames	Chief	Sheri	Doxtator	-	
Local	Oneida Nation of the Thames	Ms.	Holly	Elijah		Council Assisstant
Local	Munsee-Delaware Nation	Chief	Roger	Thomas	-	-
Local	Munsee-Delaware Nation	Mr.	Glenn	Forrest		Director of Operations
Local	Delaware Nation (Moravian of the Thames)	Chief	Greg	Peters	-	-
Local	Delaware Nation (Moravian of the Thames)	Mr.	Justin	Logan	Lands & Resources	Consultation Assistant
Local	Bkejwanong Territory (Walpole Island)	Chief	Dan	Miskokomon	-	-
Local	Bkejwanong Territory (Walpole Island)	Mr.	Jared	Macbeth	-	Project Review Coordinator
Local	Bkejwanong Territory (Walpole Island)	Dr.	Dean	Jacobs		Consultation Manager
Local	Caldwell First Nation	Chief	Louise	Hillier	-	
Local	Metis Nation of Ontario	Mr.	Aly	Alibhai	Lands, Resources and Consultatio	Director
Local	Chippewas of Kettle and Stony Point First Nation	Chief	Tom	Bressette	-	
Local	Chippewas of Kettle and Stony Point First Nation	Ms.	Lorraine	George	-	First Nation Manager
Local	Chippewas of Kettle and Stony Point First Nation	Ms.	Suzanne	Bressette		Communications Relations Officer
Local	Aamjiwnaang First Nation	Chief	Christopher	Plain	-	-
Local	Aamjiwnaang First Nation	Ms.	Sharilyn	Johnston	-	Environment Coordinator
Other Stakeholders						
Property Owner			Jan	Delaney		
Property Owner			Jason	Jordon		
Property Owner			Shirley & John	Clement		
Property Owner			Steve	Walters		
Property Owner			Wendy	Dench		
Property Owner			David	Heap		
Property Owner			Christine	Kelsey		
Property Owner			James	Nolan		
Property Owner			Dwight	Bender		
Property Owner			Angela	Goulet		
Property Owner			Richard	Dwyer		
Property Owner			Barb & Marcel	Goulet		
Property Owner			J.	Johnston		

West London Dyke Master Repair Plan
Distribution List

Interest	Agency	Title	First Name	Last Name	Department	Title
Property Owner			Carol & Michael	Tattersall		
Property Owner			Chuck	Grawbury		
Property Owner			Jean	Farrer		
Property Owner			Les	Peterson		
Property Owner			Robyn	Harvey		
Property Owner			Laurie	Birch		
Property Owner			Sharon	Lowery		
Property Owner			Linda	Mclure		
Property Owner			Erika	Simpson		
Property Owner			Grace	Hoekstra		
Property Owner			Mary	Blosh		
Property Owner			Robert	Huber		
Property Owner			Jeff	Lucas		
Property Owner			Jim	Courtney		
Property Owner			Robin	Harvey		
Property Owner			Daisy	Oliver		
Property Owner			Michael	Abbott		
Property Owner			Mary-Lyn	Hopper		



Appendix 2.2
Agency and Stakeholder Responses

Oxlade, Michele

From: EnviroOnt [EnviroOnt@tc.gc.ca]
Sent: Wednesday, June 23, 2010 9:18 AM
To: Oxlade, Michele
Subject: West London Dyke Master Repair Plan, Class EA, NEATS 24264
Attachments: NWP_App_Guide_EN.pdf

Thank you for your letter regarding the above referenced environmental assessment. Please in future forward correspondence on this environmental assessment to the undersigned.

We have reviewed the information, and note the following:

Transport Canada is responsible for the administration of the *Navigable Waters Protection Act,* which prohibits the construction or placement of any "works" in navigable waters without first obtaining approval. If any of the related project elements or activities related may cross or affect a potentially navigable waterway, you are requested to prepare and submit an application in accordance with the requirements as outlined in the attached Application Guide. Any questions about the NWPA application process should be directed to the Navigable Waters Protection Program at 1-866-821-6631 or NWPontario-PENontario@tc.gc.ca.

<<NWP_App_Guide_EN.pdf>>

Transport Canada is also responsible for the administration of the *Railway Safety Act* to ensure the safe operation of railways. The Act addresses the construction and alteration of railway works, the operation and maintenance of railway equipment and certain non-railway operations affecting railway safety. Pursuant to the Notice of *Railway Works Regulations,* the project proponent will be required to give notice of the proposed project to the following persons: the railway whose line is to be crossed, the municipality in which the crossing works are to be located and the authority having responsibility for the road in question. An approval may be required for certain railway works that depart from engineering standards set under the regulations or where an objection has been filed against the work. Any questions about the *Railway Safety Act* and the Notice of *Railway Works Regulations* should be directed to Luciano Martin, Manager of Engineering, at (416) 973-2326.

You may also wish to review the Act and Regulations by accessing the following Internet sites:

Railway Safety Act: http://www.tc.gc.ca/acts-regulations/acts/1985s4-32/menu.htm

Notice of Railway Works Regulations: http://laws.justice.gc.ca/en/SOR-91-103/

Please note that certain approvals under the *Navigable Waters Protection Act* or *Railway Safety Act* trigger the requirement for a federal environmental assessment under the Canadian Environmental Assessment Act. You may therefore wish to consider incorporating CEAA requirements into your provincial environmental assessment.

Regards,

Environmental Assessment Coordinator
Transport Canada, Ontario Region
Environment & Engineering (PHE)
4900 Yonge St., 4th Fl., Toronto, ON M2N 6A5
Email: EnviroOnt@tc.gc.ca

Please consider the environment before printing this email.

Oxlade, Michele

From: Tait, Maryjo (MNR) [Maryjo.Tait@ontario.ca]
Sent: Monday, July 05, 2010 9:30 AM
To: Oxlade, Michele
Subject: RE: West London Dyke Master Repair Plan - Notice of Study Commencement Environmental Assessment, City of London

Good morning Michele,

Please disregard the previous message (9:21 am, July 5 2010) and accept the below as MNR comments on the Notice of Study Commencement for the West London Dyke Master Repair Plan.

The Ministry of Natural Resources (MNR) has received the Notice of Study Commencement for the West London Dyke Master Repair Plan in the City of London. We would like to offer the following.

The MNR requests clarification on the following items:

1) How do the works associated with the Master Repair Plan relate to those proposed in the Schedule A West London Dyke Replacement Project in 2007?

2) Confirmation that all works are proposed within the original footprint of the existing dyke

3) Confirmation that the works as proposed will not result in an in-fill of the Thames River

The Endangered Species Act, 2007
The *Endangered Species Act* 2007 came into force on June 30, 2008 and offers greater protection to an increased number of species at risk. The Species At Risk in Ontario (SARO) List is Ontario Regulation 230/08.

The MNR has known occurrences for the following species within the study area:
- Spiny Softshell (THR)
- Wavy-rayed Lampmussel (END)
- Green Dragon (SC)
- Silver Chub (SC)
- Northern Map Turtle (SC)
- Eastern Green Violet
- Greenside Darter

There is also potential for Kentucky Coffee Tree (THR) and Butternut (END) to occur along the Thames River.

The MNR recommends the environmental assessment includes surveys to identify the presence/absence of species at risk or habitat. While a species may not be directly within the area proposed for works, it may be adjacent and therefore the impacts to this should be assessed. The environmental assessment should include options that avoid species at risk and their habitat.

Additionally, DFO Aquatic Species at Risk Act (SARA) red lined mapping occurs on the subject lands. We recommend contacting DFO. The environmental assessment should consider impacts to fish and fish habitat.

Public Lands Act
Any in-water or shore lands works require the issuance of a Work Permit in accordance with Regulation 335/00, formerly Regulation 453/96 under the Public Lands Act.

The MNR requests to be keep informed of this project. We would like to review and provide comments on any draft plans or alternatives including wildlife and dyke naturalization plans.

Please let me know if you have any questions.

Thank you,
Maryjo

Maryjo Tait
Planning Intern – Aylmer District
Ministry of Natural Resources
615 John Street North
Aylmer, ON N5H 2S8
Phone: (519) 773-4786
email: maryjo.tait@ontario.ca

Oxlade, Michele

From: Hatcher, Laura (MTC) [Laura.Hatcher2@ontario.ca]
Sent: Tuesday, July 20, 2010 4:26 PM
To: Oxlade, Michele
Subject: West London Dyke Repair Plan -- MTC comments
Attachments: West London Dyke Repair Plan Comments July 20 2010.pdf

Dear Ms. Oxlade,

Thank you for your letter regarding the West London Dyke Master Repair Plan. The Ministry of Tourism and Culture was not able to attend the PIC in June, but while the project is in its initial stages, we would like to share some comments on the project. Please find attached a letter with MTC's comments.

Best regards,

Laura

Laura Hatcher
Heritage Planner
Ministry of Tourism and Culture - Culture Services Unit
400 University Avenue, 4th Floor
Toronto, Ontario
M7A 2R9

Telephone: 416-314-3108
Fax: 416-212-8102
Email: laura.hatcher2@ontario.ca

Ministry of Tourism and Culture
Cultural Services Unit, 4th Fl.
400 University Ave
Toronto, ON M7A 2R9

Ministre du Tourisme et de la Culture
400, avenue University
Toronto, ON M7A 2R9



Ms. Michele Oxlade
Environmental Coordinator
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7

Subject/Project: West London Dyke Master Repair Plan – Notice of Study Commencement
Location: City of London, Ontario

Dear Ms. Oxlade,

Thank you for your letter with respect to the Municipal Class Environmental Assessment for the West London Dyke Master Repair Plan, City of London. From your letter, it is my understanding that the project is at an early stage within the Class EA process, however I would like to flag some important information that may or may not apply to this specific project:

As part of the Class Environmental Assessment process, the Ministry of Culture has an interest in the conservation of cultural heritage resources including:

- Archaeological resources;
- Built heritage resources; and
- Cultural heritage landscapes.

The Provincial Policy Statement, 2005 issued under the authority of the Planning Act defines "conserved" as "the identification, protection, use and/or management of cultural heritage and archaeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a conservation plan or heritage impact assessment."

Archaeology:

The site in question has archaeological potential for the following reasons:

- a known archaeological site or within 250 meters of a known site
- within 300 meters of a primary water source (lakeshore, river, large creek)

If it is determined any ground disturbances are to take place outside the footprint of the dyke, an archaeological assessment that conforms to the Ministry of Culture's *Standards and Guidelines for Consultant Archaeologists* is required.

Built Heritage / Cultural Heritage Landscapes:

If the site in question contains buildings/structures over 40 years old, a Heritage Impact Assessment should be undertaken. The Assessment should include the following:

1. Historical research, site analysis and evaluation
2. Identification of the significance and heritage attributes of the property
3. Description of the proposed development / site alteration
4. Measurement of impacts
5. Consideration of alternatives, mitigation and conservation methods
6. Implementation and monitoring schedules
7. Summary statement and conservation recommendations

For more information, refer to Ministry of Culture *InfoSheet #5: Heritage Impact Assessments and Conservation Plans* in the Ontario Heritage Tool Kit at http://www.culture.gov.on.ca/english/heritage/Toolkit/Heritage_PPS_infoSheet.pdf

Please do not hesitate to contact me if you have any questions.

Sincerely,

Laura Hatcher
Heritage Planner
416-314-3108

Oxlade, Michele

From: Tait, Maryjo (MNR) [Maryjo.Tait@ontario.ca]
Sent: Tuesday, July 27, 2010 8:45 AM
To: Oxlade, Michele
Subject: RE: West London Dyke Master Repair Plan - Notice of Study Commencement Environmental Assessment, City of London

Good morning Michele,

The MNR would like to offer the following additional comments for this Municipal Class EA.

The environmental assessment should consider options for the potential naturalization of the shoreline, slope and top of slope.

Fisheries
It is recommended that the proponent assess the potential impacts of the project on fish resources: species, migrations, timing, etc. DFO/UTRCA is the delegated authority for the review of fish habitat.

Wildlife
It is recommended that the proponent assess the impacts of the project on the wildlife resources: wildlife, wildlife of concerns, birds and endangered-threatened species. Additionally, it is recommended that the proponent assess the naturalization and enhancement of the wildlife resource.

Thank you,

Maryjo

From: Tait, Maryjo (MNR)
Sent: July 5, 2010 9:30 AM
To: 'Oxlade, Michele'
Subject: RE: West London Dyke Master Repair Plan - Notice of Study Commencement Environmental Assessment, City of London

Good morning Michele,

Please disregard the previous message (9:21 am, July 5 2010) and accept the below as MNR comments on the Notice of Study Commencement for the West London Dyke Master Repair Plan.

The Ministry of Natural Resources (MNR) has received the Notice of Study Commencement for the West London Dyke Master Repair Plan in the City of London. We would like to offer the following.

The MNR requests clarification on the following items:

1) How do the works associated with the Master Repair Plan relate to those proposed in the Schedule A West London Dyke Replacement Project in 2007?

2) Confirmation that all works are proposed within the original footprint of the existing dyke

3) Confirmation that the works as proposed will not result in an in-fill of the Thames River

The Endangered Species Act, 2007
The *Endangered Species Act* 2007 came into force on June 30, 2008 and offers greater protection to an increased number of species at risk. The Species At Risk in Ontario (SARO) List is Ontario Regulation 230/08.

The MNR has known occurrences for the following species within the study area:
- Spiny Softshell (THR)

- Wavy-rayed Lampmussel (END)
- Green Dragon (SC)
- Silver Chub (SC)
- Northern Map Turtle (SC)
- Eastern Green Violet
- Greenside Darter

There is also potential for Kentucky Coffee Tree (THR) and Butternut (END) to occur along the Thames River.

The MNR recommends the environmental assessment includes surveys to identify the presence/absence of species at risk or habitat. While a species may not be directly within the area proposed for works, it may be adjacent and therefore the impacts to this should be assessed. The environmental assessment should include options that avoid species at risk and their habitat.

Additionally, DFO Aquatic Species at Risk Act (SARA) red lined mapping occurs on the subject lands. We recommend contacting DFO. The environmental assessment should consider impacts to fish and fish habitat.

Public Lands Act
Any in-water or shore lands works require the issuance of a Work Permit in accordance with Regulation 335/00, formerly Regulation 453/96 under the Public Lands Act.

The MNR requests to be keep informed of this project. We would like to review and provide comments on any draft plans or alternatives including wildlife and dyke naturalization plans.

Please let me know if you have any questions.

Thank you,
Maryjo

Maryjo Tait
Planning Intern – Aylmer District
Ministry of Natural Resources
615 John Street North
Aylmer, ON N5H 2S8
Phone: (519) 773-4786
email: maryjo.tait@ontario.ca

300 Dufferin Avenue
P.O. Box 5035
London, ON
N6A 4L9

London
CANADA

RECEIVED
JUL 22 2010
STANTEC CONSULTING LTD.

July 9, 2010

M. Oxlade
Environmental Coordinator
Stantec Consulting Ltd.
800 – 171 Queens Avenue
London ON N6A 5J7

Re: West London Dyke Master Repair Plan

At its meeting held on July 7, 2010, the Advisory Committee on the Environment (ACE) received your communication dated June 4, 2010 with respect to a Notice of Study Commencement relating to the West London Dyke Master Repair Plan.

The ACE postponed consideration of this matter to its next meeting and asked you to provide copies of the West London Dyke Master Repair Plan Study to the ACE members. (6/8/ACE)

Heather Lysynski

Heather Lysynski
Committee Secretary

The Corporation of the City of London
Office 519-661-2500 ext. 4856
Fax 519-661-4892
www.london.ca

Chris Bentley, MPP
London West
Ontario

RECEIVED
AUG 18 [illegible]
STANTEC CONSULTING LTD.

July 26, 2010

Michele Oxlade
Environmental Assessment Coordinator
Stantec Consulting Ltd.
800 – 171 Queens Avenue
London, ON
N6A 5J7

Dear Mr. Oxlade:

Thank you for your letter regarding the West London Dyke Master Repair Plan.

I look forward to working with the Upper Thames River Conservation Authority, the City of London and Stantec Consulting in the efforts to fix the West London Dyke. Please continue to keep me informed on the development of this project.

Thank you again for contacting my office.

Yours truly,

Chris Bentley, MPP
London West

CB/jk

11 Base Line Road East, Unit 8, London, ON N6C 5Z8 • T - (519) 657-3120 F - (519) 657-0368
cbentley.mpp.co@liberal.ola.org www.chrisbentley.onmpp.ca

Canadian Environmental Assessment Agency

55 St-Clair Avenue East
9th Floor, Room 907
Toronto, Ontario
M4T 1M2

Agence canadienne d'évaluation environnementale

55 Avenue St-Clair Est
9ième étage, pièce 907
Toronto, Ontario
M4T 1M2

RECEIVED
AUG 24
STANTEC CONSULTING LTD.

August 16, 2010

Michele Oxlade B.Sc., EMX
Environmental Coordinator
Stantec Consulting Ltd.
800-171 Queens Avenue
London ON N6A 5J7

Dear Michele Oxlade,

Re: West London Dyke Master Repair Plan – Notice of Study Commencement

Thank you for your letter dated June 4, related to the above-noted project.

The *Canadian Environmental Assessment Act* (the Act) may apply to federal authorities when they contemplate certain actions or decisions in relation to a project that would enable it to proceed in whole or in part. A federal environmental assessment may be required when a federal authority: is the proponent of a project; provides financial assistance to the proponent; makes federal lands available for the project, or issues a permit, license or any other approval as prescribed in the *Law List Regulations*.

In the case of projects that are subject to the Ontario *Environmental Assessment Act,* if there is uncertainty as to whether the Act may also apply, the Agency can help proponents answer this question. For projects that are subject to the Act, the Agency will act as the federal environmental assessment coordinator and facilitate the involvement of the federal authorities in a co-ordinated assessment aimed at meeting all agencies' needs simultaneously.

In order for the Agency to undertake either of these roles, it must have a project description that can be distributed to various federal authorities to determine their interest in the project. It is recognized that at the early stages of the planning process, there may not be much detailed information to provide. However, proponents should try to provide some information on:

- the nature of the project and its location;
- federal decisions which may be made in relation to the project;
- whether federal funding is being contemplated or federal lands are required.

.../2

To better assist proponents, the Agency has developed an Operational Policy Statement, which provides guidance in preparing project descriptions. This is available on the Agency's website at:
http://www.ceaa-acee.gc.ca/013/0002/ops_ppd_e.htm

If your purpose in sending us notification of your project is to determine whether the *Canadian Environmental Assessment Act* applies, please be aware that simple notification will not be sufficient. A project description for the preferred alternative will be required.

Important Note: Please be aware that release of documents to the public may be part of the EA process. Information provided by you related to the EA for this project will be part of the Canadian Environmental Assessment Registry and will be made available to members of the public, if requested. A package with additional information will be provided to you upon submission of the project description. Should you provide any documents that contain confidential or sensitive information that you believe should be protected from release to the public, please contact the undersigned to obtain an Exclusion Form. This Form can be used to identify the information to be considered for exclusion from the Canadian Environmental Assessment Registry and the rationale for the exclusion.

If you have any questions regarding any of the above, please contact the undersigned at 416-954-7334.

Sincerely,



Linda Boeheim, Project Manager
Canadian Environmental Assessment Agency, Ontario Region

LB/jr

Oxlade, Michele

From: Doyle, Rod [doyler@LondonHydro.com]
Sent: Friday, September 10, 2010 4:18 PM
To: Oxlade, Michele
Subject: West London Dyke Mater Repair Plan

Michele:

London Hydro's comments and concerns are the following with respect the Environmental Assessment of the West London Dyke Plan:

1. London Hydro has existing pole line circuits crossing St. James St. to Beaufort St. and running south along the west side of the river to Saunby St. These circuits are critical.
2. London Hydro has existing pole line circuits crossing Ann St. to Patrick St. These circuits are critical and London Hydro has plans to cross the Thames at this same location with two more circuits. These two future circuits are planned to run along the west side of the river heading north to Oxford St.
3. London Hydro has existing underground duct structure and underground cables along the north side of the Thames (south side of Riverside Dr), east of Wharncliffe Rd. to the fork of the Thames.

We request that London Hydro's existing infrastructure remain unaffected and remain accessible and we will work with the consultant, City of London and the Upper Thames Conservation Authority towards a common plan to incorporate our future works together.

Rod Doyle, P.Eng.
Distribution Engineer
London Hydro Inc.
Office: 519-661-5800 ext. 4515
Mobile: 519-860-0390
Email: doyler@londonhydro.com

Ministry of Aboriginal Affairs

160 Bloor St. East, 9th Floor
Toronto, ON M7A 2E6
Tel: (416) 326-4740
Fax: (416) 325-1066
www.aboriginalaffairs.gov.on.ca

Ministère des Affaires Autochtones

160, rue Bloor Est, 9e étage
Toronto ON M7A 2E6
Tél. : (416) 326-4740
Téléc. : (416) 325-1066
www.aboriginalaffairs.gov.on.ca

Ontario

JAN 1 2 2010

RECEIVED
JAN 1 5 2011
STANTEC CONSULTING LTD.

Reference: 455

Michele Oxlade
Environmental Assessment Coordinator
Stantac Consulting Ltd.
800 – 171 Queens Ave.
London ON, N6A 5J7

Re: West London Dyke Master Plan Repair - Notice of Study Commencement

Dear Mr. Oxlade:

Thank you for your inquiry dated June 4, 2010 regarding the above noted project.

The responsibilities of the Ministry of Aboriginal Affairs (MAA) include conducting land claim and related negotiations on behalf of the Province. MAA can provide you with information about land claims that have been submitted to the Ministry, are currently in active negotiations, or are being implemented. We can also advise as to whether there is any litigation with an Aboriginal community that may be relevant to your project.

You should also be aware that many First Nations and Métis communities either have or assert rights to hunt and fish in their traditional territories. These territories often include lands and waters outside of a First Nation reserve. As well, in some instances project work may affect archaeological and burial sites. Aboriginal communities with an interest in such sites may include communities other than those in the vicinity of the proposed project.

With respect to your project, we have reviewed the brief materials you have provided, and can advise that the project appears to be located in an area where First Nations may have existing or asserted rights that could be impacted by your project. Contact information is below:

Oneida Nation of the Thames 2212 Elm Avenue SOUTHWOLD, Ontario NOL 2GO	Chief Joel Abram (519) 652-3244 (Fax) 652-9287 Joel.abram@oneida.on.ca Laura.phillips@oneida.on.ca Holly.elijah@oneida.on.ca
Chippewas of the Thames 320 Chippewa Road R.R. #1 MUNCEY, Ontario N0L 1Y0	Chief Vaughan Albert Sr. (519) 289-5555 (Fax) 289-2230 chief@cottfn.ca

For your information, MAA notes that the following First Nation may be interested in your project given the potential impacts of your project on the environment: and the location of their reserve lands or areas of interest:

Munsee-Delaware Nation R. R. #1 MUNCEY, Ontario N0L 1Y0	Chief Patrick Waddilove (519) 289-5396 (Fax) 289-5156 pwaddilove@munsee.on.ca

MAA is not the approval or regulatory authority for this project. To determine what consultation with Aboriginal communities may be required, please consider the information provided in this letter in light of the legislative, regulatory and policy framework for your project. Should you have any questions, please contact the appropriate ministry.

The Government of Canada sometimes receives claims that Ontario does not receive, or with which Ontario does not become involved. For information about possible claims in the area, MAA recommends the proponent contact the following federal contacts:

Ms. Janet Townson
Claims Analyst, Ontario Team
Specific Claims Branch
Indian and Northern Affairs Canada
1310-10 Wellington St.
Gatineau, QC K1A 0H4
Tel: (819) 953-4667
Fax: (819) 997-9873

Mr. Sean Darcy
Manager
Assessment and Historical Research
Indian and Northern Affairs Canada
10 Wellington St.
Gatineau, QC K1A 0H4
Tel: (819) 997-8155
Fax: (819) 997-1366

For federal information on litigation contact:

Mr. Marc-André Millaire
Litigation Team Leader for Ontario
Litigation Management and Resolutions Branch
Indian and Northern Affairs Canada
10 Wellington St.
Gatineau, QC K1A 0H4
Tel: (819) 994-1947
Fax: (819) 953-1139

Additional details about your project or changes to it that suggest impacts beyond what you have provided to date may necessitate further consideration of which Aboriginal communities should be contacted. If you think that further consideration may be required, please bring your inquiry to whatever government body oversees the regulatory process for your project.

You should also be aware that information upon which the above comments are based is subject to change. First Nation or Métis communities can make assertions at any time, and other developments can occur that might require additional communities to be notified.

Yours truly,

Heather Levecque
Manager, Consultation Unit
Aboriginal Relations and Ministry Partnerships Division

Introduction

The ***Navigable Waters Protection Act (Act)*** protects the public right to boat freely on waterways in Canada. The Act and its regulations:

- Require the pre-approval of structures (known as ***works***) to be placed in, on, over, under, through, or across any navigable waters; and
- Provide a legal framework for dealing with obstacles and obstructions to navigation.

The Act was updated on March 12, 2009. You can find the Act and its regulations online at: http://laws.justice.gc.ca/en/N-22/

Transport Canada's (TC) **Marine Safety, Navigable Waters Protection Program** works to:

- Protect the public right of navigation
- Ensure safety for the shared use of Canada's waterways; and
- Consider any impacts proposed works might have on the environment.

Navigable Waterways are any natural or man-made bodies of water (rivers, lakes, canals, etc.) that can be used by vessels to work, move freight, travel or enjoy pleasure activities – even if they were created for purposes other than navigation.

Get the Facts

What is a Minor Water?

Before starting construction, repairs or changes, owners should find out if their work is on a minor water or a navigable waterway. To determine if the waterway is minor you may refer to the *Minor Works and Waters (Navigable Waters Protection Act) Order* at http://www.tc.gc.ca/marinesafety/oep/nwpp/minorworks/menu.htm.

What is a work?

A work includes:

- Any man-made structure, devise or thing, temporary or permanent, that may limit or prevent boating; and
- Any fill dumped into, or materials being dug from, the bed of navigable water that may limit or prevent boating.

What is a minor work?

Some works, called minor works, that **will not limit or prevent boating**, do not require TC approval. However, they must be placed, built and maintained according to the Minor Works and Waters (NWPA) Order. If they aren't, owners may be fined.

Minor works include:

- Winter Crossings
- Water Intakes
- Pipeline Crossings
- Docks & Boathouses
- Submarine (underwater) Cables
- Aerial Cables
- Erosion Protection Works
- Dredging

Canada

Get Your Project Approved

All works, except those listed as minor works under the *Order*, must be approved by Transport Canada. TC approval is proof that your planned work will not limit or prevent boating.

Contact TC for approval **well before your desired start date**. This will give us time to review your project and respond.

Remember: You must request and get any local building or other permits you may need **before** you begin your work.

Approval process

Step One: Apply.

1. Prepare a letter or application form that includes the information set out in Table 1, below;
2. Include a map and directions indicating the exact location of the worksite;
3. Include onsite, upstream and downstream photos of the waterway.
4. Mail your letter and supporting documents to:

Transport Canada, Navigable Waters Protection Office
100 Front Street South,
Sarnia, Ontario N7T 2M4

Table 1 - Information and Application Requirements

Please provide as much of the following information as possible as missing information may delay your review. Pay particular attention to the mandatory information listed in Section D - Summary of Supporting Documents.

Application Section A:	• Your name and address, phone, number, fax and email address. • Contractor/consultant/agent (if any) address, phone, number, fax and email addresses
Application Section B **Work Site Location and Description:**	• Legal site description (lot, concession, county/township or city/town, etc) and 911 address (if any). • Name of the owner(s) of property immediately upland to the work site (note that you may require written consent to do the work). • Six copies of a key map showing the exact location of the work site. • One copy of written directions to the site. • The latitude and longitude of the work site, if known. • Legal and/or local name of waterway. • Photos taken at, upstream and downstream of the work site. • Canadian Hydrographic Service (CHS) navigation chart number (if known). • National Traffic System (NTS) topographic map numbers (if known). • A photocopy of your water lot lease or permit. • The ordinary high water mark, the normal summer water elevation or chart datum at the work site (if known). • Average width and depth of the waterway at the work site. • Known boating uses of the waterway, i.e. traveling, moving freight, work or pleasure.
Application Section C **Description of Work:**	• A detailed description of the work, including: ○ method of construction; ○ equipment and material used; ○ operating plans; ○ debris management plans; and ○ any temporary works (berm, cofferdam, road, signage, portage, etc) required for the project. • Six copies of drawings of the work (top-down plan view and side-on profile view) including: ○ structure dimensions; ○ shoreline shape; ○ water depths; and ○ near by structures. • Any Environmental Assessment documents and information you have. • Your proposed building or project schedule (with start and end dates). • Status of the work at the time of application (existing, proposed, rebuilding, repairs, etc). • Original date the existing work was constructed, if this is a repair or rebuild, and the date of any previous approvals. • Name of any other agencies you have submitted these plans to.
NOTE	Transport Canada must receive at minimum the following information to process your application. **Missing information may lead to delays**.

(Continued)

Table 1 - Information and Application Requirements

Application Section D **Summary of Supporting Documents:**	❑ Your name, address, phone, number, fax and email address. ❑ If an agency is acting on your behalf, provide Agency Applicant and name, address, phone, number, fax and email address. ❑ Legal site description (lot, concession, county/township or city/town, etc). If the work site has been assigned a 911 address, provide this as well. ❑ Six copies of a key map showing the exact location of the work site. ❑ A photocopy of your water lot lease or permit. ❑ Photos taken at, upstream and downstream of the work site. ❑ The ordinary high water mark, the normal summer water elevation or chart datum at the work site. ❑ A detailed description of the work, including method of construction, equipment and material used, operating plans, debris management plans and any temporary works (berm, cofferdam, road, signage, portage, etc) required for the project. ❑ Six copies of drawings of the work (top-down plan view and side-on profile view) including structure dimensions, shoreline shape, water depths and near by structures.

Step Two: Wait for a response.

Transport Canada reviews proposed works based on information you provide, on-site assessment of the waterway and potential impacts to navigation. Once its review is complete, TC may issue an approval if the impacts to navigation can be lessened. The approval may include conditions you must meet.

The complete Transport Canada review can take some time because you may be asked to:

- Provide more information;
- Meet a Transport Canada official on site;
- Deposit plans after confirmation to proceed,
- Notify the public of the proposed work and allow one month for comments, and
- Support an environmental assessment of the work as per the under *Canadian Environmental Assessment Act (CEAA)*.

Step Three: Receive a response.

If / When you receive an Approval Document, you must:

- Read it carefully. It may include conditions that you must meet or time limits you must respect.
- Keep a copy of the Approval Document on the work site at all times.
- Meet all conditions of approval.
- Expect a TC official inspect your site to make sure you are meeting all conditions of approval.
- Write to TC when your work is done.

Table 2 – The Approval Process – Step by Step

1. Verify if the waterway is subject to the *Minor Works and Waters (Navigable Waters Protection Act) Order* or is a navigable waterway.

2. Verify if the work is subject to the *Minor Works and Waters (Navigable Waters Protection Act) Order* or is subject to application and review under the Act.

3. Complete and sign the application form and send it to Transport Canada with supporting documents listed in Table 1 (above) to the following address:

Transport Canada, Navigable Waters Protection Office
100 Front Street South,Sarnia, Ontario N7T 2M4

Include six copies of the drawings and key map showing location of the work site.

4. Be prepared to attend an on-site meeting with Transport Canada officials, or if asked, to provide more information.

5. If notified by Transport Canada, deposit one set of drawings and the supporting documents at the nearest Land Registry or Land Titles Office. Have one set of drawings certified by the Registrar and return it to Transport Canada with the Registrar's certificate, signature and deposit number.

6. If notified by Transport Canada, advertise your work project in the legal section, if possible. We will send you a sample ad, complete instructions and a blank Statutory Declaration of Advertising. When you have advertised your project:
- Have the "Statutory Declaration of Advertising" witnessed by a Commissioner of Oaths and return it to Transport Canada with 1 copy of the advertisements.
- Allow one month for comments from the public before starting to build.

NOTE: The advertising process may have to be repeated if done too soon, if information is missing or if project plans change.

7. If asked, provide Transport Canada with any additional information needed for the environmental assessment.

8. When you receive your Approval from Transport Canada, read it carefully and note any conditions of approval. Also, look for any time limits for starting and completing the work as well as how long the Approval Document is valid.

9. Build your work, fulfilling all conditions of the Approval Document. Keep a copy of the Approval on the work site at all times during construction. Transport Canada officials may conduct on-site inspection(s) to ensure conditions are being met.

10. Notify Transport Canada in writing when the work is completed.

11. TC officials may inspect your finished work to make sure that it is built according to plan and meets the conditions of approval. **You** must:
- Meet all conditions of approval;
- Take any measures required by the environmental assessment.
- Make sure to keep the work up to the standard of its approved plans.

Notes: You are responsible to:
a. Complete the work according to plans approved by Transport Canada;
b. Fulfill conditions of approval, as set out in the Approval Document issued by Transport Canada;
c. Implement any environmental protection measures identified under *Canadian Environmental Assessment Act.*

NOTE: ***This guide explains the Navigable Waters Protection Act application and approval process. If anything in this Guide differs from the Act, comply with the Act.***

For further information about Transport Canada's Navigable Waters Protection Program please feel free to visit us at http://www.tc.gc.ca/eng/marinesafety/oep-nwpp-menu-1978.htm.

Canada

Navigable Waters Protection Act
Request for Project Review

This is my first request for a NWPP review for this project.

Yes ☐ No ☐

Section A — Your Contact Information

Your full name:		
Mailing Address:		
Street Address (if not the same):		
City/Town:	Province/Territory:	Postal Code:
Tel. No. (Home):	Tel. No. (Work):	Tel. No.: (Other)
Fax No:	E-mail Address:	
Name of Contractor/Consultant/Agent (if any):		
Mailing Address:		
Street Address (if not the same):		
City/Town:	Province/Territory:	Postal Code:
Tel. No. (Home)	Tel. No. (Work):	Tel No. (Other)
Fax No:	E-mail Address:	

Section B — Site location and description

Name of Nearest City, Town, Village:	Municipality / District / County:
Legal site description (lot, concession, county/township, city/town, etc.) and 911 address, if any:	
Access road or directions to Proposed Work Site (route number, highway series number or street name/number if urban area, etc.)	
Legal and/or local name of waterway:	Description of waterway (Note: Enclose photographs):
CHS navigation chart and NTS topographic map numbers (if available):	Water lot Lease or Permit (if any):
Average width and depth of waterway at or near the project site:	Known navigation and waterway use (recreational and commercial):

Section C — Basic Project Description

What is the proposed project? *(dock, dam, bridge, aquaculture site, etc.)* **Note:** *You must attach detailed description and plans of work.*

Proposed project Start and End dates:	Status of the Project (circle one): New Existing Addition Repair Other (explain)

Building plans (describe methods, temporary works, etc.):

Section D — Required Supporting Documents and Information

Documents:	**Information:**
• A detailed written description of your project • A Map showing exactly where the project site is. • Drawings – plan view (top down) and profile view (side on) including structure dimensions, shoreline shape and any nearby structures. • Environmental Assessment documents and information. • Onsite, upstream and downstream photos.	• Description of any temporary works related to the project (i.e. portage, signage, berms, cofferdams, roads, etc.). • Original building date of an existing work and any previous approvals. • Latitude and Longitude of the work site. • Upland property owner's name (if you are not the upland property owner, you may need their written consent) • Names of other agencies you have submitted plans to.

Date:	**Signature:**

For NWPP Use only:

NWPA #:

Ministry of Tourism, Culture and Sport

Culture Services Unit
Programs and Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416 314 7145
Fax: 416 212 1802

Ministère du Tourisme, de la Culture et du Sport

Unité des services culturels
Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto ON M7A 0A7
Tél: 416 314 7145
Téléc: 416 212 1802

Ontario

September 24, 2015 (EMAIL ONLY)

Cameron Gorrie, P.Eng.
Stantec Consulting Ltd.
600-171 Queens Avenue
London, ON N6A 5J7
E: Cameron.Grrie@stantec.com

RE: MTCS file #: 39WT142
Proponent: City of London/Upper Thames River Conservation Authority
Subject: Notice of Public Information Centre (PIC) #3
West London Dyke Master Repair Plan
Location: City of London, Ontario

Dear Cameron Gorrie:

Thank you for providing the Ministry of Tourism, Culture and Sport (MTCS) with the Notice of PIC #3 and presentation materials for your project. MTCS's interest in this EA project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- Archaeological resources, including land-based and marine;
- Built heritage resources, including bridges and monuments; and,
- Cultural heritage landscapes.

Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources. Realizing that this is in part a Master Plan, developing a preliminary inventory of known and potential cultural heritage resources within the study area can identify specific resources that may play a significant role in guiding the evaluation of alternatives for subsequent project-driven EAs. While the PIC #3 materials state that this project is anticipated to be a Schedule B Municipal Class EA project, if any municipal bridges may be impacted by this project, we can provide additional screening documentation as formulated by the Municipal Engineers Association in consultation with MTCS.

Please note that the *Standards and Guidelines for Conservation of Provincial Heritage Properties* (S&G), prepared pursuant to Section 25.2 of the *Ontario Heritage Act* (*OHA*), came into effect on July 1, 2010. All Ontario government ministries and public bodies that are prescribed under Ontario Regulation 157/10 must comply with the S&Gs. They apply to property that is owned or controlled by the Crown in right of Ontario or by a prescribed public body.

While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation. Aboriginal communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Aboriginal communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Municipal Heritage Committees, historical societies and other local heritage organizations may also have knowledge that contributes to the identification of cultural heritage resources.

Archaeological Resources
Your EA project may impact archaeological resources and you should screen the project with the MTCS *Criteria for Evaluating Archaeological Potential* to determine if an archaeological assessment is needed. MTCS archaeological sites data are available at *archaeologicalsites@ontario.ca*. If your EA project area exhibits archaeological potential, then an archaeological assessment (AA) should be undertaken by an archaeologist licenced under the *OHA*, who is responsible for submitting the report directly to MTCS for review.

Built Heritage and Cultural Heritage Landscapes
The MTCS *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* should be completed to help determine whether your EA project may impact cultural heritage resources. The Clerk for the City of London can provide information on property registered or designated under the *Ontario Heritage Act*. Municipal Heritage Planners can also provide information that will assist you in completing the checklist.

If potential or known heritage resources exist, MTCS recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant, should be completed to assess potential project impacts. Our Ministry's *Info Sheet #5: Heritage Impact Assessments and Conservation Plans* outlines the scope of HIAs. Please send the HIA to MTCS for review, and make it available to local organizations or individuals who have expressed interest in heritage.

Environmental Assessment Reporting
All technical heritage studies and their recommendations are to be addressed and incorporated into EA projects. Please advise MTCS whether any technical heritage studies will be completed for your EA project, and provide them to MTCS before issuing a Notice of Completion. If your screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file.

Thank-you for consulting MTCS on this project: please continue to do so through the EA process, and contact me for any questions or clarification.

Sincerely,

Joseph Muller, RPP/MCIP
Heritage Planner
Joseph.Muller@Ontario.ca

Copied to: Rick Goldt, Supervisor, Water Control Structures, UTRCA
Chris McIntosh, Environmental Services Engineer, City of London

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. MTCS makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MTCS be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MTCS if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists.

If human remains are encountered, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.



Appendix 2.3
Aboriginal Consultation Log

Aboriginal Community Name	Contact Information	Notice of Commencement & PIC 1	PIC 1 Information Package	Notice of PIC 2	Notice of Project Re-Commencement	Notice of PIC 3	PIC 3 Information Package	Notice of Completion	Additional Communication
Aamjiwnaang First Nation	Chief Christopher Plain Ms. Sharilyn Johnston 978 Tashmoo Ave Sarnia, ON N7T 7H5	Delivered by Canada Post Letter mail	Delivered by Canada Post Letter mail	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Plain and Sharilyn Johnston on July 17, 2015 via Canada Post.	Letter sent to Chief Plain and Sharilyn Johnston on August 26, 2015 via Canada Post.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Plain and Sharilyn Johnston on September 14, 2015. Followed up with phone call on October 7, 2015 (left voicemail with Sharilyn).	Letter sent to Chief Plain and Sharilyn Johnston on February 23, 2016 via Canada Post.	Jan 22, 2015 letter response, Committee has decided not to recommend in full consultation but would like to continue to receive project information.
Delaware Nation (Moravian of the Thames)	Chief Greg Peters Mr. Justin Logan Ms. Tina Jacobs 14670 School House Line, RR#3 Thamesville, ON N0P 2K1	Delivered by Canada Post Letter mail	Delivered by Canada Post Letter mail	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Peters, Tina Jacobs and Justin Logan on June 30, 2015 via Canada Post.	No additional consultation required, no letter sent.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Peters and Tina Jacobs on September 14, 2015. Email also sent to Justin Logan on September 16, 2015. Followed up with phone call on October 7, 2015 and spoke with Justin Logan who requested that information be resent. PIC Display Boards re-sent to Justin Logan via email on October 7, 2015.	Letter sent to Chief Peters, Tina Jacobs and Justin Logan on February 23, 2016 via Canada Post.	Jan 5, 2015 letter response received, community does not require any additional consultation for this project.
Chippewas of the Thames	Chief Leslee White-Eye Ms. Rolanda Elijah 320 Chippewa Rd. Muncey, ON NOL 1Y1	Delivered by Canada Post Letter mail	Does not require further information until study is complete.	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Mikokomon and Rolanda Elijah on June 30, 2015 via Canada Post.	Letter sent to Chief White-Eye and Rolanda Elijah on August 26, 2015 via Canada Post.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Miskokomon and Fallon Burch on September 14, 2015. Email also sent to Rolanda Elijah on September 16, 2015. Followed up with phone call on October 7, 2015 (left voicemail with Rolanda Elijah). Received a phone call on February 2, 2016 from Mary Alikakos (Consultation Coordinator) requesting previously sent information material. Provided a copy of the Executive Summary, draft Stage 1 Archaeological Assessment report as well as the PIC 3 Display Boards on February 2, 2016.	Letter sent to Chief White-Eye and Mary Alikakos on February 23, 2016 via Canada Post.	Received a letter from Mary Alikakos (Consultation Coordinator) dated February 1, 2016 requesting their preference to schedule a meeting to discuss project details and expected outcome. Followed up with Mary on February 5, 2016 via phone conversation. She had reviewed the information provided on February 2, 2016 and no additional consultation or meeting is required at this time.
Munsee-Delaware Nation	Chief Roger Thomas RR#1 Muncey, ON N0L 1Y1	Delivered by Canada Post Letter mail	Delivered by Canada Post Letter mail	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Thomas on June 30, 2015 via Canada Post.	Letter sent to Chief Thomas and Glenn Forrest on August 26, 2015 via Canada Post.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Thomas on September 14, 2015. Followed up with a phone call on October 7, 2015 (left a voicemail with Chief Thomas).	Letter sent to Chief Thomas and Glenn Forrest on February 23, 2016 via Canada Post.	
Oneida Nation of the Thames	Chief Sheri Doxtator Ms. Holly Elijah 2212 Elm Ave. Southwold, ON N0L 2G0	Delivered by Canada Post Letter mail	Delivered by Canada Post Letter mail	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Doxtator, Joel Abram and Holly Elijah on June 30, 2015 via Canada Post.	Letter sent to Chief Doxtator and Holly Elijah on August 26, 2015 via Canada Post.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Doxtator and April Varewyck on September 14, 2015. Email also sent to Darryl Hill on September 16, 2015. Followed up with phone call on October 7, 2015 and spoke with Holly Elijah who requested that information be sent to Cherilyn Hill. PIC 3 Display Boards sent to Cherilyn via email on October 7, 2015.	Letter sent to Chief Doxtator and Holly Elijah on February 23, 2016 via Canada Post.	
Bkejwanong Territory (Walpole Island)	Chief Dan Miskokomon Dean Jacobs Jared Macbeth RR#3 Wallaceburg, ON N8A 4A9	Delivered by Canada Post Letter mail	Delivered by Canada Post Letter mail and email	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Kewayosh, Dean Jacobs and Jared Macbeth on June 30, 2015 via Canada Post.	Letter sent to Chief Miskokomon, Dean Jacobs and Jared Macbeth on August 26, 2015 via Canada Post.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Kewayosh, Dean Jacobs and Jared Macbeth on September 14, 2015. Followed up with phone call on October 7, 2015 (left voicemail for Jared).	Letter sent to Chief Miskokomon, Dean Jacobs and Jared Macbeth on February 23, 2016 via Canada Post.	July 14, 2015 Meeting with Dean Jacobs and Jared Macbeth to explain the restart of the project. Met with Jared Macbeth on January 28, 2016. Provided an overview of the project and current status. Jared requested a copy of the Stage 1 archaeological assessment report for the north branch of the Thames River once it is finalized. No concerns noted.

Aboriginal Community Name	Contact Information	Notice of Commencement & PIC 1	PIC 1 Information Package	Notice of PIC 2	Notice of Project Re-Commencement	Notice of PIC 3	PIC 3 Information Package	Notice of Completion	Additional Communication
Caldwell First Nation	Chief Louise Hillier PO Box 388 Leamington, ON N8H 3W3	Delivered by Canada Post Letter mail and email	Delivered by Canada Post Letter mail	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Hillier on June 30, 2015 via Canada Post.	Letter sent to Chief Hillier on August 26, 2015 via Canada Post.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Hillier on September 14, 2015. Followed up with phone call on October 7, 2015 (left voicemail with Chief Hillier). Had a meeting with Chief Hillier on December 14, 2015 to discuss in person the progress of the project and any concerns the community may have with regards to the project. Caldwell First Nation is interested in what Species At Risk are identified, replanting native species only and reducing the carbon footprint.	Letter sent to Chief Hillier on February 23, 2016 via email.	
Chippewas of Kettle and Stony Point First Nation	Chief Tom Bressette Ms. Suzanne Bressette Ms. Lorraine George 6247 Indian Lane Forest, ON N0N 1J0	Delivered by Canada Post Letter mail	Delivered by Canada Post Letter mail and email	Delivered on February 9, 2012 via Canada Post.	Letter sent to Chief Bressette, Lorraine George and Sue Bressette on June 30, 2015 via Canada Post.	Letter sent to Chief Bressette, Lorraine George and Sue Bressette on August 26, 2015 via Canada Post.	PIC 3 Display Boards uploaded to FTP site and email sent to Chief Bressette and Suzanne Bressette on September 14, 2015. Followed up with phone call on October 7, 2015 (left voicemail with Lorraine George).	Letter sent to Chief Bressette, Lorraine George and Sue Bressette on February 23, 2016 via Canada Post.	Received letter from Suzanne Bressette dated November 16, 2015. Chippewas of Kettle and Stony Point do not require consultation with regards to this project unless the project scope changes which may affect or impact their Traditional Territory.
Southern First Nations Secretariat	Ms. Jolene Whiteye Mr. Michael George 22361 Austin Line Bothwell, ON N0P1C0	Delivered by Canada Post Letter mail	-						
Ministry of Aboriginal Affairs-Consultation Unit	Pauline Wakegijijig Sarah West	RFI - Delivered by Canada Post Letter Mail	-						May 15, 2015 - Letter response providing information on First Nations Communities (3) that may have claims impacted by project and additional communities (1) that may be interested based on proximity to project study area. All four communities have already been engaged.



Appendix 2.4
Aboriginal Consultation Responses

Caldwell First Nation

Head Office: 22361 Austin Line, Bothwell, ON N0P 1C0
Branch Office: P.O. Box 388, Leamington, ON, N8H 3W3
Chief Louise Hillier: Box 388, Leamington, ON N8H 3W3
Phone: 519-322-1766 * **Fax:** 519-322-1533

RECEIVED
APR 10 2012
STANTEC CONSULTING LTD.

March 5, 2012

Nelson Oliveira, P.Eng
Project Manager
Associate, Environmental Infrastructure
Stantec Consulting Ltd.
800-171 Queens Ave.
London, ON
N6A 5J7

SUBJECT: CONSULTATION WITH FIRST NATION

This correspondence is to inform you that you have not complied with government protocol in regards to "consultation with First Nations".

Consultation is not sending us correspondence that may or may not include your project plans or progress or reports.

Consultation is meaningful dialogue between two parties. This has not taken place at any point with Caldwell First Nation.

Caldwell First Nation's traditional land extends from the Detroit River to Long Point. If your project falls within this geographical area, you are required to engage in "consultation" with the Caldwell First Nation.

We do not support or encourage your project and you should cease any further development until "consultation" with Caldwell First Nation has taken place.

Copies of this correspondence will be forwarded to the appropriate government offices.

Meegwetch

Chief Louise Hillier
Caldwell First Nation

UPPER THAMES RIVER
CONSERVATION AUTHORITY

The Thames
A Canadian
Heritage River

"Inspiring a Healthy Environment"

May 16, 2012

Caldwell First Nation
22361 Austin Line,
Bothwell, ON
N0P 1C0

Attention: Chief Louise Hillier

Dear Ms. Hillier,

Subject: Consultation with First Nation

This letter acknowledges your correspondence of March 5, 2012 to this office, which we understand was also sent to the City of London and Stantec Consultants.

Michelle Oxlade of Stantec Consultants has discussed the matter of the West London Dyke Master Repair Plan Study with your administrative staff. From this discussion, we understand that the Caldwell First Nation has no concerns with the study. I would like to reassure you that our procedure for undertaking this project has been to follow the directions provided under the Municipal Class Environmental Assessment of Ontario and has included extensive mailing to First Nations in a broad area.

Through an agreement with the City of London, the Upper Thames River Conservation Authority (UTRCA) is responsible for major capital maintenance of the London Dykes, which includes the West London Dyke. I would like to further respond as Project Manager on behalf of the UTRCA by providing the attached background materials as presented at our last Public Information Centre.

If there are any questions on the background materials or the study I would be pleased to answer them or have a further discussion in person. I may be reached at 519-451-2800 ext. 244.

Yours truly,
UPPER THAMES RIVER CONSERVATION AUTHORITY

Rick Goldt C.E.T.
Supervisor, Water Control Structures
Enclosure
c.c. B. Halklander ,City of London
N. Oliveira, Stantec, London

enclosures

CHIPPEWAS OF THE THAMES
FIRST NATION
320 CHIPPEWA ROAD, MUNCEY, ONTARIO N0L 1Y0 TEL:(519) 289-5555 FAX:(519) 289-2230

RECEIVED
AUG 15 2011
STANTEC CONSULTING LTD

August 9, 2011

Ms. Michele Oxlade
Environmental Coordinator
Stantec Consulting Ltd.
800 – 171 Queens Avenue
London, ON
N6A 5J7

Re: West London Dyke Master Repair Plan

Dear Michele Oxlade,

Thank you for consulting with Chippewas of the Thames First Nation (COTTFN) about your upcoming initiative. We refer to ourselves as Ojibwe and are a part of a larger group of Anishinabe (people) that come from the Algonkian language family. COTTFN is a Sovereign and Self-governing Nation residing on land that has never been ceded. We appreciate your recognition of our Treaties with the Crown and our Aboriginal inherent rights to this land we share.

Our traditional territory prior to European contact stretched from the Eastern states and provinces to West of the Great Lakes. At the time of our Treaties with the Crown our people moved freely throughout the Southern Great Lakes area utilizing the land, waterways and air for its' abundant and valuable resources. Since your project falls within our Traditional Territory we look forward to speaking with you regarding your project.

Our consultation staff will review your project shortly and will follow up with a letter indicating our interest in your project.

Sincerely,

Raymond Deleary,
Policy Analyst

CHIPPEWAS OF THE THAMES FIRST NATION

February 1, 2016

RECEIVED
FEB - 4 2016
STANTEC CONSULTING LTD.

The Corporation of the City of London
300 Dufferin Avenue
P.O. Box 5035
London, ON N6H 5T3

Attn: Chris McIntosh
Engineer, Environmental Services

Subject: West London Dyke Master Repair Plan

Dear Mr. McIntosh,

Thank you for distributing the information for the abovementioned work. The proposed work will be conducted within the London Township Treaty area, to which Chippewas of the Thames First Nation (COTTFN) are a signatory. The proposed work is also located within the Big Bear Creek Additions to Reserve (ATR) Land selection area, as well as COTTFN Traditional territory.

We encourage all project proponents to exercise due diligence in the area of respecting our Aboriginal and Treaty Rights, and any Consultation and Accommodation. A review of the abovementioned project indicates a medium importance for COTTFN with respect to potential impact to our Aboriginal and Treaty Rights. It is our preference to schedule a meeting to discuss project details and expected outcome. Moreover, we look forward to continuing this open line of communication.

Respectfully,

Mary Alikakos
Consultation Coordinator
Chippewa of the Thames First Nation
(519) 289-2662 Ext. 213
malikakos@cottfn.com

c. Cameron Gorrie, Stantec Consulting Ltd.

Chippewas of Kettle & Stony Point First Nation
6247 Indian Lane
Kettle & Stony Point FN, Ontario, Canada N0N 1J1

November 16, 2015

RECEIVED
NOV 19 2015
STANTEC CONSULTING LTD.

Stantec Consulting Ltd.
600-171 Queens Avenue
London, Ontario
N6A 5J7
ATT: Cameron Gorrie, Project Engineer

Dear Mr. Gorrie:

RE: City of London is completing a Master Repair Plan (West London Dyke) within the vicinity of Kettle and Stony Point First Nation's Traditional Territory.

I'd like to take the opportunity to introduce myself as the Consultation Coordinator for Chippewas of Kettle and Stony Point First Nation ("Kettle & Stony Point"). Kettle & Stony Point have asserted it's Aboriginal and Treaty Rights, and Aboriginal Title in their traditional territory ("Traditional Territory") since time immemorial. These constitutionally entrenched rights and title to our Traditional Territory have been legally recognized by the provincial and federal Crowns, as signatories to the Huron Tract Treaty #29.

We are aware that the City of London is either engaged, or is interested in engaging in an activity that is in close proximity to Kettle & Stony Point's Traditional Territory. The First Nation does not require that you engage in consultation with the Chippewas of Kettle & Stony Point; however, in the event the scope of the project changes and/or amendments are made that in any manner involves / impacts our Traditional Territory, please ensure that the First Nation receives notification.

We acknowledge that industry does not have a court-imposed duty to consult with First Nations; however, it is our expectation that if Algonquin Power Co. is either engaging, or is interested in engaging, an activity in Kettle & Stony Point's Traditional Territory, it will have an interest in becoming involved in consultation and accommodation efforts with our First Nation.

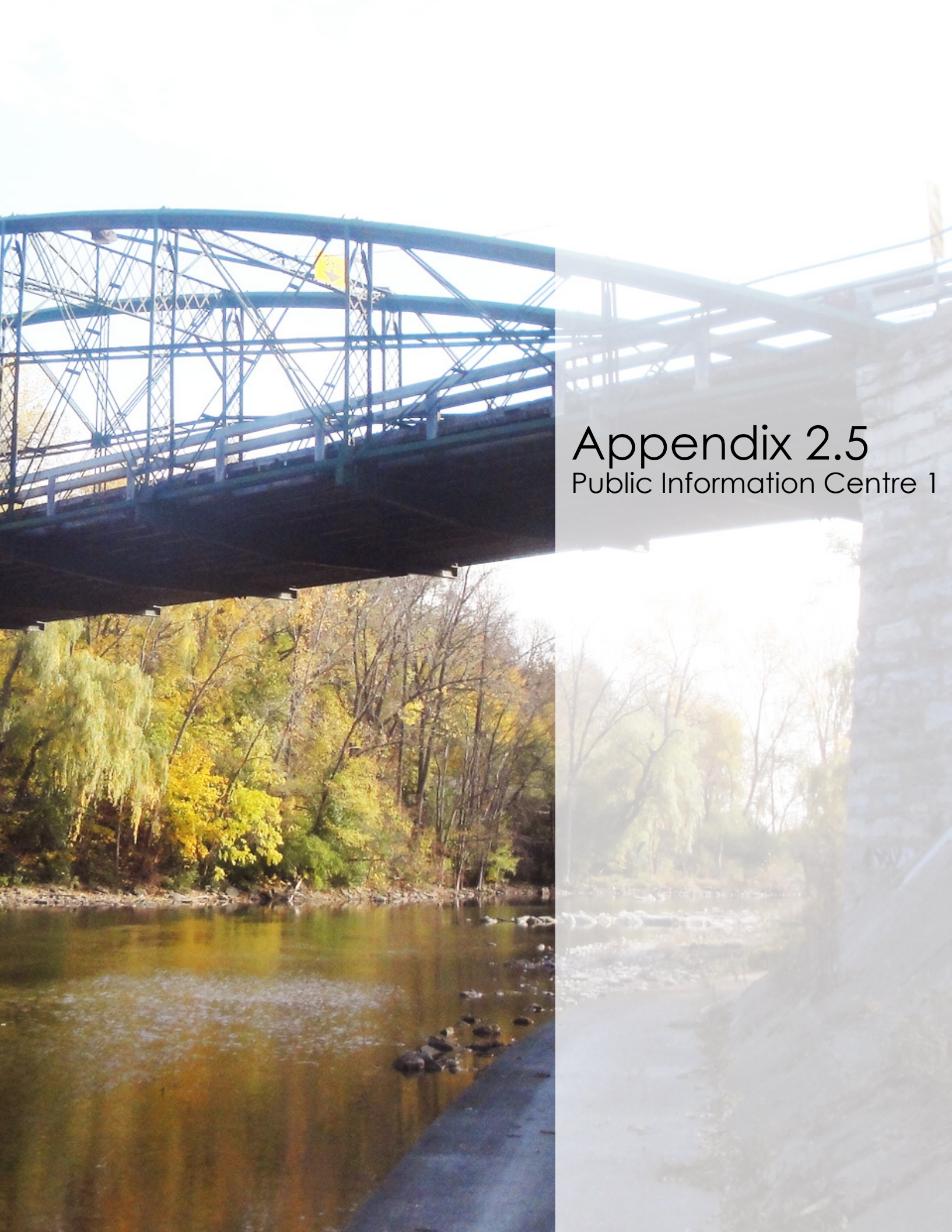
Consequently, if the City of London is prepared to engage in meaningful consultations to understand, address and accommodate our concerns, then Kettle & Stony Point will welcome your participation as a sign of good faith and cooperation and we will respond in kind.

Therefore, on behalf of the Kettle & Stony Point First Nation, we thank you for providing information to our First Nation regarding the above mentioned.

Sincerely,

Suzanne Bressette

K. Suzanne Bressette
Chippewas of Kettle and Stony Point First Nation



Appendix 2.5
Public Information Centre 1

UPPER THAMES RIVER
CONSERVATION AUTHORITY

West London Dyke Master Repair Plan

Public Information Centre #1
Wednesday, June 16, 2010 6-9PM

This Public Information Centre is the 1st of 2.
Its purpose is to inform the public and to receive input with regards to the West London Dyke Master Repair Plan.
The following panels describe the *history*, *recent work* and the *purposes* of this project.

Please feel free to take a handout, along with a comment sheet, which you can fill out at your convenience. Questions relating to a panel or in regards to the project in general can be answered by either City of London, Upper Thames River Conservation Authority or Stantec staff.

INTRODUCTION

The West London Dyke is 2374 m long, comprises of both a concrete and earthen revetment, and runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the main branch to the west side of the Wharncliffe Road Bridge. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities.

PROBLEM OPPORTUNITY STATEMENT

The UTRCA and the City of London are undertaking a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. This study is being conducted in accordance with requirements of Phases 1 and 2 of the Municipal Class Environment Assessment (Class EA) which is an approved process under the Environmental Assessment Act.

The intent of the Master Repair Plan is to develop the required strategic plan to allow the UTRCA and the City to have a method for determining when a trigger point for repair and/or replacement of a portion of the dyke is required.

Historical Information

- When London was settled in the early 1800s, the Thames River offered water, a means of transportation and a power source for mills. Both natives and early settlers had used the low riverside land to the west of the Forks for farming.
- By the late 1800s, the small settlements of London West and Kensington were growing on the banks of the Thames River from their beginnings surrounding water-powered mills. The communities experienced several floods, such as the catastrophic July 1883 flood that killed 17 people. Rather than resettling away from the hazardous areas, the response was to build a formalized dyke system.
- Construction of the West London Dyke, the first of the City's seven dykes to be built, began in the late 1880s. By the early 1900s, the dyke had been reinforced, extended and raised at least twice. The flood of April 1937 overtopped the reinforcements, though, and flooded the communities behind the dyke. Additional raising of the dyke occurred after the 1937 flood on the main branch section and before the 1947 flood. In 1947 some overtopping of the dyke on the North Branch section required evacuations, although flooding was not as deep as in 1937.
- The UTRCA was formed following the 1947 Flood and resulted in a watershed management partnership between the Province of Ontario and watershed member municipalities (including the City of London) to carry out a comprehensive watershed flood control program. Besides the London Dyke system that had existed for some time, additional flood control dams, flood plain management, and land stewardship programs were implemented to further ease the flood pressure on the dykes.



Forks of the Thames, July 2000 Flood

West London Dyke, April 1947 Flood





Source: UTRCA

Forks of the Thames, July 2000 Flood





Previous Work/Rehabilitation

- 1980's Investigations & Repairs
  - Geotechnical Investigation undertaken in October 1982 revealed sections of revetment (dyke) in poor condition with noticeable shifting and tilting. Abrupt changes in slope of facing noted with cracking along concrete surface.
  - Based on investigations undertaken, repair of select sections of dyke including grouting behind panels and improvements to toe structure were completed between 1983 and 1985.
- 2004 Inspection
  - In 2004, the UTRCA undertook a condition assessment of the Thames River dykes within the City, including the West London Dyke. Approximately 350 m of the dyke north from the Queens Avenue Bridge were identified as being the highest priority for repair. This portion was originally built in the 19th century in order to minimize flooding in the West London area.
- 2005 Concrete Repair Program
  - In 2005, while undertaking the initial stages of a concrete repair program on the 350 m segment identified in the 2004 study, it was concluded that a significant portion of this section had come to the end of its useful life and needed to be replaced rather than repaired.
- 2007 Phase I Dyke Replacement
  - The first phase of the project (July to December, 2007) replaced a 300 metre section of the dyke north from Queens Avenue, adjacent to Labatt Park. The new dyke structure is located entirely within the footprint of the previous dyke and provided some improvement to flood height protection.
  - Phase 1 was funded by the MNR Water and Erosion Control Infrastructure Program and the City of London. The total cost of the Phase 1 construction project was $3,600,000.



1980's Repair Work



1980's Repair Work



2005 Concrete Repair Program



2007 Phase I Dyke Replacement

EA Process / Public & Agency Input*

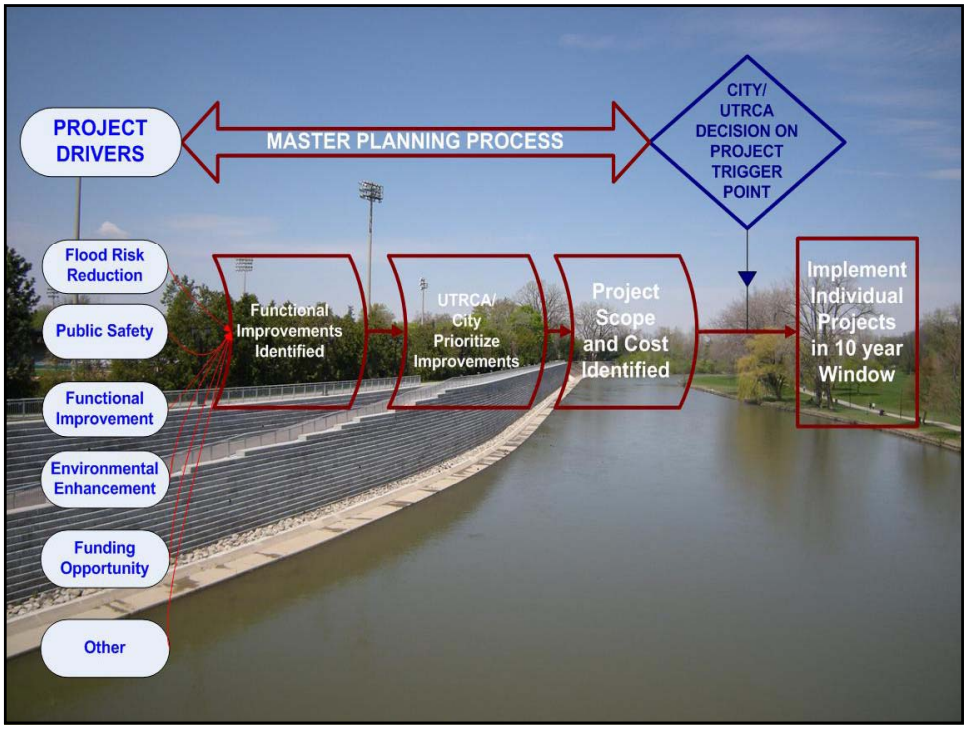
- The purpose of the Ontario Environmental Assessment Act (EA Act) is "the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment". Environment is applied broadly and includes the natural, social, cultural, built and economic components.

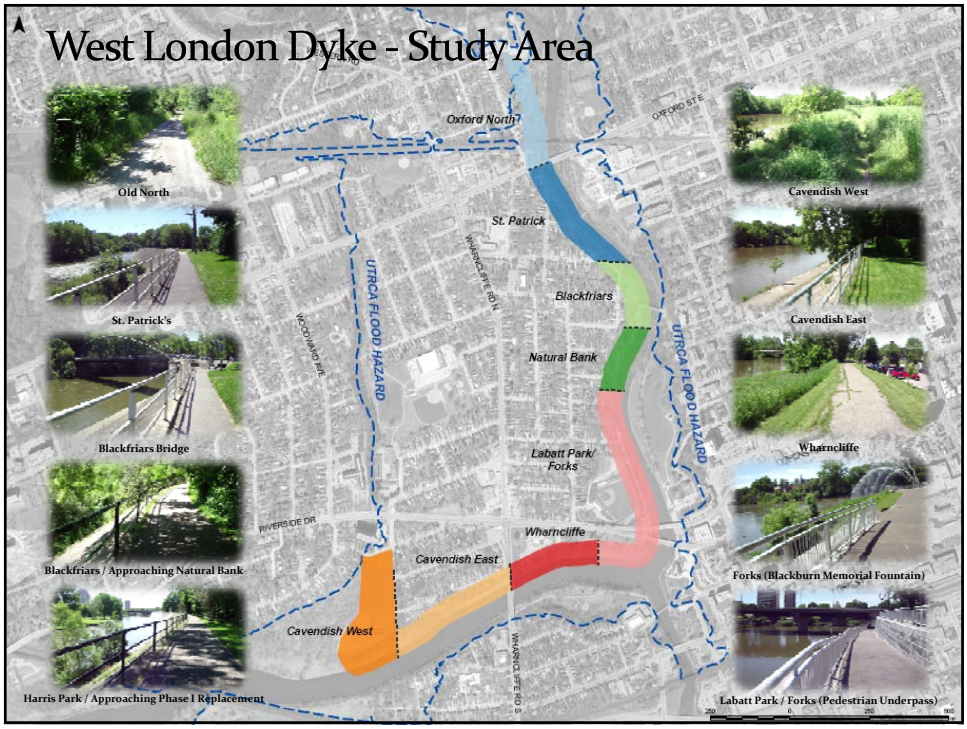
- Environmental Assessment (EA) is a decision making process to promote good environmental assessment planning. The key features are:
  - Early consultation
  - Consideration of reasonable range of alternatives
  - Assessment of environmental effects
  - Systematic evaluation of alternatives
  - Clear documentation and traceable decision making

- Public Involvement
  - The role of those members of the public with an interest in a study is to provide background information to advise the proponent (City of London / UTRCA) of their support and concerns, and to review and provide comments and input about the study findings (as the project progresses – Public Information Centre (PIC) 1 and PIC 2).
  - Members of the public with an interest in the study can ask to be placed on the mailing list to receive notification of the consultation opportunities for the project.

- Municipal Class EA
  - This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class EA which is an approved process under the EA Act.
  - It is anticipated to be a Schedule B Class EA.

** As referenced in the Municipal Class EA Document*


PROJECT DRIVERS
MASTER PLANNING PROCESS
CITY/ UTRCA DECISION ON PROJECT TRIGGER POINT
Flood Risk Reduction
Public Safety
Functional Improvement
Environmental Enhancement
Funding Opportunity
Other
Functional Improvements Identified
UTRCA/ City Prioritize Improvements
Project Scope and Cost Identified
Implement Individual Projects in 10 year Window

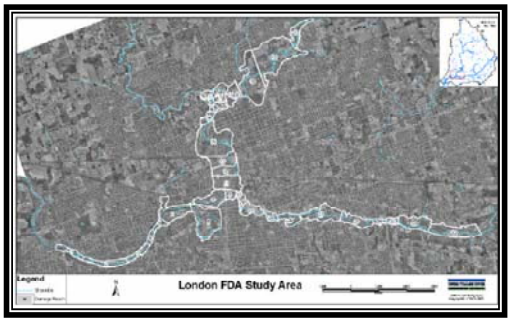

West London Dyke - Study Area
Old North
St. Patrick's
Blackfriars Bridge
Blackfriars / Approaching Natural Bank
Harris Park / Approaching Phase I Replacement
Oxford North
St. Patrick
Blackfriars
Natural Bank
Labatt Park/ Forks
Wharncliffe
Cavendish East
Cavendish West
UTRCA FLOOD HAZARD
UTRCA FLOOD HAZARD
WHARNCLIFFE RD N
WHARNCLIFFE RD S
WOODWARD AVE
RIVERSIDE DR
OXFORD ST E
Cavendish West
Cavendish East
Wharncliffe
Forks (Blackburn Memorial Fountain)
Labatt Park / Forks (Pedestrian Underpass)

Flood Risk Reduction & Public Safety

Project Driver 1 & 2

- Flood Risk Reduction
  - Master Plan will review entire structure as a whole.
  - Flood Damage Estimation in the Upper Thames River Watershed was published in August 2005. Master Plan will provide update to damage cost estimates.
  - Based upon 100 and 250 year design flows and the study area shown in the figure below, the following dollar amounts associated with total estimated flood damages are described below:
    - 100 Year Design Storm ~ $23,000,000 (2005 $'s)
    - 250 Year Design Storm ~ $42,000,000 (2005 $'s)

    ***Work completed in 2007 raised the level of the dyke and may have mitigated/lessened damage amounts*
  - In addition to assessing damage costs, existing dyke elevations will be reviewed in comparison to flood levels to determine areas that may need to be raised.



Flood Damage Estimate Map

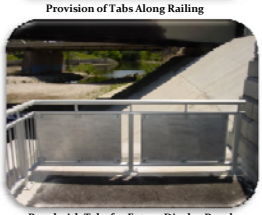
Functional Improvements

Project Driver 3

- Master Repair Plan will involve Integration of Other City Initiatives:
  - Bicycle Master Plan
  - Future Pedestrian Pathways (i.e. future Wharncliffe Bridge Underpass)
  - Thames Valley Corridor Study
  - Previous 2007 Master Plan
  - Panel with tabs for provision of future panel displays
- Consideration will need to be given to the following when determining replacement or rehabilitation work in the future:
  - Amenity
  - Function
  - Durability
  - Constructability
  - Capital Cost & Future Maintenance



Provision of Tabs Along Railing



Panel with Tabs for Future Display Panels



Top of Dyke Pathway Access



Top of Dyke Look-Out



Pedestrian Walkway

Environmental Enhancements

Project Driver 4

- Vegetation Management Plan (Dougan & Associates, 2006):
  - Carried out to identify and prioritize vegetation that currently poses a threat to the structural integrity of the dykes
  - Suggest appropriate removal and remediation methods for the hazard vegetation
  - Develop a plan for the future management of vegetation along the dyke
- Planning must also consider potential implementation of environmental features along and within the areas surrounding the dyke structure, such as:
  - Tree & Shrub Planting
  - Maintenance of existing vegetated areas
  - Aquatic Plantings
- Implement concepts from other planning projects and initiatives (i.e. 2007 Master Plan Document)



Top of Dyke Vegetation

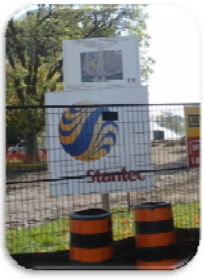


Vegetation at Toe of Dyke

Funding Opportunities

Project Driver 5

- Availability of Capital Funding
  - Provincial / Federal Funding Opportunities & Grants
  - Municipal Funding
- May be replacement, rehabilitation, or extension
- Trigger point to implement future project may be reached sooner on availability of funding (i.e. stimulus funding programs)







Project Sign Boards

Next Steps

- Public Consultation
  - Review of public and agency comments
- Comments from the public are welcomed. Please take a few minutes to complete the 'Comment Sheet' that accompanies the handout you received.
- Technical Review
  - Planning / Environment Review
  - Hydraulic Review
  - Engineering Review of each section of dyke
- Next PIC (tentatively set for late October 2010) to present recommendations
  - Determination of potential future works (repair or replacement)
  - Costing (Planning, Design, Implementation, Maintenance) of each works
  - Trigger Point Determination

Rick Goldt, C.E.T.
Supervisor, Water Control Structures
Upper Thames River Conservation Authority
1424 Clarke Road
London ON N5V 5B9
Tel: (519) 451-2800 x 244
Fax: (519) 451-1188

Billy Haklander, P.Eng.
Environmental Services Engineer Stormwater Management Unit
Environmental and Engineering Services Department
City of London
300 Dufferin Avenue, 9th Floor
London ON N6A 4L9
Tel: (519) 661-2500 x5862
Fax: (519) 661-2355

Michele Oxlade, B.Sc., EMX
Environmental Coordinator
Stantec Consulting Ltd.
800-171 Queens Avenue
London ON N6A 5J7
Tel: (519) 6445-2007 x240
Fax: (519) 645-6575

For additional information throughout the duration of this project, please visit
http://www.london.ca/d.aspx?s=/Sewer_and_Wastewater/default.htm

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1
June 16, 2010

COMMENT SHEET

Name:

Mailing Address:

Interest (*i.e.* property owner, agency):

1. **Do you live within the proposed study area? Yes / No**

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please <u>circle</u> on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	1	2	3	4	5
Amenity	1	2	3	4	5
Architecture	1	2	3	4	5
Heritage/History	1	2	3	4	5
Lighting/Security	1	2	3	4	5
Other _____	1	2	3	4	5

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

4. **Other comments or concerns.**

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1

June 16, 2010

COMMENT SHEET

Please place comments in the box provided or submit comments to the following:

Michele Oxlade, B.Sc., EMX
Environmental Assessment Coordinator
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 645-2007
Fax: (519) 645-6575
michele.oxlade@stantec.com

This comment sheet will be included as part of the Municipal Class EA process and handled in accordance with MFIPPA requirements.

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre 1
June 16th 2010

Attendance Sheet

Name (please print)	Mailing Address (please print)	Interest in Project (*i.e.* property owner, business owner, agency)	Would like to receive further information about this project (yes/no)
Christine Kelsey	6 Saint Patrick ST London	Property owner	yes
Jean Delaney	7 Carrothers Ave	property owner	
Jason Jordan	60 Blackfriars St	Renter	
Dwight Bender	112-25 Becher St London	owner	
Angela Goulet	13 Leslie St London	owner	YES
Joey McElroy	13 Leslie ST LONDON	OWNER	NO
Richard Dwyer	9 Cummings Ave London	owner	yes
Shirley + John Clement	2 Carrothers Ave	owners	yes
Judy Bynt	City Council		Yes
Barb + Marcel Goulet	116 Wilson Ave.	owners	Yes
Steve Coleltens	13 Empress Ave. London	owner	Yes
J. Johnston	10 Carrothers	owner	yes
Joe Dwyer	105 Forward Ave	Owners	NO
Chuck Grawbarg	80 Cavendish Cr	Owner	Yes

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre
June 16, 2010

Attendance Sheet

Name (please print)	Mailing Address (please print)	Interest in Project (*i.e.* property owner, business owner, agency)	Would like to receive further information about this project (yes/no)
TATTERSALL CAROL + MICHAEL	20 EMPRESS AVE N6H 1H5	property owner	yes.
JEAN FARRER	33 RIVERVIEW AVE LONDON N6J 1A3	property owner	✓

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre 1
June 16, 2010

Attendance Sheet

Name (please print)	Mailing Address (please print)	Interest in Project (*i.e.* property owner, business owner, agency)	Would like to receive further information about this project (yes/no)
Wendy Dench	21 Blackfriars St.	property owner	yes
Jim Nolan	56 Argyle St	property owner	yes
David Heap	85 Forward Ave	property owner	yes.
Les Peterson	8 W Yatt.	P.O.	Yes
Robyn Harvey	21 Riverview Ave	property	yes
John Tyrrell	66 Pond Lane Cres	Citizen of London	NO
Laurie Burch	37 Riverview Ave	London	yes
Sharon Lowery	105 Forward Ave	London	yes
Linda McCabe	906-110 Cheryfield Circle	London	yes

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1
June 16, 2010

COMMENT SHEET

Name:

Mailing Address:

Interest (*i.e.* property owner, agency):

1. **Do you live within the proposed study area? Yes / No**

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please <u>circle</u> on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	1	2	3	4	5
Amenity	1	2	3	4	5
Architecture	1	2	3	4	5
Heritage/History	1	2	3	4	5
Lighting/Security	1	2	3	4	5
Other _____	1	2	3	4	5

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

4. **Other comments or concerns.**

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1

June 16, 2010

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Phone: (519) 645-2007
Fax: (519) 645-6575
michele.oxlade@stantec.com

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Oxlade, Michele

From: Oliveira, Nelson
Sent: Thursday, June 24, 2010 8:15 AM
To: Oxlade, Michele
Subject: FW: message from Dr. Erika Simpson

Follow Up Flag: Follow up
Flag Status: Flagged

FYI.

Nelson Oliveira, P.Eng.
Associate, Environmental Infrastructure
Stantec
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 240
Fx: (519) 645-6575
nelson.oliveira@stantec.com
stantec.com

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Please consider the environment before printing this email.

From: Erika Simpson [mailto:simpson@uwo.ca]
Sent: Tuesday, June 15, 2010 11:13 AM
To: Oliveira, Nelson
Cc: 'Erika V Simpson'
Subject: message from Dr. Erika Simpson

Nelson Oliveira, P.Eng.
Project Manager
Associate, Environmental
Infrastructure
Stantec Consulting Ltd.
800-171 Queens Avenue
London, ON N6A 5J7
Tel: (519) 451-2800 x244 Tel: (519) 661-2500 x5862 Tel: (519) 645-2007

Dear Mr. Nelson Oliveira:

Thank you so much for taking the time to discuss with me the status of the current Master Plan for the Western Dyke along the Thames River in London. I appreciated your comments regarding the status of the master plan and Stantec's role in soliciting public views at this early stage of the design process.

As I am unable to attend the first of the two public meetings, I wanted to comment that when the design work is undertaken, it might be better to reduce the strength of the overhead lighting in the area overlooking the flood plane. Of course, security concerns of pedestrians at night should be an important concern but as there will be no underpass under the Blackfriar's Bridge, it may not be necessary to install floodlights beaming into the river and nearby Blackfriar's Park. I have noticed over the last 12 years (while living at 10 Cummings Avenue) that

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June 16, 2010

COMMENT SHEET

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Name: Steve Walters

Mailing Address: 13 Empress Ave. N6H 1M6

Interest (*i.e.* property owner, agency): owner

1. **Do you live within the proposed study area?** (Yes) / No

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please circle on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	1	2	3	(4)	5
Amenity	1	2	(3)	4	5
Architecture	1	(2)	3	4	5
Heritage/History	1	2	3	4	(5)
Lighting/Security	(1)	2	3	4	5
Other _____	1	2	3	4	5

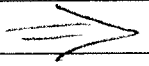
3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

I like what has been done so far. A wide path to accommodate pedestrians + cyclists, new railings, attractive vista from Harris Park.

On the negative side, the fountain is useless + unappealing, there is not enough garbage pick-ups done along the entire pathway system, and the new lighting is too excessive.

4. **Other comments or concerns.**

Living directly adjacent to the pathway north of Blackfriars Bridge, my main concerns are as follows:



the flood plane is the home for a huge diversity of birds and animals. Accordingly, I hope that the final plans to replace the dilapidated concrete consider the lighting when (if ever) the old dyke is replaced.

I would also like to congratulate you and your company on the reconstruction that has been undertaken thus far. The new dyke wall is aesthetically pleasing. The sidewalk beside the river itself is safe and pleasant to stroll upon. The new railings increase safety and are also a visible asset to the City of London.

Congratulations on your good work so far!

Sincerely,

Associate Professor Erika Simpson
Room 4157, Department of Political Science
Social Science Building
University of Western Ontario
London, Ontario, CANADA, N6A 5C2

Office Telephone: (519)-661-2111, ext. 85156
Office Fax: (519) 661-3904
Email: simpson@uwo.ca
Webpage: http://politicalscience.uwo.ca/faculty/simpson/

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1
June 16, 2010

COMMENT SHEET

1. What is the plan for the mature trees along the section of path at the end of Empress Ave. (they are close to the path)? Will they be replaced in some fashion?

2. If the lighting is as abundant as the newest section, it will be like trying to sleep in a Stadium ... and a waste of electricity.

3. How will the removal of old materials be handled?

4. Will there be compensation for those of us who are likely to be directly impacted during the excavation/construction phase?

Thank You.

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michele.oxlade@stantec.com

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Public Information Centre #1
June 16, 2010

COMMENT SHEET

Name: Wendy Dench

Mailing Address: 21 Blackfriars St.

Interest (*i.e.* property owner, agency): property owner

1. **Do you live within the proposed study area?** (Yes) / No

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please circle on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	1	2	3	4	(5)
Amenity	1	2	3	4	5
Architecture	1	2	3	(4)	5
Heritage/History	1	2	3	4	(5)
Lighting/Security	1	2	3	(4)	5
Other _____	1	2	3	4	5

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

love it! I walk my dog all along the river from Oxford, past Blackfriars to Dundas & back along the other side. I have only lived in this area for 2 years & I want to keep my house & my basement safe & dry.

4. **Other comments or concerns.**

I am sure you will, but please keep a bike path/lane included in plans. Closing of Blackfriars Bridge to vehicles would be fantastic!

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1

June 16, 2010

COMMENT SHEET

6/10/10

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June 16, 2010

COMMENT SHEET

Name: David Heap

Mailing Address: 85 Forward Ave

Interest (*i.e.* property owner, agency): property owner

1. **Do you live within the proposed study area? Yes / No** (just outside (across the street))

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please circle on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	1	2	3	4	(5)
Amenity	1	2	3	(4)	5
Architecture	1	2	(3)	4	5
Heritage/History	1	2	3	(4)	5
Lighting/Security	1	2	3	4	(5)
Other _____	1	2	3	4	5

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

Underpass - outstanding!

Fountain - no comment

Phase 1 replacement ~~- not~~ overall good but attention needs to be paid to the direction of lighting so as not to "flood" residential areas ~~with~~ (and homes!) with public lighting.

4. **Other comments or concerns.**

the historical info is important - much appreciated.

West London Dyke Master Repair Plan
Municipal Class EA

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COMMENT SHEET

Name: Christine Kelsey

Mailing Address: 6 Saint Patrick ST.

Interest (*i.e.* property owner, agency): Property Owner

1. **Do you live within the proposed study area? (Yes) / No**

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please circle on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility to river	1	2	3	4	(5)
Amenity	1	2	3	4	(5)
Architecture	1	2	(3)	4	5
Heritage/History	1	2	3	(4)	5
Lighting/Security	1	(2)	3	4	5
Other _____	1	2	3	4	5

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

Great to have the sidewalk under the bridge - it makes biking along the path much safer!

Lighting is good for an area next to Labbatt Park, but would be too bright for the more residential areas

4. **Other comments or concerns.**

* Access to the river on the west side at St. Patrick St is very important - Many people scramble down the slope to fish + to sit at the edge, + even to boat down the river.

West London Dyke Master Repair Plan
Municipal Class EA

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June 16, 2010

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COMMENT SHEET

Name: JAMES NOLAN

Mailing Address: 56 ARGYLE ST

Interest (*i.e.* property owner, agency): PROPERTY OWNER

1. **Do you live within the proposed study area?** (Yes) No

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please circle on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	(1)	2	3	4	5
Amenity	(1)	2	3	4	5
Architecture	(1)	2	3	4	5
Heritage/History	(1)	2	3	4	5
Lighting/Security	(1)	2	3	4	5
Other MAINTAINABILITY	(1)	2	3	4	5

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

THE DYKE REPLACEMENT SEEMS TO BE A GOOD AESTHETIC MODEL FOR FUTURE WORK & RAILINGS MUCH BETTER THAN THE EASILY VANDALISED ALUMINUM RAILS NORTH OF BLACKFRIARS. THE PEDESTRIAN UNDERPASS IS GREAT VERY FUNCTIONAL BUT COMFORTABLE TO USE AS WELL. FOUNTAIN LOOK NICE - BUT UPKEEP COSTS...?

4. **Other comments or concerns.**

MY WIFE & I HAVE BEEN VERY CONCERNED WITH THE STATE OF THE RAILINGS & DYKES NORTH OF BLACKFRIARS (W. SIDE). VANDALISM TO RAILS SEEMS ALMOST CONSTANT & HAS BEEN QUITE DANGEROUS AT TIMES.

West London Dyke Master Repair Plan
Municipal Class EA

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June 16, 2010

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Public Information Centre #1
June 16, 2010

COMMENT SHEET

Name: SHIRLEY + JOHN CLEMENT

Mailing Address: 2 CARROTHERS AVE. LONDON N6H1J5

Interest (*i.e.* property owner, agency): PROPERTY OWNER

1. **Do you live within the proposed study area?** (Yes) No

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please circle on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	1	(2)	3	4	5
Amenity	1	2	3	4	5
Architecture	1	2	(3)	4	5
Heritage/History	1	(2)	3	4	5
Lighting/Security	1	2	3	4	(5)
Other TREES + WILDLIFE	1	2	3	4	(5)

I don't know what you mean by this → a balance between safety concerns & light pollution

Are we suppose to put these order or rat each categ

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

We like the plantings that have been done & are glad that the cedar hedge around Labatt's Park was preserved. We do not support the increased width of the walkway. We wish that an integrated plan had been developed first that took current scientific info. about climate change into account.

4. **Other comments or concerns.** We are very concerned about the trees along the walkway and would hope that any construction will do everything possible to save the existing trees - esp. the huge cottonwoods and the trees we have planted adjacent to the walkway at the edge of our property. We do not support the walkway being any wider than it currently is; there is no need for the city to be a slave to uniformity everywhere in the city.

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1
June 16, 2010

COMMENT SHEET

We would hope that thoughtful native species can be planted between the dyke & the river on the wide flood plane area between Cherry & the Blackfriars Bridge. This vegetation now provides a screen that we value highly & we suspect it helps to mitigate the excessive noise from Harris Park during "Rock the Park".

We are also very concerned about the issue of light pollution. At present there is a light standard on the walkway at the back of our garage which produces more light at night than we like. We do understand the need for light at night for safety - esp. for women walking alone - but there is no need for the lights to be so high. We hope something can be designed that is perhaps shorter, less bright - and with baffles on the back to direct the light onto the path rather than into our private backyards & verandahs.

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michele.oxlade@stantec.com

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Perhaps most importantly we hope that no further construction will proceed until the whole river corridor study is completed. We want a thoughtful integrated plan that takes into account the issue of climate change along the whole river rather than a series of isolated bandaids.

West London Dyke Master Repair Plan
Municipal Class EA

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Public Information Centre #1
June 16, 2010

COMMENT SHEET

Name: JAN DELADEY

Mailing Address: 7 CARROTHERS AVE

Interest (*i.e.* property owner, agency): PROPERTY OWNER

1. **Do you live within the proposed study area?** (Yes) / No

2. **Along with protection of life and property, what other features of the dyke are important to you? (Please circle on a scale of 1 – 5, with 1 being least important and 5 being most important.)**

Accessibility	1	2	3	4	(5)
Amenity	1	2	(3)	4	5
Architecture	1	2	3	4	(5)
Heritage/History	1	2	3	4	(5)
Lighting/Security	1	2	3	4	(5)
Other _____	1	2	3	4	5

3. **What is your opinion on the works completed to date?**
Phase 1 Dyke Replacement (2007), Blackburn Memorial Fountain (2008), Dundas/Queens Pedestrian Underpass (2009), etc.

DYKE - IS GOOD, IF A BIT UGLY, BUT THE PLANTINGS WHICH WERE GREAT WHEN NEW ARE NOT BEING MAINTAINED.

FOUNTAIN - VERY NICE. WHY IS THE LARGE ONE TURNED OFF SO OFTEN?

UNDERPASS - GREAT ADDITION

4. **Other comments or concerns.**

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #1

June 16, 2010

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Fax: (519) 645-6575
michele.oxlade@stantec.com

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From: Jason Jordan [jason.jordan.id@gmail.com]
Sent: Monday, June 21, 2010 9:58 AM
To: Oxlade, Michele
Subject: West London Dyke Comment Sheet

Follow Up Flag: Follow up
Flag Status: Flagged

Hello,

Here is my comment sheet for the West London Dyke Master Repair Plan

Name: Jason Jordan
Address: 60 Blackfriars St
Interest: Tenant
1. Do you live within the proposed study area? yes
2…
Accessibility: 5
Amenity: 4
Architecture: 5
Heritage / History: 3
Lighting / Security: 5
3. What is your opinion on the works completed to date?
Dyke Replacement
- I do like the Great Wall, and it does add afternoon shade to a part of the river. Might be too much if the whole dyke to be the same style.
- For the lights, I do not like. It can look like a black wall and at night it is very bright The light should meet, when can the Dark Sky Association standards. Also, the Victorian style of the lights does not match any of the architecture of West London which is mostly Gothic and Art & Crafts. I would like to see the same style of new lights, being used in Harris Park and the Fork of the Thames, to be used. The light put lights downward and dose not bleed upwards to hide the stars. To be using the same styles lights, and other amenities along the river between Oxford, Wharncliffe and King, it would unified the parks, into one big loop. Also, only 1/3 or at least a 1/2 of the lights are needed. In Harris Park the lights are spread much farther apart and still very much light the path. The problem with the old lights on the path, many of them are in trees and the branches are blocking the light.
Blackburn Memorial Fountain.
I do like it after it was built, just for a few minor issues.
- The control/electrical boxes at the top the dyke, blocks the view of the Wharncliffe Bridge when on the trail, coming from Dundas St. And Blocks

the view of the Fountain when walking the other way. If it was place on the other side of the trail, away for the river, it would hardly me notice.

- The asphalt had many dips, and water to pools open along the edges, in front of the fountain, making it more icy in winter.
- It looks like the nooses needs to be adjusted abit to me the pattern that is wanted.

Underpass.

- I really like the raise and landing patterns for the north side access, and hope that would be added to trails with large hills which there is a land to place it.
- I would like there still be access to the Dyke's Toe. I enjoy running along it, other people like to fish; the only spot you can walk a long distance so close to the river.

4. Other Comments

- I want to have Underpasses under Wharncliffe and Oxford Bridges and under the CP Bridge if possible.
- Where possible, have the dyke natural instead of case by concrete, these places could be Wharncliffe and Natural Back.
- Have the Labatts Parks/Forks dyke style extend to the Natural bank, I believe would be fine.
- If the Multi-use pathway is extend to Gibson Footbridge or/and Springbank Footbridge; the use the dyke pathway would really increase, and the wants the users the get to and from Downtown would increase too. The Dundas bridge does not work well for a high use trail connection. I believe a new footbridge would need to be built south of the Dundas Bridge. (Something like the old Streetcar Bridge). I vision it, on the dyke side, about 10 metres south of the Bridge, to the Ivey Park side at the 4-way intersection where can go either under or on Dundas, or near or away from the river. I feel a support for the bridge should be built when the dyke is replace to save money.



Appendix 2.6
Public Information Centre 2



West London Dyke Master Repair Plan

Phases 1 and 2 of the Municipal Class Environmental Assessment Process

Public Information Centre #2
February 23, 2012

London CANADA

UPPER THAMES RIVER CONSERVATION AUTHORITY

One Team. Infinite Solutions

Stantec

Presentation Outline

- Introduction
- Problem Identification
- Background
- Guiding Principles
- Project Study Area and Environment
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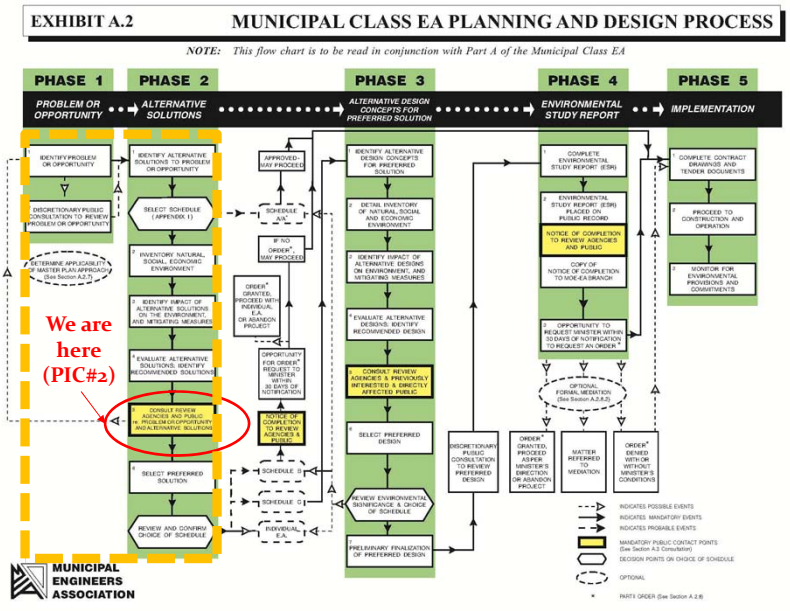
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- This is the second public meeting for the West London Dyke (WLD) Master Repair Plan (MRP)
- The Upper Thames River Conservation Authority (UTRCA) in partnership with the City of London (City) are undertaking this MRP to assist in the overall planning for the dyke and to:
  - Ensure key problems and opportunities are identified
  - Update previous 2007 Amenity Master Plan
  - Provide an overview of the dyke condition, level of protection, and constraints
  - Provide general recommendations and design guidelines
  - Provide for implementation of solutions on a cost effective, sustainable, and timely basis
- This MRP has been undertaken through the MEA Class EA process (Phases 1 and 2 of process)
- This is the second and last Public Information Centre (PIC)

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Problem Identification

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Problem Statement for the West London Dyke Master Repair Plan

"*The UTRCA and the City of London are undertaking a Master Repair Plan (MRP) covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives.* "

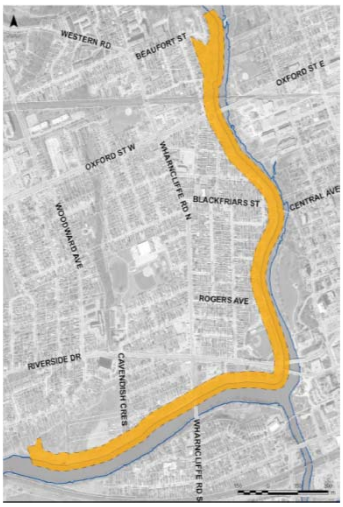
The intent of the MRP is to develop the required strategic plan to allow the UTRCA and the City to have a method for determining when a trigger point for repair and/or replacement of a portion of the dyke is required.

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- The West London Dyke is 2374m long, consists of both a concrete and earthen revetment, and runs along the west bank of the North Branch of the Thames River and along the west bank of the main branch
- The City owns the dyke and the UTRCA undertakes major maintenance activities through an agreement
- The WLD is primarily an engineered structure, which protects life and property during periods of extreme river flows



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- Construction of the WLD began in the late 1880's, and by the early 1900's the dyke had been reinforced, extended and raised at least twice
- The flood of April 1937 overtopped the reinforcements, prompting further raising of the dyke prior to the 1947 flood, in which flooding was less severe (along the North Branch)





- Subsequent floods in March 1977, September 1986, September 1997, July 2000, and April & December 2008 did not breach the dyke
- In addition to serving a critical control function, the dyke is also an integral part of the City's recreational pathway system and is a prominent structure in the downtown core

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- In 2004, a condition assessment of the dyke was undertaken and revealed the need to repair sections of the dyke
- In 2007 an approximate 300 m of concrete revetment between Rogers Avenue and Queens Avenue Bridge was replaced with a near vertical wall to the Regulatory Flood Level (1:250) at an approximate cost of $3.5 M
- In 2009, a pathway extension below the Queens Avenue Bridge and Dundas Street Bridge was completed and included further dyke replacement at a total cost of $1.1 M
- Recent inspection work undertaken since 2004 suggests further degradation of the dyke has occurred
- With exception of the Phase 1 work undertaken in 2007, the majority of the dyke is below the current Regulatory Flood Level
- Despite recent replacement work, it is anticipated that over a period of years, additional sections will also need to be replaced or areas enhanced for additional flood protection or to integrate other City initiatives

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Guiding Principles

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The following principles were established to guide future requirements relating to repairs/replacement of the West London Dyke:

- Primary purpose of the dyke is to provide flood protection, therefore any changes should consider:
  - Level of flood protection needed, including freeboard
  - Type of flood protection (passive or active)
  - Identification of active flood protection areas and process periodic reviews as part of overall Flood Management Strategy
  - Consideration for climate change impacts
- Recognizing the dyke as a significant feature, identify opportunities to incorporate amenity and functional improvements as per 2007 Amenity Master Plan
- Preference should be for long-term versus short-term solutions
- Identify opportunities to incorporate environmental considerations

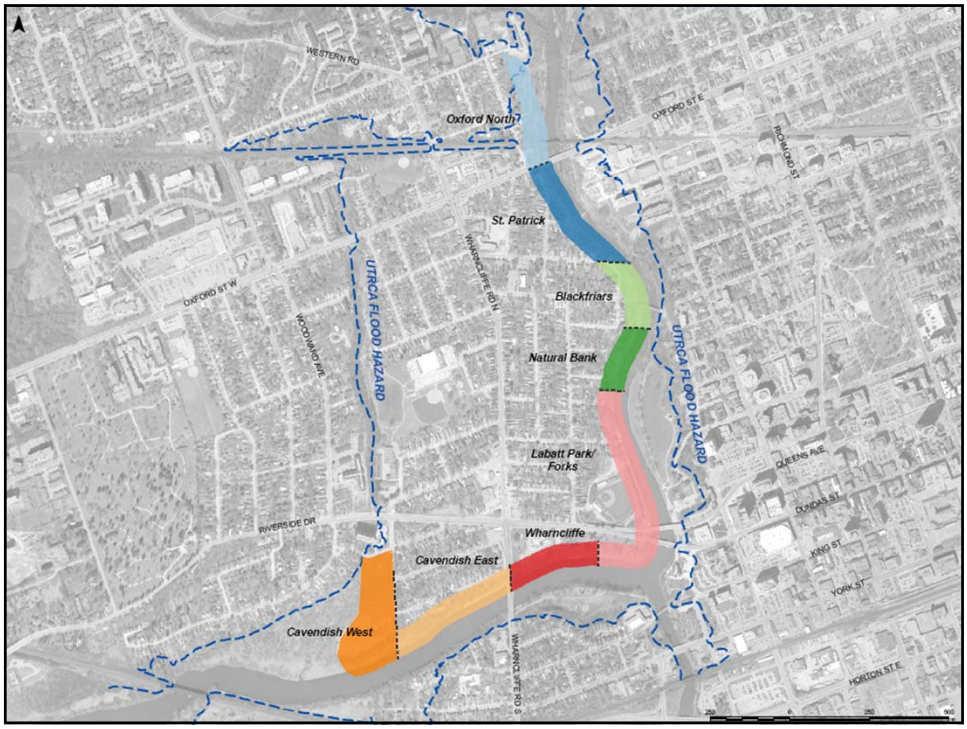
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Project Study Area and Environment

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- The subject area generally reaches from the Oxford Street Railway Bridge, south along the west side of the Thames River, to Cavendish Park
- Given the length of the West London Dyke, major differences in the structure, level of flood protection provided, condition and surrounding land use, there is a need to subdivide the dyke into segments as noted in PIC #1
- Following segments were determined:
  - Oxford North
  - St. Patrick's (Oxford to Empress)
  - Blackfriars (Empress to Cummings)
  - Natural Bank (Cummings to Leslie)
  - Labatt Park/Forks (Leslie to Dundas)
  - Wharncliffe (Dundas to Wharncliffe)
  - Cavendish East
  - Cavendish West
- These segments are not intended to represent exact limits for future works. Segments may be further broken down or may overlap to suit staging and other issues

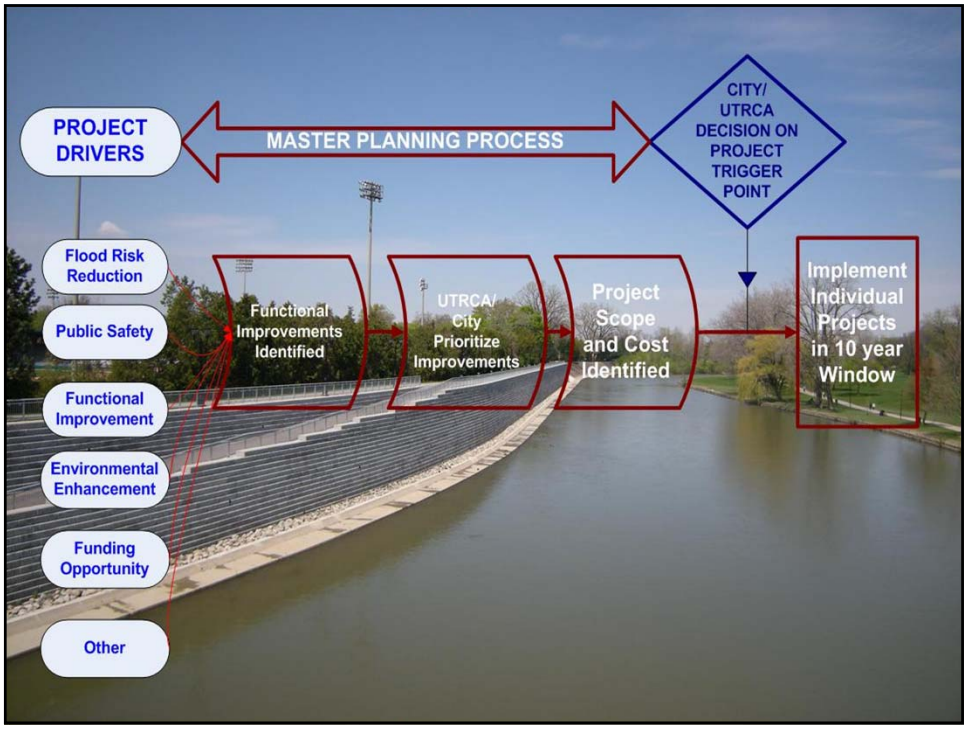
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Project Drivers

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- Project drivers are defined as potential reasons to implement or otherwise initiate work
- The following six project drivers were established through consultation with the Project Team and based on the guiding principles:
  - Flood Risk Reduction – reduce risk of flooding, support SPA designation, address policy requirements
  - Public Safety – address aging infrastructure, improve amenities related to safety, river access considerations
  - Functional Improvements – pathway extensions, considerations from Thames Valley Corridor Study and Bicycle Master Plan
  - Environmental Considerations – impacts to existing vegetation and opportunities for enhancement
  - Funding Opportunities – availability of funds to undertake work
  - Other (to be determined through the MEA process) – based on stakeholder input and additional issues noted through planning process
- These same project drivers were noted in PIC #1



General Evaluation Criteria

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- In order to assess the alternative solutions, general evaluation criteria were established
  - Natural Environment: protection of natural and physical elements (i.e., air, water, land, etc.)
  - Social Environment: potential effects on public (landowners, community groups, social elements, historical factors, etc.)
  - Economic: capital and maintenance costs, flood damage impacts
  - Legal: potential land requirements
  - Technical: technical requirements and suitability of each alternative

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Natural Environment

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- Study area located within the jurisdiction of Upper Thames River Watershed: Forks Watershed
- West London Dyke is within the Regulated Limit
- A review of the natural environment is a requirement of the EA process
- Purpose for MRP is to characterize the significance and sensitivity of the natural features in the study area, identify potential impacts and recommend measures to mitigate and minimize negative impacts
- Based on current document review, 58 fish species and 23 freshwater mussel species have been recorded within the Forks Watershed of which six species of fish and six species of mussels are designated as Species at Risk (SAR)

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- Previous vegetation surveys have not indicated any vascular plant species at risk in the area
- 7 potential wildlife SAR are noted, however unlikely that many of these species are actually present within the study area
- Future works may require detailed field review/investigations and implementation of mitigation and protection measures

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Socio-Economic Review

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- There are currently 1100 structures located behind the WLD that are within the Regulatory Flood Line (250 year level)
- The area protected by the dyke is a significant cultural base, with construction dating back prior to annexation in 1897
- Land use adjacent to the dyke is primarily residential, with open space areas, limited commercial development, and recreation facilities
- Many heritage features are also present in the area (Blackfriars Bridge and Labatt Park)
- Current City of London Official Plan identifies the areas protected by the dyke as Potential Special Policy Areas
- Economic considerations must balance cost for future works versus maintenance costs versus potential for flood damage
- Cost to replace dyke is est. at $26.1 M (-10% to +40%) to achieve existing level of protection
- Flood damage estimates suggest potential for ~$1.1 M to 1:100 year level and ~$50.9 M to 1:250 year level (2012 CDN)

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Engineering Review (Legal and Technical)

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- As part of the MRP, preliminary engineering review was undertaken to determine potential land issues (legal) and performance/legacy issues (technical)
- Land:
  - There is as little as 5 m between existing property lines and top of dyke
  - Land considerations include need for access to and from site, room to place equipment and materials to construct the project, and physical room to place the structure
  - Issues such as temporary haul routes, construction easements, and work in river may need to be considered depending on final design
- Performance:
  - Future replacement projects should consider the major functional, operational, and safety issues as noted for Phase 1 work and updated as necessary to incorporate stakeholder input and policy changes that may occur over time

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- Performance (Cont'd):
  - Additional technical consideration will also need to address
    - Opportunities for green design
    - Impacts on need for permits and approvals (i.e., work in river, etc.)
    - Impacts relating to climate change
    - Freeboard for new dyke structure
    - Passive versus active flood protection

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- Legacy:
  - Due to the location of the dyke and previous work completed to raise the structure, there is a risk of impacted soils in the area
  - Future works must consider and budget for removals and/or look to minimize disturbance of these materials





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- As part of the Class EA planning process, reasonable and feasible alternative solutions are to be identified and the net positive and negative effects noted
- Development of alternatives considered:
  - Review of Guiding Principles
  - Review of Environmental Components (Natural, Socio-Economic, Legal, Economic, Technical)
  - Review of existing dyke profile, structure and condition, site constraints
  - Planning Initiatives

The following alternatives have been identified:

- Alternative 1: Do Nothing
- Alternative 2: Replace with Similar Structure (Existing Footprint)
- Alternative 3: Replace with New Dyke to 100 Year Standard + Freeboard
- Alternative 4: Replace with New Dyke to 250 Year Standard + Freeboard

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Review of Alternatives

Option	Impact on Natural Environment	Impact on Social Environment	Impact on Economic Environment
1. Do Nothing	• No impact (subject to condition of dyke)	• No impact (subject to condition of dyke) from existing, but limited opportunity for amenity and functional improvements	• Does not provide protection against Regulatory Flood • Highest anticipated maintenance costs • Does not address current deficiencies with concrete revetment and therefore will not be considered further for those sections • For lower risk areas and areas north and west of dyke, this option will be considered further

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Review of Alternatives

Option	Impact on Natural Environment	Impact on Social Environment	Impact on Economic Environment
2. Replace with Similar Dyke (Existing Footprint)	• Least impact to natural environment (with exception of Do Nothing) as it involves work within the same footprint • In-river work may still be required due to site access issues	• "Status quo" option intended to minimize change to the nearby areas • Limited opportunity for amenity and functional improvements	• Does not provide protection against Regulatory Flood • Lower cost than Alternatives 3 and 4 (~$21.3M in 2012 CDN excluding new sections)

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Review of Alternatives

Option	Impact on Natural Environment	Impact on Social Environment	Impact on Economic Environment
3. Replace with New Dyke to 100 Year + Freeboard	• Would require work outside of the existing footprint • In-river work may also be required	• Opportunity for amenity and functional improvements • Land acquisition not anticipated	• Does not provide protection against Regulatory Flood • Lower cost than Alternative 4 (~$26.8M in 2012 CDN)

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Review of Alternatives

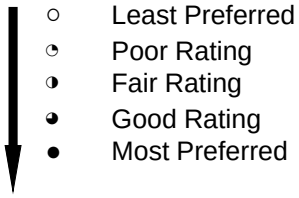
Option	Impact on Natural Environment	Impact on Social Environment	Impact on Economic Environment
4. Replace with New Dyke to 250 Year + Freeboard	• Would require work outside of the existing footprint • In-river work may also be required	• Opportunity for optimal amenity and functional improvements • Land acquisition / easements not anticipated, although exact extent to be confirmed through design based on location of new structure from river	• Would provide protection against Regulatory Flood • Highest cost in comparison to other options due to increased height (~$29.2M in 2012 CDN) • Anticipated to result in lowest overall life-cycle costs when considering long-term maintenance and potential for topping of dyke • Extension of the dyke to the north and west may be required to address additional flood protection requirements

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Selection of Preferred Alternative

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- To maintain consistency with City of London Master Plan and Class EA projects, subjective evaluation of each alternative for each segment was based on the following system



- Refer to Display Boards which includes an assessment of the impacts to the environment and qualitative evaluation of each alternative for each segment

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- Based on the preferred selection for each general segment, the preferred alternative, order of magnitude cost, and estimated project implementation period was developed
- In assessing alternatives, it is recognized that segments defined may overlap in terms of preferred alternatives and construction (i.e. one segment may have different solutions and may be constructed over different periods of time)
- Timelines noted are estimated based generally on condition and overall reduction in flood damages. Exact timelines may vary based on other project drivers
- Interim repair works may also help to bridge the timeline between replacement projects

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- Prior to undertaking any future works, additional approvals (i.e., Class EA commitments, field reviews, DFO, UTRCA, etc.) may be required depending on extent of project and will be defined during preliminary design phase

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Segment	Section	Type	Preferred Alternative	Estimated Cost	Implementation Schedule	Priority Ranking
Oxford North	North of south limit of Oxford St. Bridge	Concrete Revetment	Alt. 4	$1.8M / ($771K w/o pathway)	10 + Years	8
St. Patrick	Oxford St. to St. Patrick St.	Concrete Revetment	Alt. 4	$2.6M	5 to 10 Years	4
	St. Patrick St. to Empress Avenue	Concrete Revetment	Alt. 4	$2.7M	5 to 10 Years	5
Blackfriars	Empress Avenue to Blackfriars St.	Concrete Revetment	Alt. 4	$3.0M / ($2.0M w/o pathway)	1 to 5 Years	2
	Blackfriars St. to Cummings Ave.	Concrete Revetment	Alt. 4	$2.0M	1 to 5 Years	3
Natural Bank	Cummings Ave. to Leslie St.	Concrete Revetment (Naturalized Toe)	Alt. 4	$3.2M	10 + Years	6
Labatt Park/Forks	Leslie St. to Rogers Ave.	Concrete Revetment	Alt. 4	$2.3M	1 to 5 Years	1
	Rogers Ave. to Queens Ave. Bridge	Modular Block Wall with Geogrid	Alt. 1	N/A	10 + Years (work completed in 2007/08)	---
	Queens Ave. extending south to Forks	Natural Bank with Gabions	Alt. 4	N/A	10 + Years	9 (assumed to coincide with Wharncliffe segment work)

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Segment	Section	Type	Preferred Alternative	Estimated Cost	Implementation Schedule	Priority Ranking
Wharncliffe	From Forks to Wharncliffe Rd. Bridge	Natural Bank with Gabions	Alt. 4	$4.0M / ($2.9M w/o pathway)	**10 + Years**	9
Cavendish East	Wharncliffe Rd. Bridge extending west	Concrete Revetment	Alt. 4	$2.5M	**10 + Years**	7
	From termination of concrete revetment extending west to City Works Yard	Natural Bank/Berm	Alt. 4	$2.5M	**10 + Years**	10
Cavendish West	From City Works Yard extending north, the west along adjacent property limits	Vegetated Berm	Alt. 4	$1.1M	**10 + Years**	10

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- ANTICIPATED CAPITAL COST AND PROJECT IMPLEMENTATION SCHEDULE
- **NEXT STEPS**
- COMMUNICATIONS
- QUESTIONS

- Collect and Review Agency Comments
- Collect and Review Public Comments
- Review and Confirm Solutions and Identify Potential Future Requirements (Class EA Commitments/Schedules for each Project)
- Prepare Project File
- Advertise Study Completion and Post for 30-Day Review
- Finalize Master Plan

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Communications

- INTRODUCTION
- PROBLEM IDENTIFICATION
- BACKGROUND
- GUIDING PRINCIPLES
- PROJECT STUDY AREA AND ENVIRONMENT
- PROJECT DRIVERS
- GENERAL EVALUATION CRITERIA
  - NATURAL ENVIRONMENT
  - SOCIO-ECONOMIC REVIEW
  - ENGINEERING (LEGAL AND TECHNICAL)
- REVIEW OF ALTERNATIVES
- SELECTION OF PREFERRED ALTERNATIVE
- ANTICIPATED CAPITAL COST AND PROJECT IMPLEMENTATION SCHEDULE
- NEXT STEPS
- **COMMUNICATIONS**
- QUESTIONS

Thank you for your participation in the Master Plan process. We would be pleased to answer any questions you have this evening or you may feel free to contact us at your convenience.

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Stantec


Questions
& Answers
Questions & Answers
Questions & Answers
Answers
Stantec

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre
February 23, 2012

Attendance Sheet

Name (please print)	Mailing Address (please print)	Interest in Project (*i.e.* property owner, business owner, agency)	Would like to receive further information about this project (yes/no)
B. Krichker			
G. Mitsis.			
P Mitsis			
J Gordon	60 Blackfriars St		
GRAYDON KNIGHT	10 OAKWOOD DRIVE LONDON		
Robert Austin	49 Riverview Ave	property owner	yes
Barb + Marcel Goulet	5 Leslie St. London	property owner	yes
JUDY BRYANT	COUNCIL		
John Rose	65 St Arthur	owner	Yes
C Kelsey	" " "	"	"
Debbie Dunn	52 Forward Ave	Owner	yes
J Johnston	10 Carrothers	owner	yes
CHRIS NAINES			

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #2
Thursday February 23, 2012

COMMENT SHEET

Name: Christine Kelsey
Mailing Address: 6 Saint Patrick St.
Interest (*i.e.* property owner, agency): Property Owner
Comments:

Many people walk up and down the revetment at the end of St. Patrick for fishing, boating, + enjoying sitting by the water.

I hope this public access will remain part of this area of the dyke.

Please place comments in the comment box provided or submit comments to the following:

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Stantec Consulting Ltd.
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London ON N6A 5J7
Phone: (519) 645-2007
Fax: (519) 645-6575
michele.oxlade@stantec.com

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #2
Thursday February 23, 2012

COMMENT SHEET

Name:
Mailing Address:
Interest (*i.e.* property owner, agency):
Comments:

Please place comments in the comment box provided or submit comments to the following:

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Appendix 2.7
Public Information Centre 3

West London Dyke Master Repair Plan

Public Information Centre #3

Thursday, September 10th, 2015 4:30pm-6:30pm

The purpose of this meeting is to inform the public of the updates to the project, and to get input before the finalization of the project.
The following panels describe the ***purpose*** and ***history*** of the project, along with the ***recent updates***.

Once you have reviewed the information presented here, please take a comment sheet which you can fill out and return by **Thursday September 24, 2015**. Questions relating to a panel or in regards to the project in general can be answered by either City of London, Upper Thames River Conservation Authority or Stantec staff.

INTRODUCTION

The West London Dyke is 2374 m long, comprised of both a concrete and earthen revetment, and runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the main branch to the west side of the Wharncliffe Road Bridge. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities. The intent of the Master Repair Plan is to develop the required strategic plan to allow the UTRCA and the City to have a method for determining when a trigger point for repair and/or replacement of a portion of the dyke is required.

STUDY UPDATE

The study was put on hold early in 2013 pending updates to flood elevation information. With this new information now available, Stantec is in the process of completing the Master Repair Plan.

PROBLEM OPPORTUNITY STATEMENT

The UTRCA and the City of London are undertaking a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. This study is being conducted in accordance with requirements of Phases 1 and 2 of the Municipal Class Environment Assessment (Class EA) which is an approved process under the Environmental Assessment Act.

West London Dyke - Study Area



Old North



St. Patrick's



Blackfriars Bridge



Blackfriars / Approaching Natural Bank



Harris Park / Approaching Phase I Replacement



Cavendish West



Cavendish East



Wharncliffe



Forks (Blackburn Memorial Fountain)



Labatt Park / Forks (Pedestrian Underpass)

Oxford North

St. Patrick

Blackfriars

Natural Bank

Labatt Park/ Forks

Wharncliffe

Cavendish East

Cavendish West

OXFORD ST E

WHARNCLIFFE RD N

WHARNCLIFFE RD S

WOODWARD AVE

RIVERSIDE DR

UTRCA FLOOD HAZARD

UTRCA FLOOD HAZARD

250 0 250 500 m

Historical Information

- When London was settled in the early 1800s, the Thames River offered water, a means of transportation and a power source for mills. Both natives and early settlers had used the low riverside land to the west of the Forks for farming.
- By the late 1800s, the small settlements of London West and Kensington were growing on the banks of the Thames River from their beginnings surrounding water-powered mills. The communities experienced several floods, such as the catastrophic July 1883 flood that killed 17 people. Rather than resettling away from the hazardous areas, the response was to build a formalized dyke system.
- Construction of the West London Dyke, the first of the City's seven dykes to be built, began in the late 1880s. By the early 1900s, the dyke had been reinforced, extended and raised at least twice. The flood of April 1937 overtopped the reinforcements, though, and flooded the communities behind the dyke. Additional raising of the dyke occurred after the 1937 flood on the main branch section and before the 1947 flood. In 1947 some overtopping of the dyke on the North Branch section required evacuations, although flooding was not as deep as in 1937.
- The UTRCA was formed following the 1947 Flood and resulted in a watershed management partnership between the Province of Ontario and watershed member municipalities (including the City of London) to carry out a comprehensive watershed flood control program. Besides the London Dyke system that had existed for some time, additional flood control dams, flood plain management, and land stewardship programs were implemented to further ease the flood pressure on the dykes.

Source: UTRCA



Forks of the Thames, July 2000 Flood

West London Dyke, April 1947 Flood





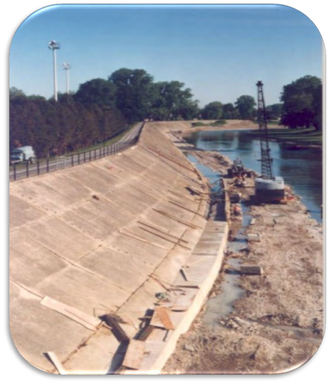
Forks of the Thames, July 2000 Flood





Previous Work/Rehabilitation

- 1980's Investigations & Repairs
  - Geotechnical Investigation undertaken in October 1982 revealed sections of revetment (dyke) in poor condition with noticeable shifting and tilting. Abrupt changes in slope of facing noted with cracking along concrete surface.
  - Based on investigations undertaken, repair of select sections of dyke including grouting behind panels and improvements to toe structure were completed between 1983 and 1985.
- 2004 Inspection
  - In 2004, the UTRCA undertook a condition assessment of the Thames River dykes within the City, including the West London Dyke. Approximately 350 m of the dyke north from the Queens Avenue Bridge were identified as being the highest priority for repair. This portion was originally built in the 19th century in order to minimize flooding in the West London area.
- 2005 Concrete Repair Program
  - In 2005, while undertaking the initial stages of a concrete repair program on the 350 m segment identified in the 2004 study, it was concluded that a significant portion of this section had come to the end of its useful life and needed to be replaced rather than repaired.
- 2007 Phase I Dyke Replacement
  - The first phase of the project (July to December, 2007) replaced a 300 metre section of the dyke north from Queens Avenue, adjacent to Labatt Park. The new dyke structure is located entirely within the footprint of the previous dyke and provided some improvement to flood height protection.
  - Phase 1 was funded by the MNR Water and Erosion Control Infrastructure Program and the City of London. The total cost of the Phase 1 construction project was $3,600,000.



1980's Repair Work



1980's Repair Work



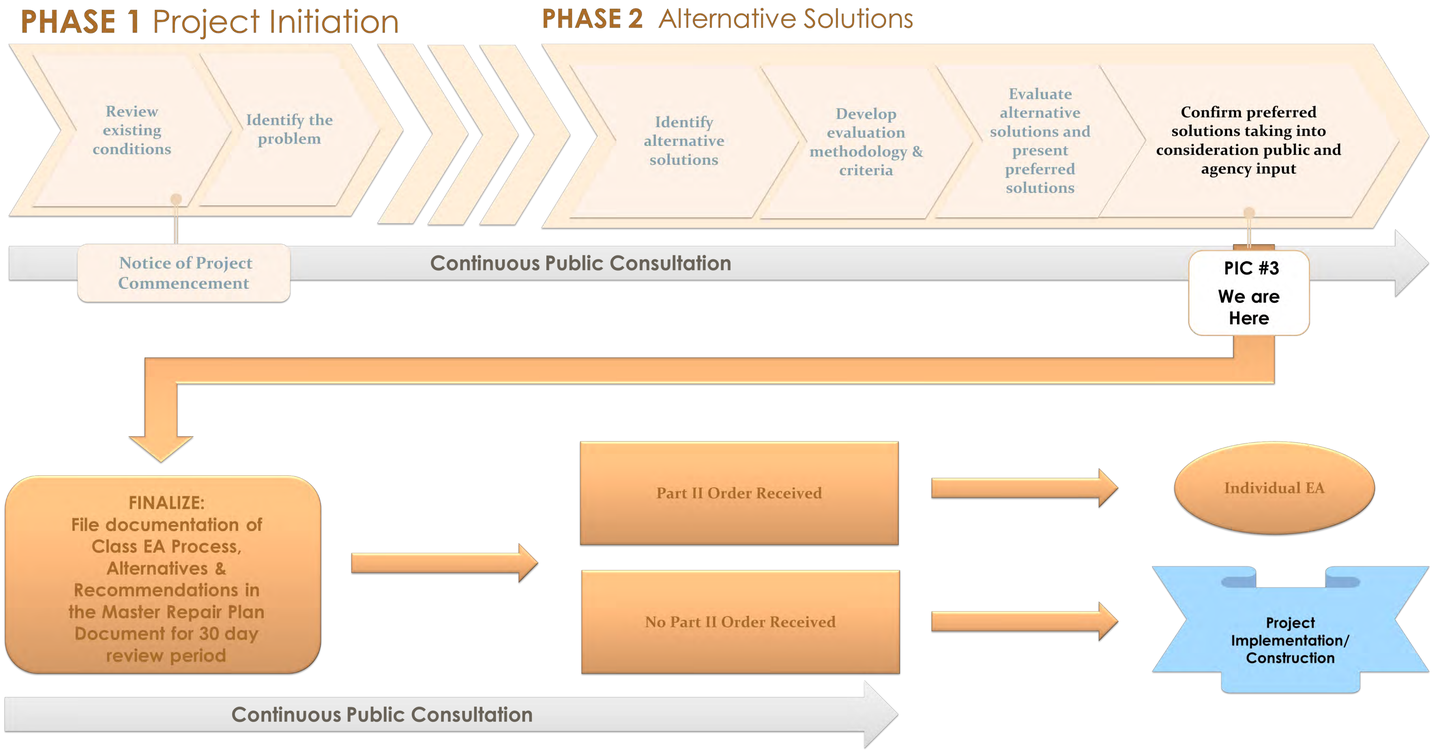
2005 Concrete Repair Program



2007 Phase I Dyke Replacement

EA Master Plan Process/Public & Agency Input*

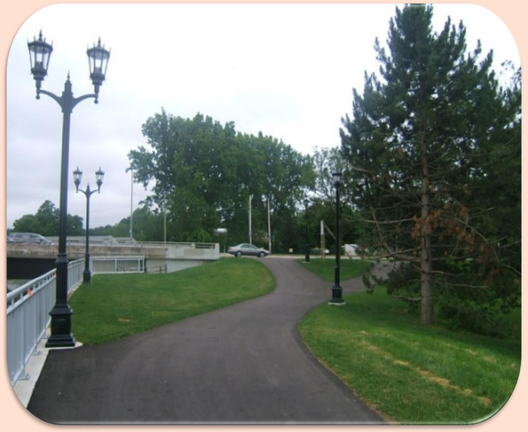
- **Environmental Assessment (EA) is a decision making process to promote good environmental assessment planning. The key features are:**
  - Early consultation with all interested parties (public, agency, Aboriginal communities, and stakeholders)
  - Consideration of reasonable range of alternatives
  - Assessment of environmental effects
  - Systematic evaluation of alternatives
  - Clear documentation and traceable decision making
- **Public Involvement**
  - The role of those members of the public with an interest in a study is to provide background information to advise the proponent (City of London / UTRCA) of their support and concerns, and to review and provide comments and input about the study findings
  - Members of the public with an interest in the study can ask to be placed on the mailing list to receive notification of the consultation opportunities for the project.
- **Master Plans**
  - The Master Plan approach was developed to recognize the benefits of considering a group of related projects over a long period
  - At a minimum, Master Plans address Phases 1 and 2 of the Municipal Class EA process, and provide a framework for future projects



** As referenced in the Municipal Class EA Document*

Project Drivers









Flood Risk Reduction & Public Safety

- The Master Plan will provide updates to the Damage Cost Estimates published by the UTR Watershed in 2005
- The 100-Year Design Storm repair costs are estimated at $49 million
- The 250-Year Design Storm repair costs are estimated at $60 million
- In addition to assessing damage costs, existing dyke elevations will be reviewed in comparison to flood levels to determine areas that may need to be raised

Functional Improvements

- The Master Plan will involve integration with other City initiatives (Bicycle Master Plan, future pedestrian pathways, etc.)
- Future rehabilitation work will have consideration for amenity, function, durability, constructability, capital costs

Environmental Enhancements

- The Master Plan will address the future management of vegetation along the dyke that currently poses a threat to the structural integrity of the dykes (Dougan & Associates, 2006)
- The Master Plan will also consider potential implementation of environmental features along and within the areas surrounding the dyke structure including the planting of trees and shrubs, aquatic planting, and the maintenance of existing vegetation

Funding Opportunities

- The Master Plan will consider the availability of Municipal, Provincial, and Federal funding opportunities
- Funding opportunities (stimulus funding programs, etc.) will be considered as a ‘trigger point’ for the timing of implementation of future projects

Next Steps

- Public Consultation - Comments from the public are encouraged. Please take a few minutes to complete the 'Comment Sheet' provided, and either place it in the box provided, or forward to the address provided on the form by **Thursday, September 24th 2015**.
    - All comments received will be addressed and incorporated into the final Master Repair Plan.
- Completion of the Master Repair Plan Document
    - The Master Repair Plan Document will be finalized, which will outline the a repair and implementation schedule based on the trigger points identified
    - A **Notice of Completion** will be issued, and the Master Repair Plan document will be made available for the mandatory **30 day public review period**. During this time, any comments or concerns expressed will be addressed and the document modified. If there are concerns that cannot be addressed within the 30-day review period, members of the public can contact the Minister of the Environment to request a Part II Order, bumping up the status of the project.
    - If no Part II Orders are received, the project is completed and the Master Repair Plan will serve as the framework for future work on the West London Dyke.

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UPPER THAMES RIVER CONSERVATION AUTHORITY

London CANADA

Stantec

Segment	Approximate Length (m)	Condition Rating	Type	Flood Elevation			Lowest Elevation (mASL)	Approx. # of Properties within Hazard Area	Est. Current Flood Damage 100yr/250yr	Alternatives	Compliance with Guiding Principles		Natural Environment	Social Cultural	Economic/Financial		Future Class EA Requirements	Technical Issues / Requirements	Preferred Alternative
				100 yr (mASL)	250 yr (mASL)	250 yr + 10% (mASL)					Flood Protection	Amenity/Functional Improvements			Estimated Capital Costs[2]	Estimated Maintenance Costs			
													-Potential impacts to the natural environment due to siting requirements	-Short-term construction related impacts including traffic, noise, access -Potential siting or routing issues, including impacts to cultural or heritage (archaeological), impacts to recreational use	-Initial cost to undertake the alternative	-Estimated maintenance and/or operational requirements	-Anticipated Class EA requirements to implement project	-Ability to implement alternative -Consideration for constructability of proposed solution, timing, potential for disruptions - Ability of the solution to suit potential regulatory requirements	Least Preferred ○ ◔ ◑ ◕ ● Most Preferred
Oxford North	50	2	Concrete Revetment with Toe	236.81 to 236.80	237.51 to 237.50	238.09 to 238.07	~237.4	20	$245,000 / $1,125,000	**Alternative 1**: Do Nothing	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension.	None identified as no work is proposed.	None identified as no work is proposed.	None identified.	Highest maintenance costs over the planning period due to concrete distress.	Not applicable.	Existing dyke may require replacement within 20 year period due to condition.	○ Not preferred as it does not meet the guiding principles for the dyke. Also, it is anticipated that structure may need replacement within 20 year horizon.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension.	Least impact compared to Alternatives 3 and 4.	Least impact compared to Alternatives 3 and 4 relating to construction activities.	$590,000 (excludes pathway)	No significant maintenance costs anticipated.	Schedule B	Work within vicinity of Oxford Street Bridge. No anticipated issues noted.	◔ This option not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway upgrades (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints and potential need to construct future pathway beneath Oxford St. Bridge, however impacts can be mitigated through best management practices.	Moderate increased impact compared to Alternative 2, but can be mitigated using best management practices.	$1,840,000 (includes pathway)	No significant maintenance costs anticipated.	Schedule B	Work within vicinity of Oxford Street Bridge. In order to accommodate amenity/functional improvements, slope of dyke may be increased. In addition, extension of the dyke to the north may be required to address the enhanced flood protection.	◑ Viable solution, however it does not provide protection to Regulatory Level. Opportunity to incorporate active flood protection measures due to proximity to nearby road for access.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including pathway upgrades (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints and potential need to construct future pathway beneath Oxford St. Bridge, however impacts can be mitigated through best management practices.	Moderate increased impact compared to Alternative 2, but can be mitigated using best management practices.	$1,950,000 (includes pathway)	No significant maintenance costs anticipated.	Schedule B	Due to limited footprint, slope of dyke would need to increase to accommodate height increase. Would need to consider impact on flood storage due to reduction in cross section area. In addition, extension of the dyke to the north may be required to address the enhanced flood protection.	● Preferred solution as it best meets the guiding principles. Impacts through construction can be mitigated through best management practices. Costs for enhancement are comparable to 100 year structure.
St. Patrick	350	2	Concrete Revetment with Toe	236.80 to 236.47	237.50 to 237.17	238.07 to 237.77	236.9	200	$3,531,000 / $9,541,000	**Alternative 1**: Do Nothing	Currently provides up to 100 year flood protection with minimal freeboard. Does not meet Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	None identified.	Highest maintenance costs over the planning period	Not applicable	Existing dyke likely to require replacement within 20 year period due to current condition.	○ Not preferred as it does not meet the guiding principles for the dyke. Existing condition of dyke would indicate that replacement versus repair is likely required within the 20 year planning period.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Provides up to 100 year flood protection. Does not meet Regulatory Flood Level requirements.	Current pathway does not meet City standards. Presence of City owned land would permit potential Butterfly/Bird Watching garden.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Minimal impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$5,200,000	No significant maintenance costs anticipated.	Schedule B	Construction/staging constraints.	○ This option not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including potential Butterfly/Bird Watching garden near existing park (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$5,200,000	No significant maintenance costs anticipated.	Schedule B	In order to accommodate amenity/functional improvements, slope of dyke may be increased. Construction staging and access may be difficult.	◑ Viable solution, however it does not provide protection to Regulatory Level. Opportunity exists to incorporate active flood protection measures due to proximity to nearby roads for access. However, significant measures would be necessary to accommodate length of entire section.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including potential Butterfly/Bird Watching garden near existing park (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Increase in elevation may require placement of structure closer to toe.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$5,525,000	No significant maintenance costs anticipated.	Schedule B	In order to accommodate increased height to 250 year level (+ freeboard), and amenity/functional improvements, increase dyke slope may be required. Would need to consider impact on flood storage due to reduction in cross section area.	● Preferred solution as it best meets the guiding principles. Significant number of properties protected by dyke in this area, therefore passive protection to 250 year level (+ freeboard) is preferable. Cost/benefit advantage over Alternative 3 is significant.
Blackfriars	260	2	Concrete Revetment with Toe	236.47 to 236.23	237.17 to 236.94	237.77 to 237.53	236.3	210	$8,723,000 / $9,730,000	**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities. Deficiencies along pathway noted that would require action.	None identified as no work is proposed.	None identified as no work is proposed.	None identified.	Highest maintenance costs over the planning period.	Not applicable.	Existing dyke likely to require replacement within 20 year period due to current condition.	○ Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Current pathway does not meet City standards. This option would not allow additional amenity/functional improvements including lookout area and pathway beneath bridge due to proximity to adjacent lands.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. No impact to Blackfriars Bridge anticipated.	$3,800,000 (excludes pathway)	No significant maintenance costs anticipated.	Schedule B	Construction/staging constraints.	○ This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4. Not preferred as structure would not meet 100 year flood protection or meet Regulatory Flood Levels.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway beneath Blackfriars Bridge and Lookout Area (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Staging requirements may call for removal of vegetation along south boundary.	Moderate impact based on construction activities, but can be mitigated using best management practices. No impact to Blackfriars Bridge anticipated.	$5,100,000 (includes pathway)	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Potential for Schedule C EA requirement due to presence of Blackfriars Bridge and potential transportation impacts.	In order to accommodate amenity/functional improvements, slope of dyke may be increased.	◑ Viable solution, however it does not provide protection to Regulatory Level. Opportunity to incorporate active flood protection measures due to proximity to nearby roads for access.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including pathway beneath Blackfriars Bridge and Lookout Area (per 2007 Master Plan Concept).	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Staging requirements may call for removal of vegetation along south boundary.	Moderate impact based on construction activities, but can be mitigated using best management practices. No impact to Blackfriars Bridge anticipated, but likely subject to final dyke elevation.	$5,415,000 (includes pathway)	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Potential for Schedule C EA requirement due to presence of Blackfriars Bridge and potential transportation impacts.	In order to accommodate amenity/functional improvements and increase in dyke height, slope of dyke may be increased.	● Preferred solution as it best meets the guiding principles. It is anticipated that additional increase in height of ~1.5m would be sufficient to provide 250 yr + protection. Significant number of properties protected by dyke in this area, therefore passive protection to 250 year level (+ freeboard) is preferable. Cost/benefit advantage over Alternative 3 is significant.
Natural Bank	230	4	Concrete Revetment with Naturalized Toe	236.23 to 236.35	236.94 to 237.08	237.53 to 237.67	236.0	180	$8,256,000 / $9,100,000	**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	None Identified	Highest maintenance costs over the planning period.	Not applicable	None identified.	◔ Not preferred as it does not meet the guiding principles for the dyke. Invasive species in area could result in further damage to the dyke. Not preferred as it does not meet 100 year flood protection or the Regulatory Flood Level.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Current pathway does not meet City standards. This option could still allow additional amenity/functional improvements including enhanced playground area as per 2007 Master Plan Concept behind dyke.	Potential significant impact to existing vegetated area. Could require substantial clearing and grubbing, however mostly invasive species noted. Marginal impact to river. Work in river not anticipated.	Moderate impact based on construction activities, but can be mitigated using best management practices. Work in river not anticipated.	$3,030,000	No significant maintenance costs anticipated, however, if segment is to remain vegetated, minor vegetation control costs should be budgeted.	Schedule B	Need to determine extent of dyke (as it is partially buried by deposition), could require significant earthworks.	◑ This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 3 or 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including enhanced playground area and river access (per 2007 Master Plan Concept).	Potential significant impact to existing vegetated area. Could require substantial clearing and grubbing, however mostly invasive species noted. Marginal impact to river. Work in river not anticipated.	Moderate impact based on construction activities, but can be mitigated using best management practices. Work in river not anticipated.	$3,250,000	No significant maintenance costs anticipated, however, if segment is to remain vegetated, minor vegetation control costs should be budgeted.	Schedule B	Need to determine extent of dyke (as it is partially buried by deposition), could require significant earthworks.	◕ Viable solution, however it does not provide protection to Regulatory Level. Would negatively impact mature vegetation along the dyke face, but could be mitigated using proper planning and best management practices.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including enhanced playground area and river access (per 2007 Master Plan Concept).	Potential significant impact to existing vegetated area. Could require substantial clearing and grubbing, however mostly invasive species noted. Marginal impact to river. Work in river not anticipated.	Moderate impact based on construction activities, but can be mitigated using best management practices. Work in river not anticipated.	$3,470,000	No significant maintenance costs anticipated, however, if segment is to remain vegetated, minor vegetation control costs should be budgeted.	Schedule B	Need to determine extent of dyke (as it is partially buried by deposition), could require significant earthworks.	● Preferred solution as it best meets the guiding principles. Significant number of properties protected by dyke in this area, therefore passive protection to 250 year level (+ freeboard) is preferable. Cost/benefit advantage over Alternative 3 is significant.

Segment	Approximate Length (m)	Condition Rating	Type	Flood Elevation			Lowest Elevation (mASL)	Approx. # of Properties within Hazard Area	Est. Current Flood Damage 100yr/250yr	Alternatives	Compliance with Guiding Principles		Natural Environment	Social Cultural	Economic/Financial		Future Class EA Requirements	Technical Issues / Requirements	Preferred Alternative
				100 yr (mASL)	250 yr (mASL)	250 yr + 10% (mASL)					Flood Protection	Amenity/Functional Improvements			Estimated Capital Costs[2]	Estimated Maintenance Costs			
													-Potential impacts to the natural environment due to siting requirements	-Short-term construction related impacts including traffic, noise, access -Potential siting or routing issues, including impacts to cultural or heritage (archaeological), impacts to recreational use	-Initial cost to undertake the alternative	-Estimated maintenance and/or operational requirements	-Anticipated Class EA requirements to implement project	-Ability to implement alternative -Consideration for constructability of proposed solution, timing, potential for disruptions - Ability of the solution to suit potential regulatory requirements	Least Preferred ○ ◔ ◑ ◕ ● Most Preferred
Labatt Park/Forks	135	3	Concrete Revetment with Toe	236.35 to 236.32	237.08 to 237.05	237.67 to 237.65	236.0	340	$21,967,000 / $23,522,000	**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	None identified	Highest Maintenance Costs over the planning period	Not applicable	Existing dyke likely to require replacement within 20 year period due to current condition.	○ Not preferred as it does not meet the guiding principles for the dyke
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Current pathway does not meet City standards. This option could not allow additional amenity/functional improvements including look out area to Harris Park as per 2007 Master Plan Concept behind dyke.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Large trees located near property line likely impacted based on existing footprint.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$1,840,000	No significant maintenance costs anticipated.	Schedule B	Construction/staging constraints.	◔ This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 4. Not preferred as structure would not meet 100 year flood protection or meet Regulatory Flood Levels.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway widening and ability to incorporate look out area depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Impact to large trees located near property line may be minimized depending on placement of wall.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,275,000	No significant maintenance costs anticipated.	Schedule B	In order to accommodate amenity/functional improvements, slope of dyke may be increased.	◑ Viable solution, however it does not provide protection to Regulatory Level. Opportunity to incorporate active flood protection measures due to proximity to nearby roads for access.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~ 0.6 m freeboard.	Allows opportunities for improvements including pathway widening and ability to incorporate look out area depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners). Impact to large trees located near property line may be minimized depending on placement of wall.	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,500,000	No significant maintenance costs anticipated.	Schedule B	Consider same type of dyke structure as Phase I for continuity/ connection at Rogers Ave.	● Preferred solution as it best meets the guiding principles. It is anticipated that additional increase in height of ~1.5m would be suffcient to provide 250 yr + protection. Cost/benefit advantage over Alternative 3 is significant.
Labatt Park/Forks	300	4	Concrete Modular Block Wall with Geogrid (2007 - 2009 Replacement Projects)	236.32 to 236.23	237.05 to 236.95	237.65 to 237.55	236.8			**Alternative 1**: Do Nothing	Current structure provides up 100 year flood protection.	Amenity/functional improvements identified in 2007 construction	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Minor maintenance required, primarily along lower pathway.	Not applicable	Not applicable	◕ Viable alternative.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not meet revised Regulatory Flood Level.	Generally not applicable due to current condition of the dyke (not anticipated to need replacement within the 20 year study period). Amenities were incorporated as part of replacement phase.	Limited impact anticipated due to availability of lands for staging, etc. and setback of river to property line.	Moderate impact based on construction activities, but can be mitigated using best management practices.	$4,440,000	No significant maintenance costs anticipated.	Schedule B	Construction/staging constraints.	X Not applicable. Structure constructed in 2007 and not anticipated to require replacement within 20 year planning period.
										Alternative 3: Replace w 100 yr + Freeboard	Not applicable as current modular wall provides above 100 year limit. This option would not meet Regulatory Flood Level.	Generally not applicable due to current condition of the dyke (not anticipated to need replacement within the 20 year study period). Amenities were incorporated as part of replacement phase.	Limited impact anticipated due to availability of lands for staging, etc. and setback of river to property line.	Moderate impact based on construction activities, but can be mitigated using best management practices.	$4,660,000	No significant maintenance costs anticipated.	Schedule B	Construction/staging constraints.	X Not applicable. Structure constructed in 2007 and not anticipated to require replacement within 20 year planning period.
										Alternative 4: Replace with 250 yr + Freeboard	Current structure provides up to Regulatory Flood Level but does not provide up to the revised Regulatory Flood Level plus freeboard.	Generally not applicable due to current condition of the dyke (not anticipated to need replacement within the 20 year study period). Amenities were incorporated as part of replacement phase.	Limited impact anticipated due to availability of lands for staging, etc. and setback of river to property line.	Moderate impact based on construction activities, but can be mitigated using best management practices.	$5,000,000 (includes entire wall reconstruction. Cost estimate of $245,000 for raising of the existing wall)	No significant maintenance costs anticipated.	Schedule B	Construction/staging constraints.	● Replacement not viable. Consideration given to raising of the dyke is the preferred solution.
	175	4	Natural Bank with Gabion Toe	236.23 to 236.10	236.95 to 236.77	237.55 to 237.32	236.2	0		**Alternative 1**: Do Nothing	Does not provide 100 year flood protection or meets Regulatory Flood Level requirements.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified.	Not applicable.	Maintenance costs associated with vegetation control.	Not applicable.	Not applicable.	○ Viable alternative as amenity improvements can be integrated without dyke upgrades. Does not meet the Regulatory Flood Level, however less impacted properties in this area, therefore cost benefit of raising the structure is less.
										Alternative 2: Replace w Similar Dyke (existing footprint)									X This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Forks of the Thames Phase 4 completed. Not known whether additional amenity/functional improvements are required.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions.	None identified.	$260,000	Depends on type of dyke selected and amenity requirements. Not anticipated to be significantly higher costs than existing dyke maintenance.	Schedule B	None identified.	◕ Viable solution, however it does not provide protection to the Regulatory Flood Limit. Adequate land behind dyke would make Alternative 4 more preferable.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Forks of the Thames Phase 4 completed. Not known whether additional amenity/functional improvements are required.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions.	None identified.	$300,000	Depends on type of dyke selected and amenity requirements. Not anticipated to be significantly higher costs than existing dyke maintenance.	Schedule B	None identified.	● Preferred solution as it best meets the guiding principles and assuming additional flood protection accomplished by means of berm enhancements. It is anticipated that additional increase in height of ~1m would be sufficient to provide 250 yr + protection. Cost/benefit advantage is marginal, however, due to smaller impacted area.
Wharncliffe	380	4	Natural Bank with Gabion Toe	236.10 to 235.83	236.77 to 236.47	237.32 to 236.98	235.5	1	$1,200,000 / $1,202,000	**Alternative 1**: Do Nothing	Currently provides up to 100 year flood protection with little to no freeboard. Does not meet Regulatory Flood Level requirements.	Capable of implementing amenity or functional improvements separately within the area due to its size.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Maintenance costs associated with vegetation control.	Not applicable.	Not applicable.	○ Not preferred as it does not meet the guiding principles for the dyke
										Alternative 2: Replace w Similar Dyke (existing footprint)									X This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impacts expected as construction could proceed out of river. Minor repairs to existing gabions may be required at rivers edge.	None identified.	$3,800,000 (includes pathway)	Maintenance costs associated with vegetation control.	Schedule B	May need to relocate pathway.	◕ Viable solution, however it does not provide protection to the Regulatory Limit. Adequate land behind dyke would make Alternative 4 more preferable without a significant increase in cost.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impacts expected as construction could proceed out of river. Minor repairs to existing gabions may be required at rivers edge.	None identified.	$4,330,000 (includes pathway)	Maintenance costs associated with vegetation control.	Schedule B	May need to relocate pathway.	● Preferred solution as it best meets the guiding principles and assuming additional flood protection accomplished by means of berm enhancements. It is anticipated that additional increase in height of ~1.5m would be sufficient to provide 250 yr + protection. Cost/benefit advantage is marginal, however, due to smaller impacted area.
Cavendish East	160	3	Concrete Revetment with Toe	235.83 to 235.69	236.47 to 236.33	236.98 to 236.83	233.5	70	$4,260,000 / $4,820,000	**Alternative 1**: Do Nothing	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Highest maintenance costs compared to other alternatives over the planning period.	Not applicable	Existing dyke likely to require replacement within 20 year period due to current condition.	○ Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)	Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities including potential future pathway extension or construction of pathway at top of dyke.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,380,000	No significant maintenance costs anticipated.	Schedule B	Construction/staging constraints.	○ This option is not preferred as the cost/benefit is anticipated to be significantly less than Alternative 3 or 4.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Allows opportunities for improvements including pathway construction depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,600,000	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Schedule B	In order to accommodate amenity/functional improvements, slope of dyke may be increased.	◑ Viable solution, however it does not provide protection to the Regulatory Limit. Could potentially implement active flood control measures.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Allows opportunities for improvements including pathway construction depending on alignment of wall.	Potential requirement to conduct work in river due to existing constraints (proximity to adjacent landowners).	Moderate impact based on construction activities, but can be mitigated using best management practices. May require work in river.	$2,700,000	No significant maintenance costs anticipated. Maintenance costs associated with pathway may be higher (impact of high water level).	Schedule B	In order to replace dyke to 250 yr, area available for construction may result in increased slope of dyke, similar to Phase I structure (also to minimize height).	● Preferred solution as it best meets the guiding principles for the dyke.
	240	4	Natural Bank	235.69 to 235.57	236.33 to 236.21	236.83 to 236.71	235.8	60	$475,000 / $535,000	**Alternative 1**: Do Nothing	Currently provides protection up to the 100 year flood level. Does not provide protection to Regulatory Flood Level.	Does not provide for amenity / functional improvement opportunities.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Maintenance costs associated with vegetation control.	Not applicable	Not applicable	◔ Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)									X This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements (signage) within the area due to its size.	Mature trees along this section, could impose constraints on construction.	None identified.	$2,275,000	Maintenance costs associated with vegetation control.	Schedule B	Significant mature vegetation to address during construction.	◕ Viable solution, however it does not provide protection to the Regulatory Limit.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Capable of implementing amenity or functional improvements (signage) within the area due to its size.	Mature trees along this section, could impose constraints on construction.	None identified.	$2,600,000	Maintenance costs associated with vegetation control.	Schedule B	Significant mature vegetation to address during construction.	● Preferred solution as it meets the guiding principles. Would negatively impact mature vegetation along the dyke face, but could be mitigated using proper planning and best management practices.
Cavendish West	220	4	Natural Bank with Berms	235.57 to 235.54	236.21 to 236.18	236.71 to 236.69	~236	0		**Alternative 1**: Do Nothing	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements separately within the area due to its size.	None identified as no work is proposed.	None identified as no work is proposed.	Not applicable	Maintenance costs associated with vegetation control.	Not applicable.	Not applicable.	◔ Not preferred as it does not meet the guiding principles for the dyke.
										Alternative 2: Replace w Similar Dyke (existing footprint)									X This option not applicable to earth dyke segments as it is generally no different than the "Do Nothing" option or Alternative 3.
										Alternative 3: Replace w 100 yr + Freeboard	Does not provide protection to Regulatory Flood Level.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions. Implement best management practices.	None identified.	$975,000	Maintenance costs associated with vegetation control.	Schedule B	None identified, however extension of the dyke may be required to address the enhanced flood protection requirements.	◕ Viable solution, however it does not provide protection to the Regulatory Level.
										Alternative 4: Replace with 250 yr + Freeboard	Provides protection to Regulatory Flood Level with ~0.5 m freeboard.	Capable of implementing amenity or functional improvements separately within the area due to its size.	No significant impact anticipated due to working area present. Return to prior natural/vegetated conditions. Implement best management practices.	None identified.	$1,200,000	Maintenance costs associated with vegetation control.	Schedule B	None identified, however extension of the dyke may be required to address the enhanced flood protection requirements.	● Preferred solution as only moderate increase in the dyke height is required in order to achieve Regulatory Flood Level. Sufficient space available to integrate height increase.



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Figure No.
1.1

Title
NORTH BRANCH
KEY PLAN



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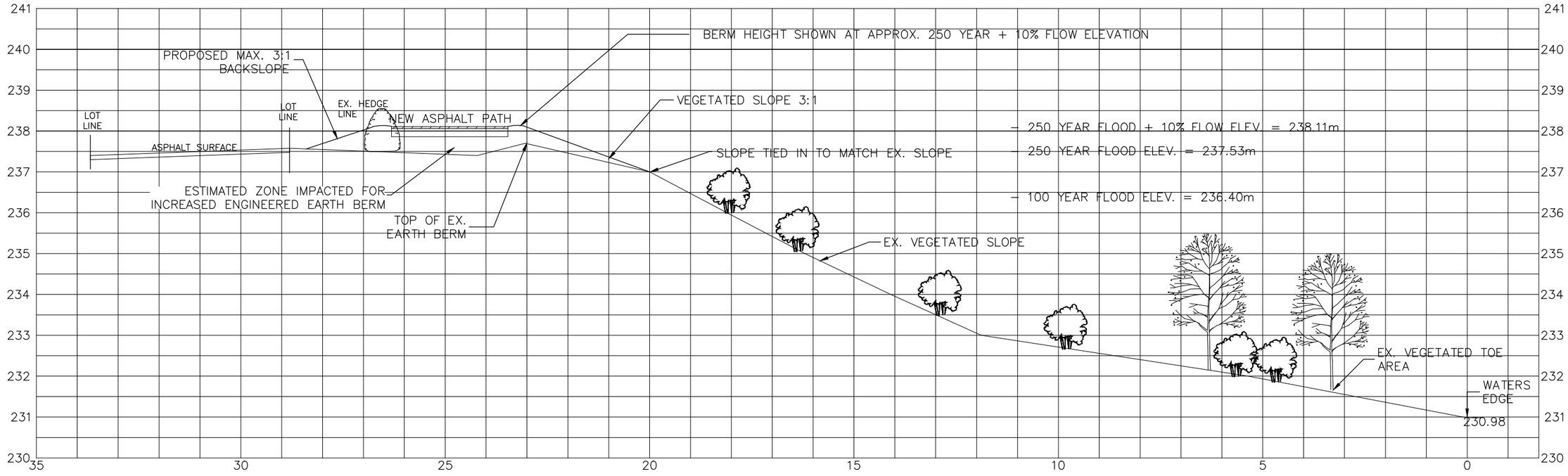
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Figure No.
1.2

Title
MAIN BRANCH
KEY PLAN

Dyke Cross Section
Section 1 - Oxford North

APPROXIMATE STATION -0+015



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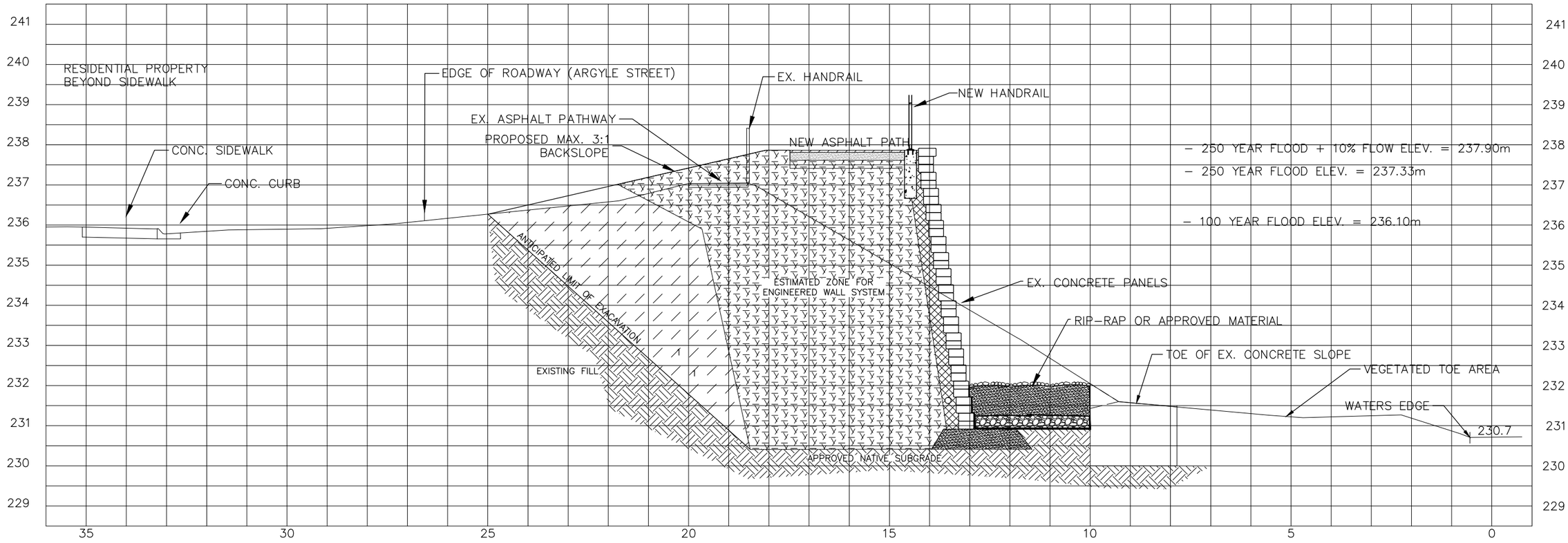
Figure No.
1.3

Title
SECTION 1 - OXFORD NORTH

Dyke Cross Section
Section 2 - St. Patrick

APPROXIMATE STATION 0+130

CONCEPTUAL WALL PLACED IN APPROX. CENTER OF EXISTING STRUCTURE. LOCATION SUBJECT TO CHANGE.



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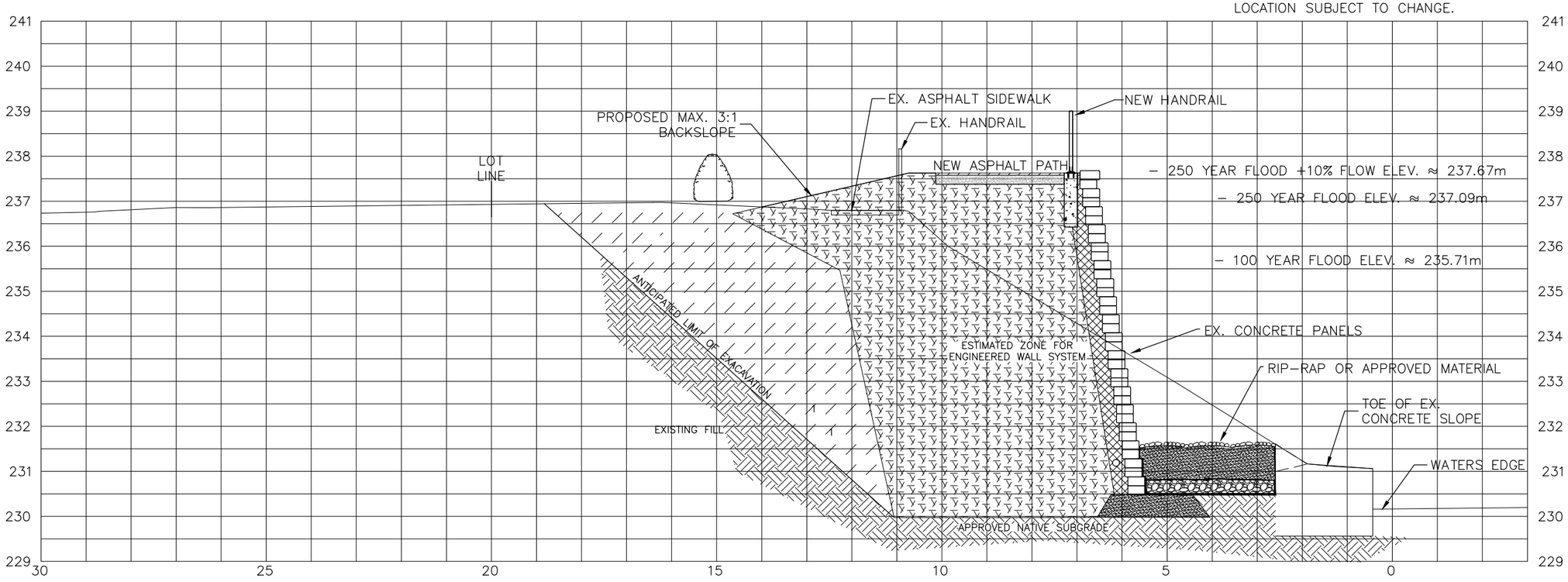
Figure No.
1.4

Title
SECTION 2 - ST. PATRICK

Dyke Cross Section
Section 3 - Blackfriars

APPROXIMATE STATION 0+565

CONCEPTUAL WALL PLACED IN APPROX. CENTER OF EXISTING STRUCTURE. LOCATION SUBJECT TO CHANGE.



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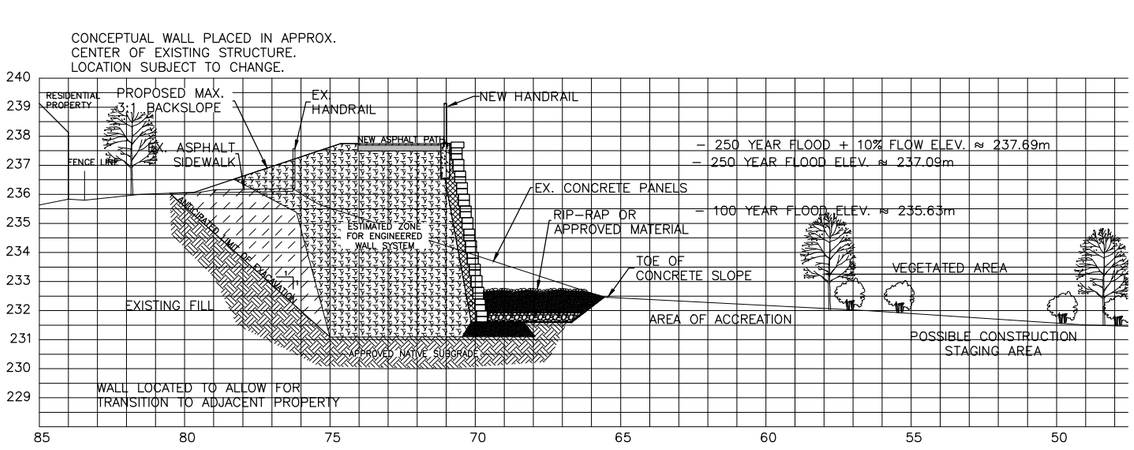
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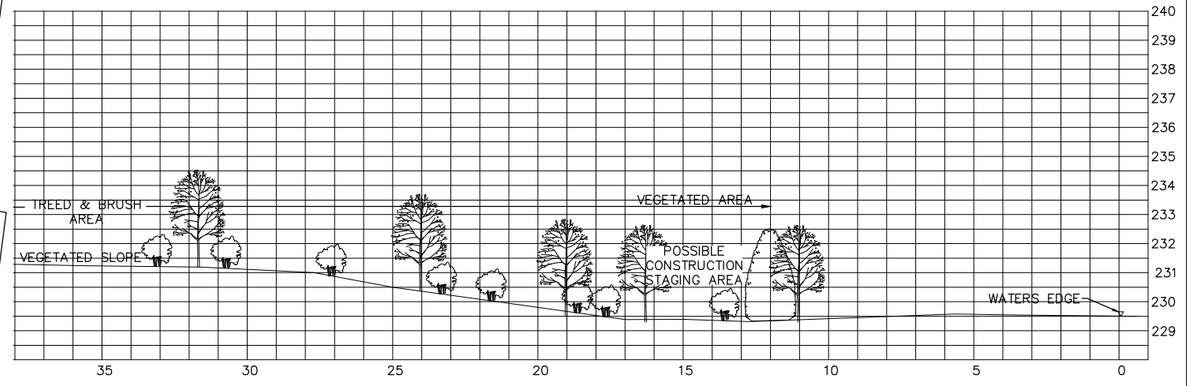
Figure No.
1.5

Title
SECTION 3 - BLACKFRIARS

Dyke Cross Section
Section 4 - Natural Bank

APPROXIMATE STATION 0+810





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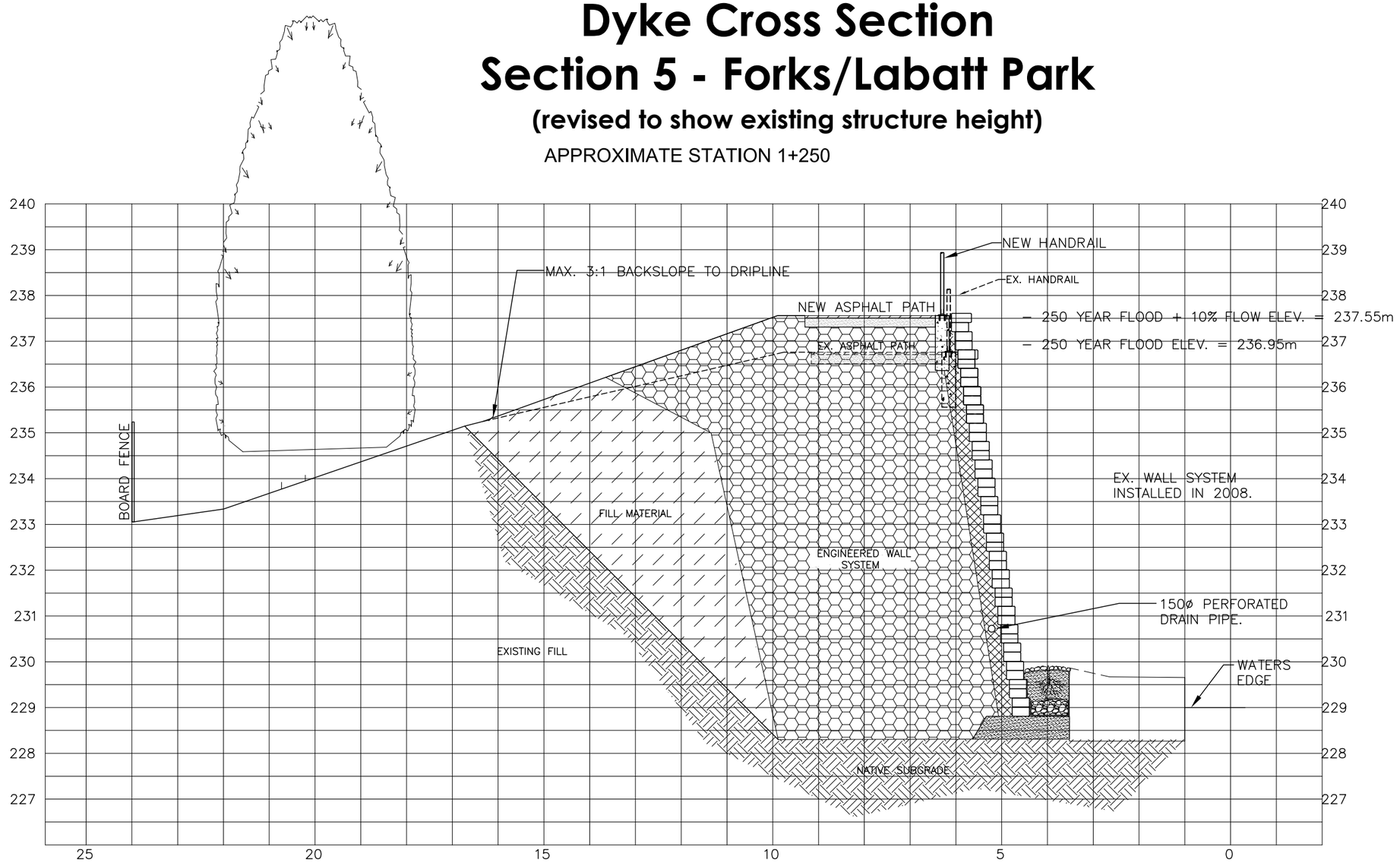
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Figure No.
1.6

Title
SECTION 4 - NATURAL BANK

Dyke Cross Section
Section 5 - Forks/Labatt Park
(revised to show existing structure height)

APPROXIMATE STATION 1+250



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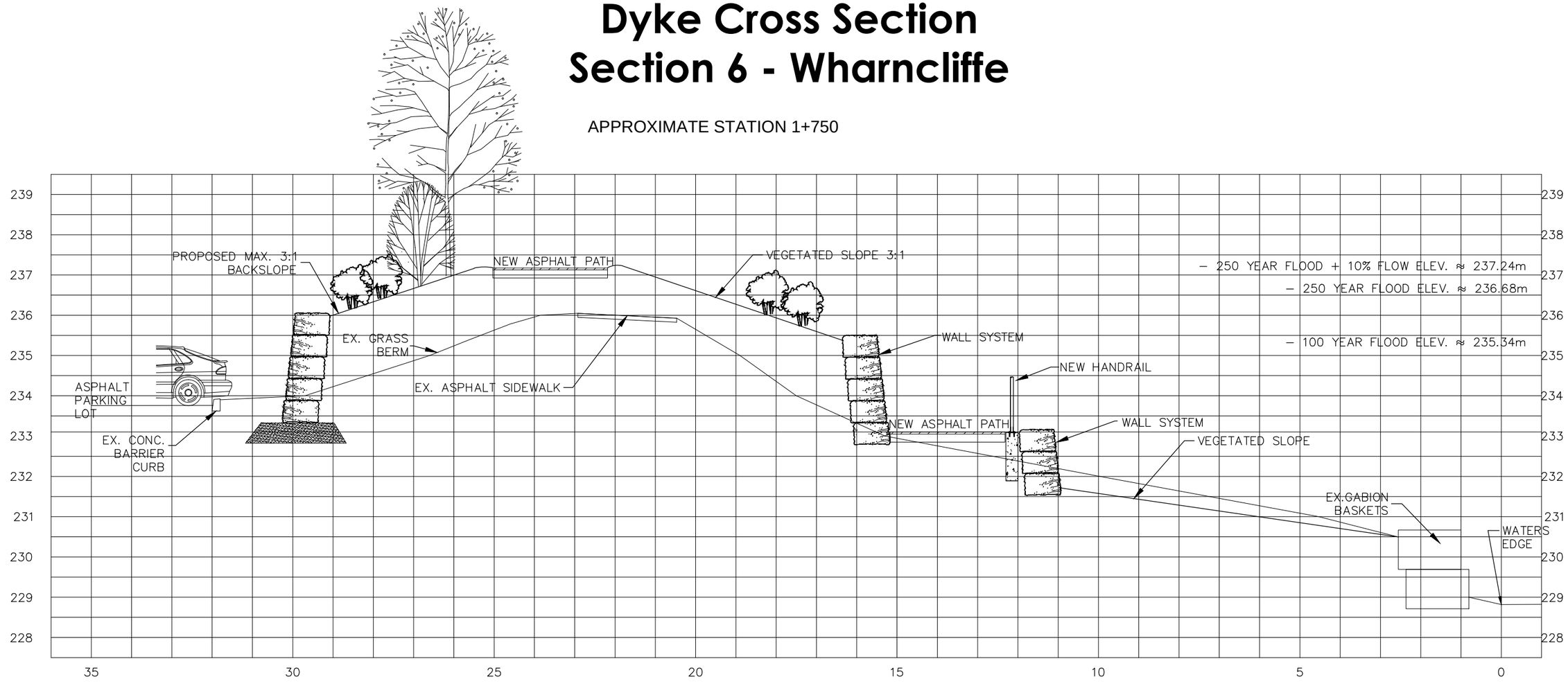
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Figure No.
1.7

Title
SECTION 5 - FORKS/LABATT PARK

Dyke Cross Section
Section 6 - Wharncliffe

APPROXIMATE STATION 1+750



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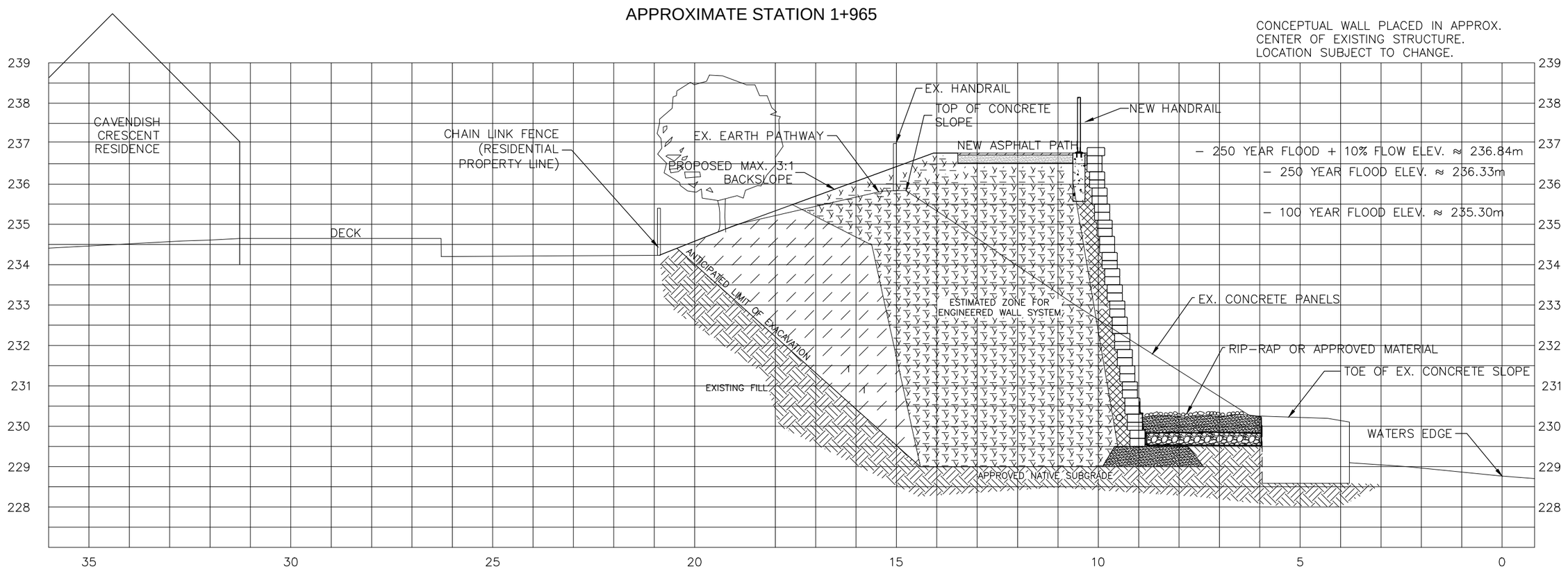
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Figure No.
1.8

Title
SECTION 6 - WHARNCLIFFE

Dyke Cross Section
Section 7 - Cavendish East



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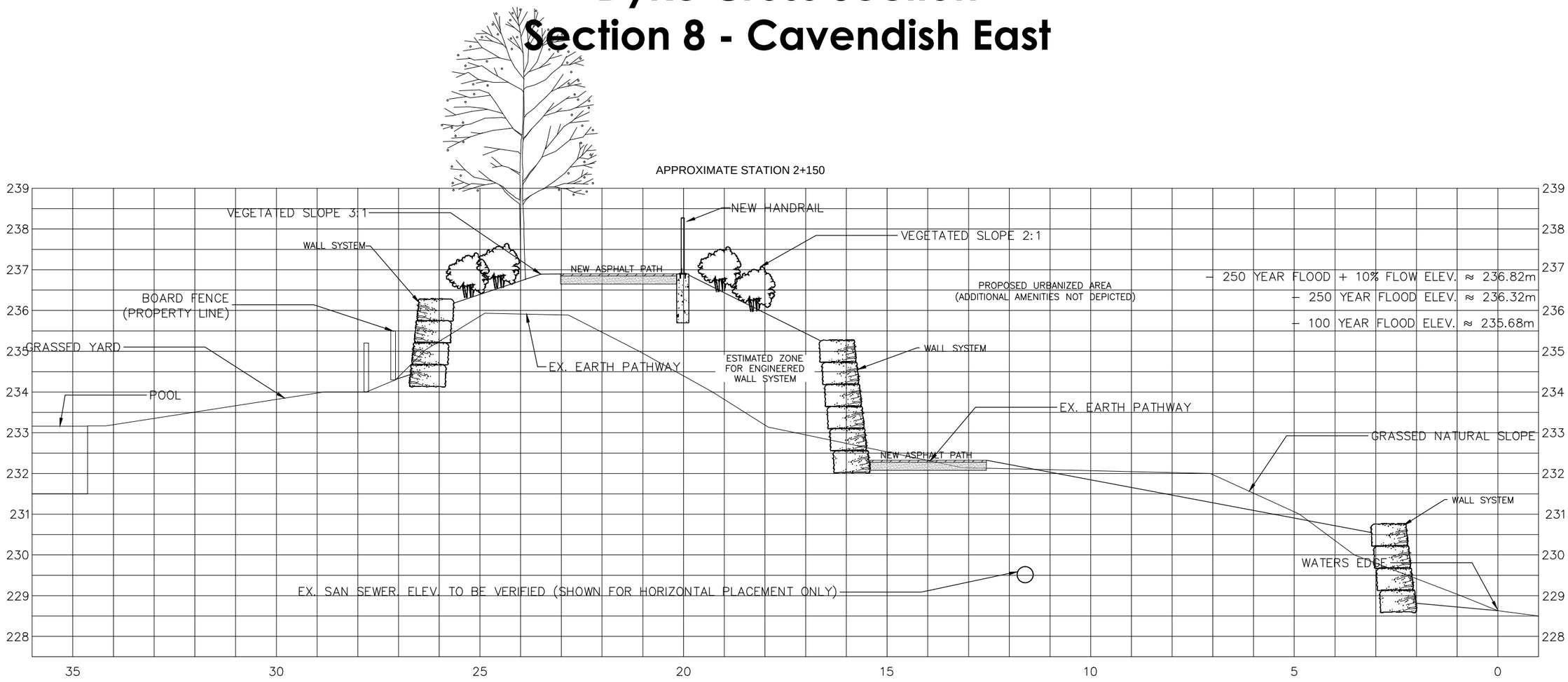
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Figure No.
1.9

Title
SECTION 7 - CAVENDISH EAST

Dyke Cross Section
Section 8 - Cavendish East



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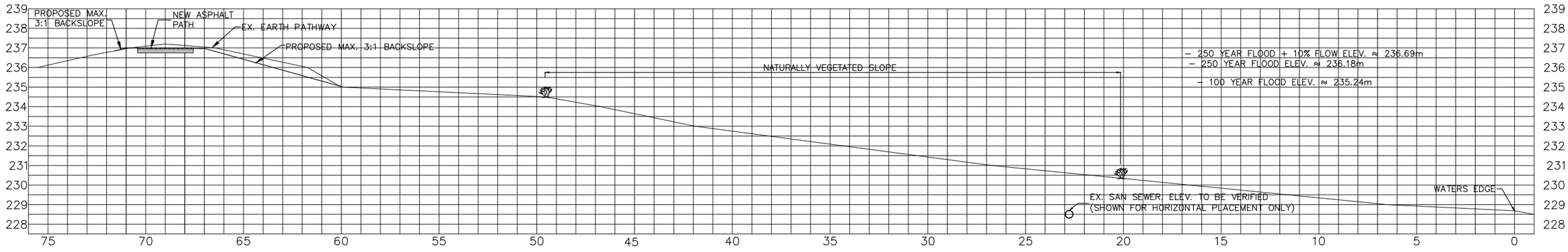
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Figure No.
1.10

Title
SECTION 8 - CAVENDISH EAST

Dyke Cross Section
Section 9 - Cavendish West

APPROXIMATE STATION 2+385



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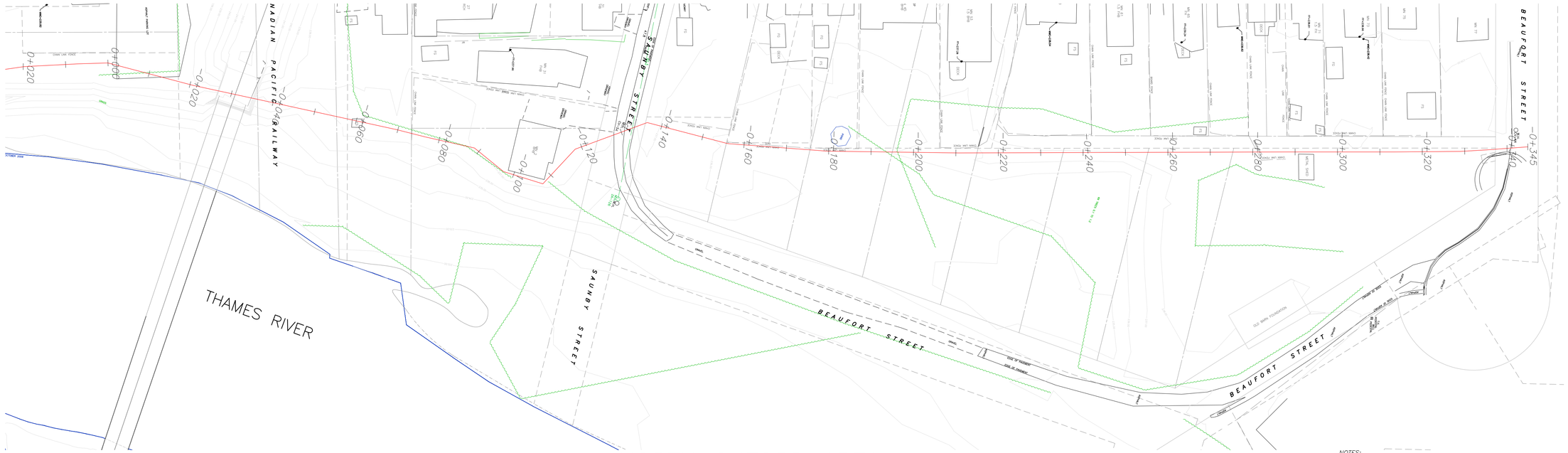
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WEST LONDON DYKE
MASTER REPAIR PLAN

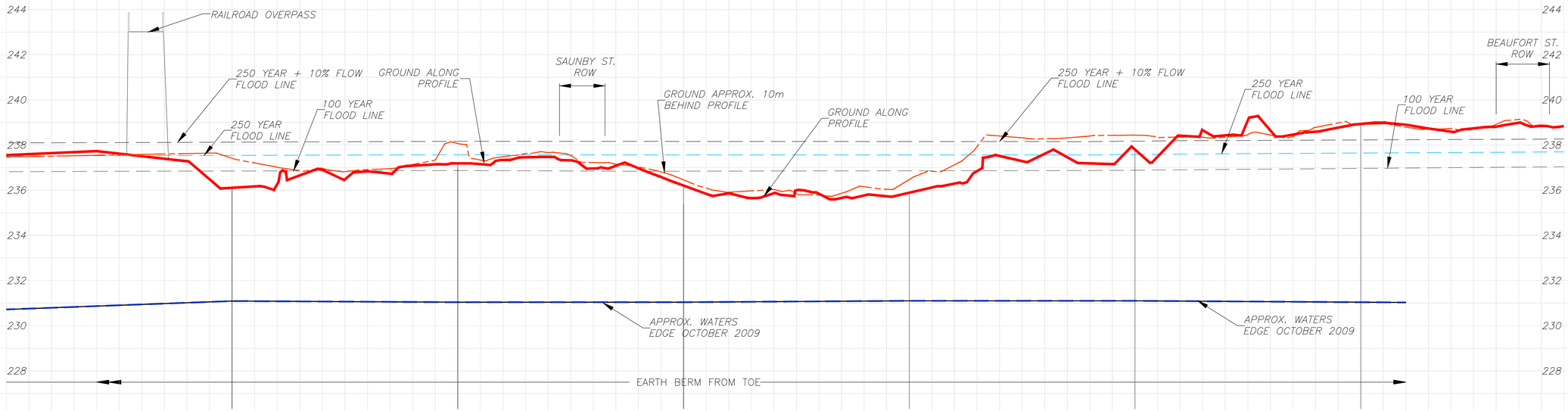
Figure No.
1.11

Title
SECTION 9 - CAVENDISH WEST



NORTH OXFORD AREA

NOTES:
1. PLAN AND PROFILE DRAWINGS PREPARED BASED ON INFORMATION SUPPLIED BY THE UPPER THAMES RIVER CONSERVATION AUTHORITY AND CITY OF LONDON OBM MAPPING.
2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



STATION	0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180	0+200	0+220	0+240	0+260	0+280	0+300	0+340
TOP OF EXISTING DYKE	237.6		236.1			236.2			236.2		235.9		237.8			238.9	
250 YEAR FLOOD LINE		237.63				237.57		237.56				237.56		237.60			237.69
APPROX. 10m BEHIND TOP OF DYKE	237.47		237.41			238.07			236.46		236.47		238.44			238.83	
TOE OF DYKE	231.72		231.09			231.04			231.05		231.10		231.13			231.01	

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
DATE	SEPT. 2, 2015
	165630035

No.	REVISIONS	DATE	CONSULTANT

CONSULTANT OR DIVISION

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CORPORATION OF THE CITY OF LONDON
London CANADA

SCALE
HORZ 1:500

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

OXFORD NORTH AREA

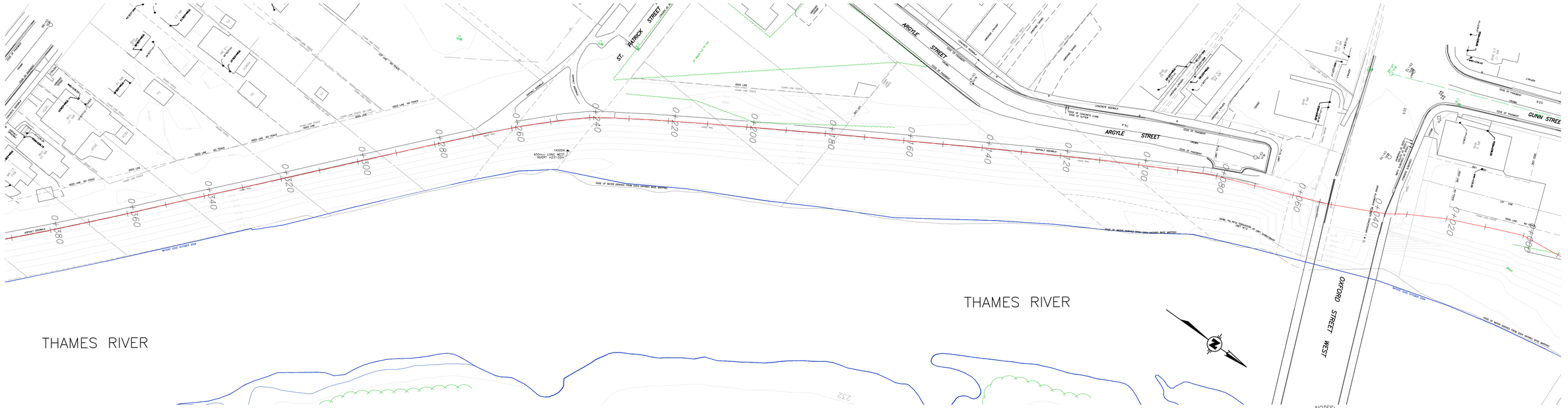
STATION -0+310 TO 0+000

PROJECT No.

SHEET No.
1

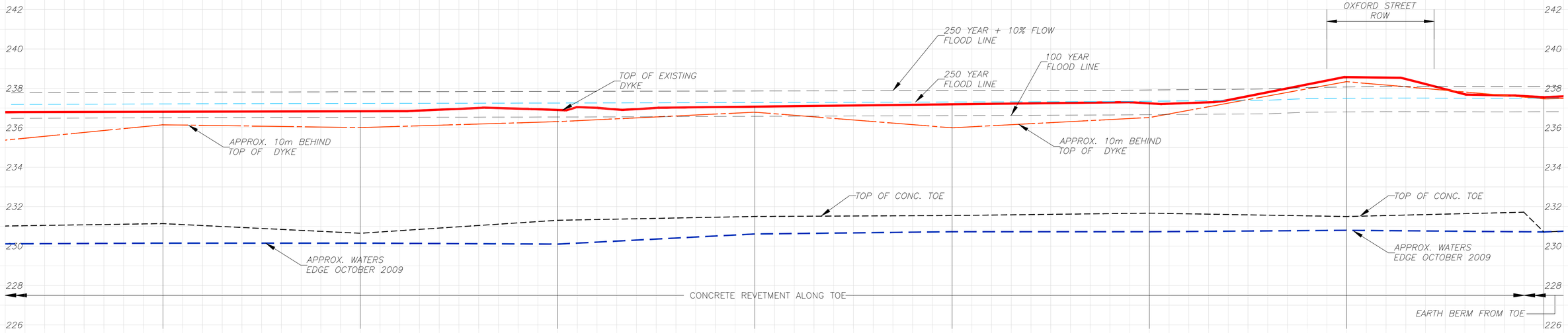
PLAN FILE No.

Job No. DWG No. JOB NAME



ST. PATRICK AREA

NOTES:
1. PLAN AND PROFILE DRAWINGS PREPARED BASED ON INFORMATION SUPPLIED BY THE UPPER THAMES RIVER CONSERVATION AUTHORITY AND CITY OF LONDON OBM MAPPING.
2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



STATION	0+380	0+360	0+340	0+320	0+300	0+280	0+260	0+240	0+220	0+200	0+180	0+160	0+140	0+120	0+100	0+080	0+060	0+040	0+020	0+000
TOE OF DYKE		231.14			230.65			231.28	231.51			231.55			231.67		231.50			231.72
APPROX. 10m BEHIND TOP OF DYKE		236.00			236.01			236.36	236.79			236.00			236.52		238.34			237.47
250 YEAR FLOOD LINE			237.22				237.26				237.33			237.40	237.48	237.51			237.50	
TOP OF EXISTING DYKE		236.8			236.8			236.9	237.1			237.2			237.2		238.6			237.6

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.c.
APPROVED	N.O.
DATE	SEPT. 2, 2015

165630035

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SCALE
HORZ 1:500

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

ST. PATRICK AREA

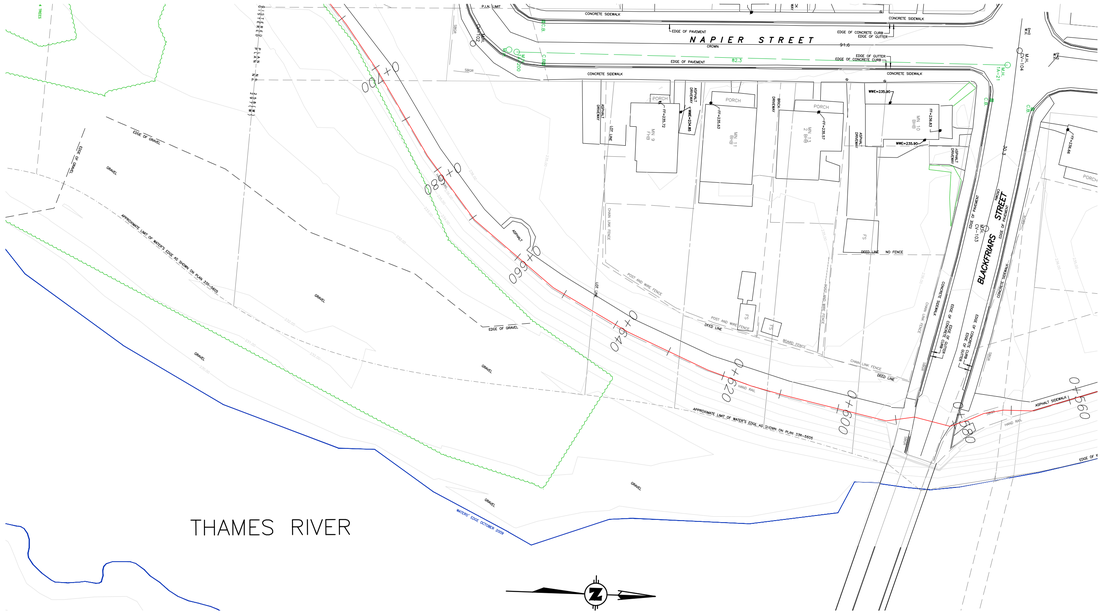
STATION 0+000 TO 0+380

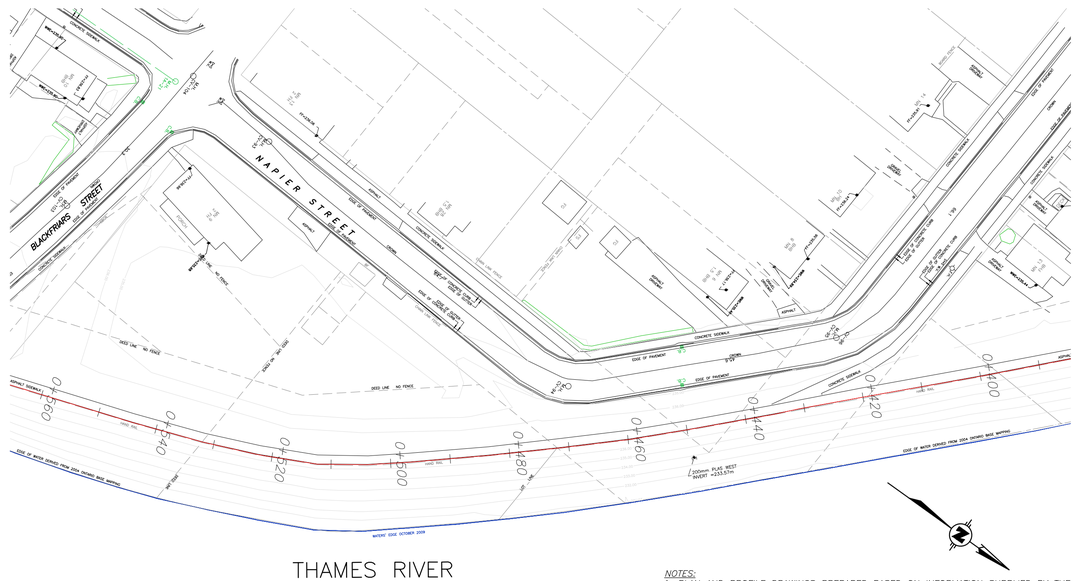
PROJECT No.

SHEET No.
2

PLAN FILE No.

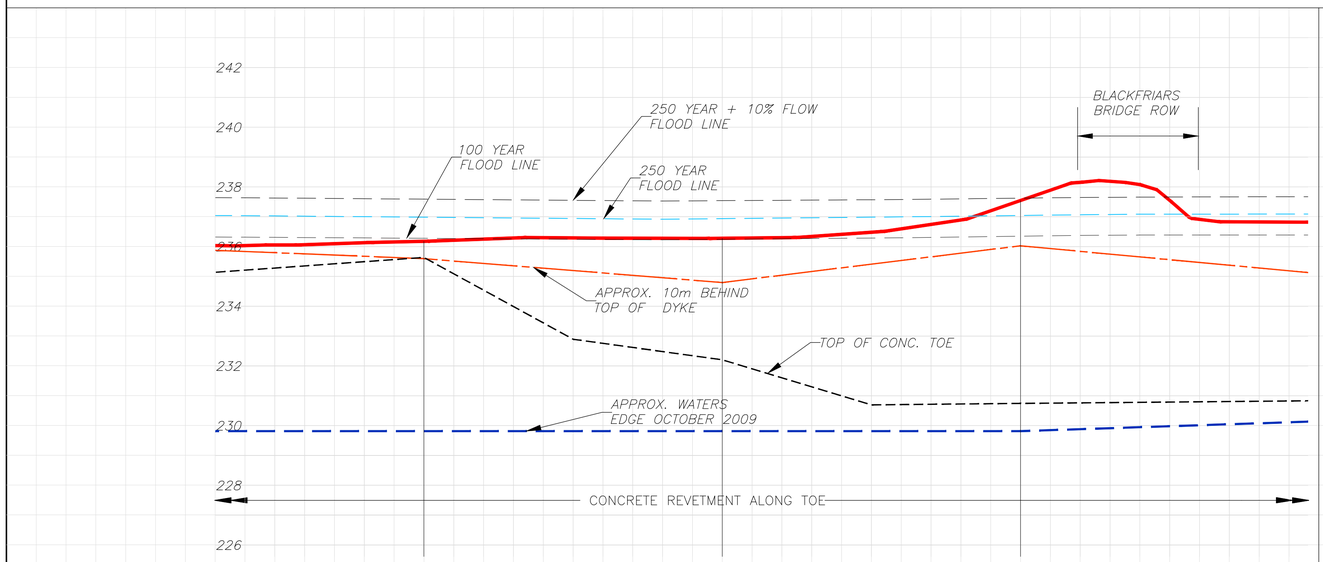
Job No. DWG No. JOB NAME

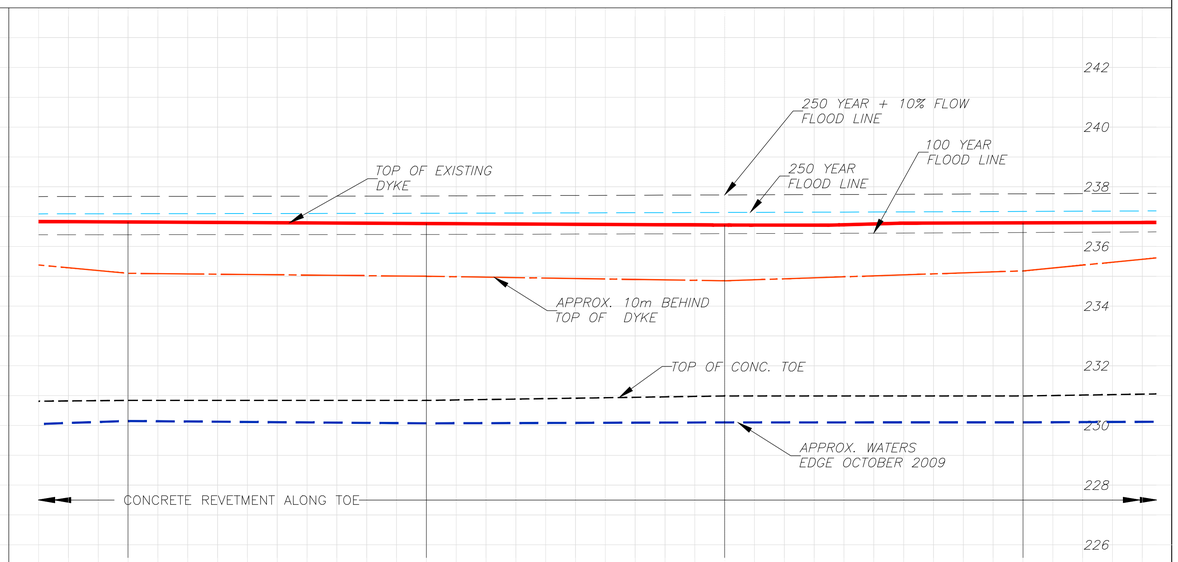




NOTES:
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2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.

BLACKFRIARS AREA





STATION	TOP OF EXISTING DYKE	250 YEAR FLOOD LINE	APPROX. 10m BEHIND TOP OF DYKE	TOE OF DYKE
0+720				
0+700	236.2		235.60	235.64
0+680				
0+660	236.3	236.92	234.80	232.21
0+640				
0+620				
0+600	237.5	237.00	236.03	230.75
0+580		237.02		
0+560	236.8	237.09	235.10	230.83
0+540		237.09		
0+520				
0+500	236.8	237.11	235.00	230.84
0+480				
0+460	236.7	237.15	234.85	230.98
0+440				
0+420				
0+400	236.8		235.18	231.00
0+380				

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
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DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
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	165630035

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VERT 1:50

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

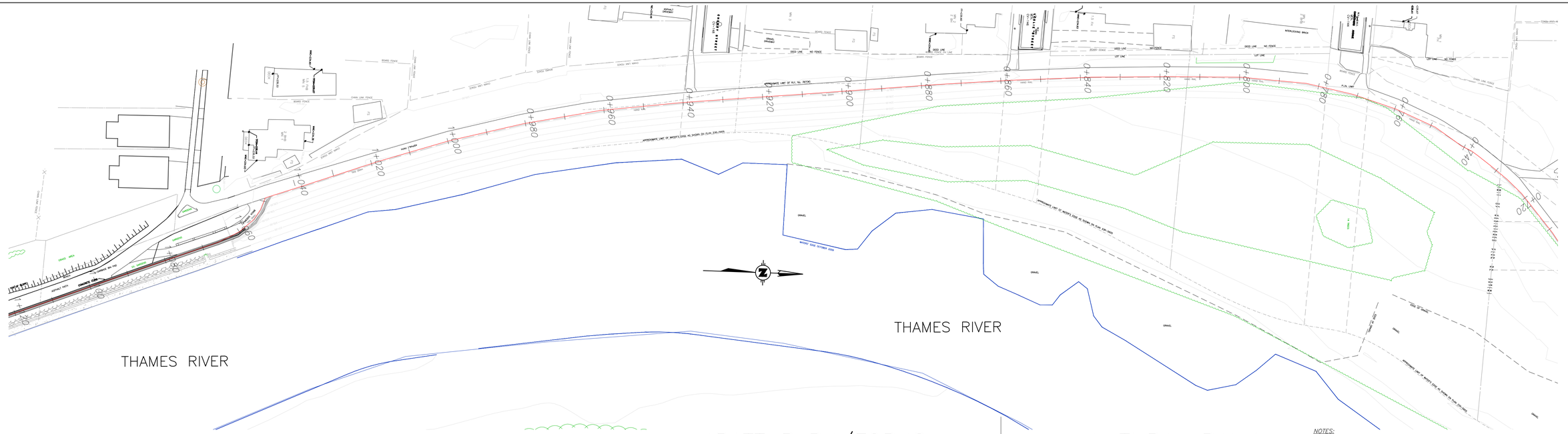
BLACKFRIARS AREA
STA 0+380 TO 0+720

PROJECT No.

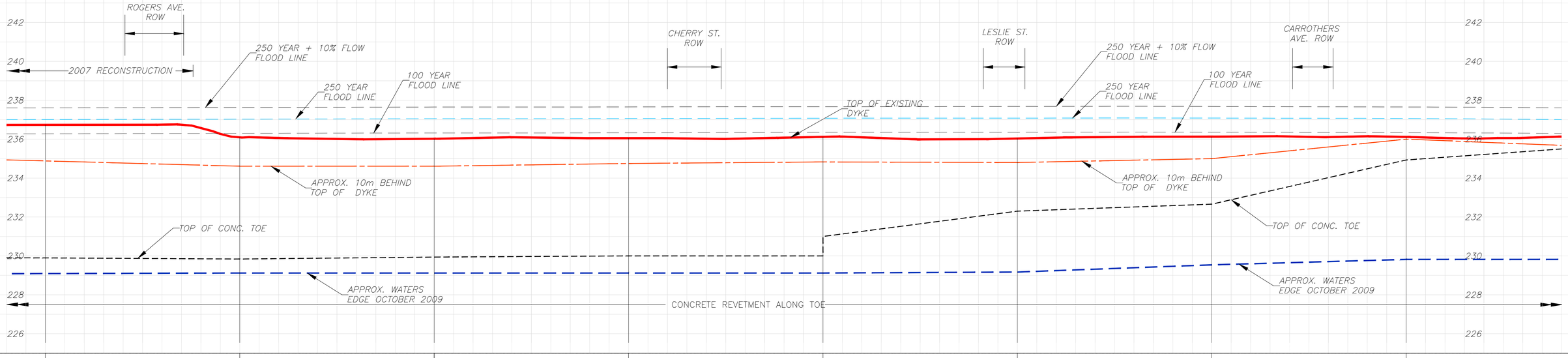
SHEET No.
3

PLAN FILE No.

Job No. DWG No. JOB NAME



NOTES:
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2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



STATION	1+100	1+080	1+060	1+040	1+020	1+000	0+980	0+960	0+940	0+920	0+900	0+880	0+860	0+840	0+820	0+800	0+780	0+760	0+740	0+720
TOE OF DYKE	229.88			229.84		229.94			229.99		231.00			232.30		232.66			234.93	
APPROX. 10m BEHIND TOP OF DYKE	234.95			234.61		234.60			234.75		234.83			234.80		235.00			236.00	
250 YEAR FLOOD LINE						237.05		237.05		237.07		237.08		237.08		237.09			237.07	237.04
TOP OF EXISTING DYKE	236.7			236.1		236.0		236.1			236.1			236.0		236.1			236.1	

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
DATE	SEPT. 2, 2015

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London CANADA

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VERT 1:50

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

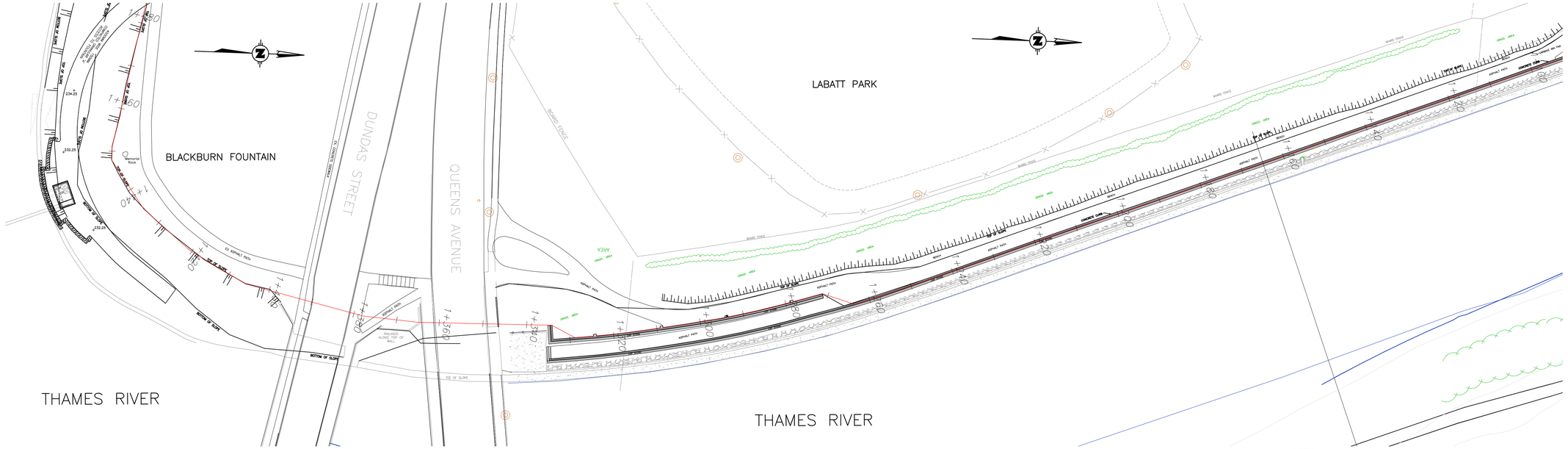
LABATT PARK/FORKS & NATURAL BANK AREA
STA 0+720 TO 1+100

PROJECT No.

SHEET No.
4

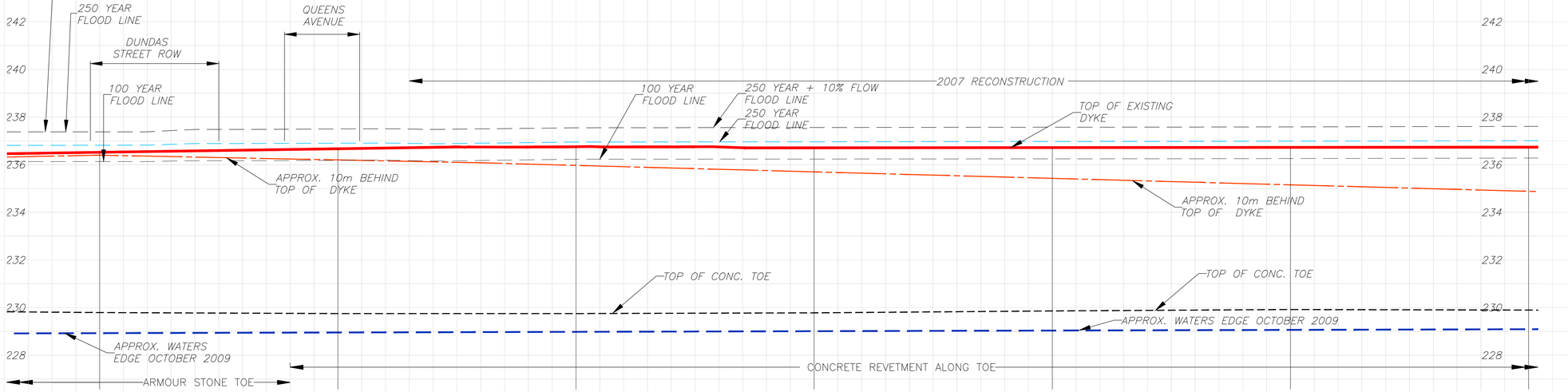
PLAN FILE No.

Job No. DWG No. JOB NAME



LABATT PARK/FORKS

NOTES:
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2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



STATION	1+420	1+400	1+380	1+360	1+340	1+320	1+300	1+280	1+260	1+240	1+220	1+200	1+180	1+160	1+140	1+120	1+100
TOP OF EXISTING DYKE		236.5		236.7			236.8			236.7		236.7		236.7			236.7
250 YEAR FLOOD LINE	236.81		236.82	236.89	236.89		236.91	236.88		236.95			236.98			237.00	
APPROX. 10m BEHIND TOP OF DYKE		236.40				236.08				235.97		235.70	235.43		235.15		234.95
TOE OF DYKE		230.21			229.75			229.75		229.78		229.86		229.92			229.88

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
DATE	SEPT. 2, 2015
	165630035

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VERT 1:50

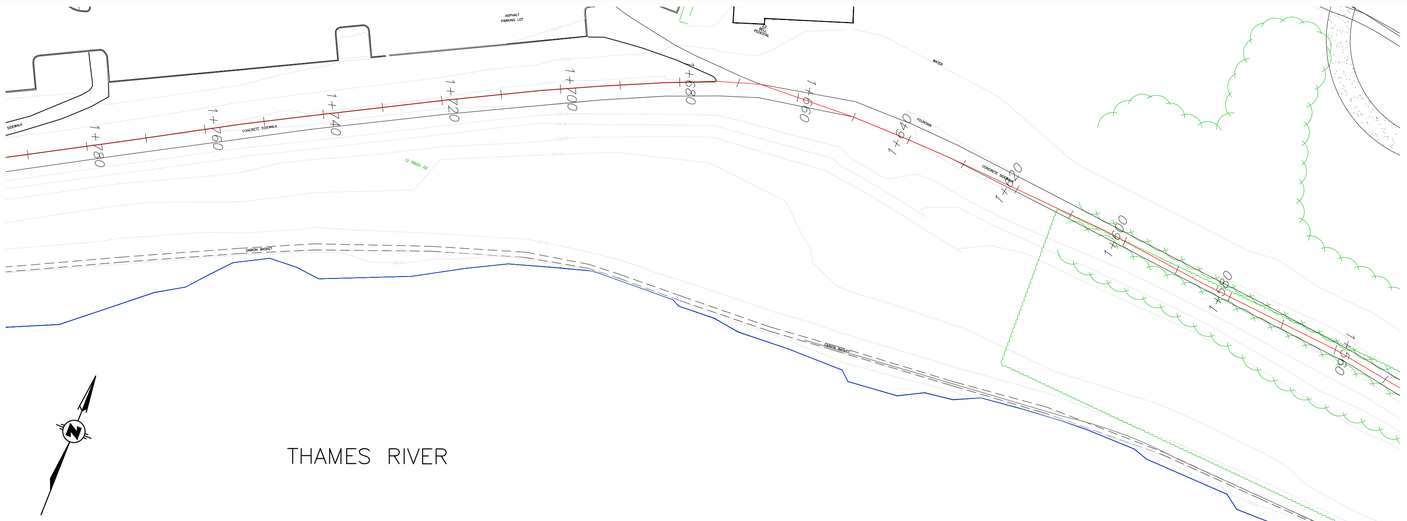
TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY
LABATT PARK/FORKS AREA
STA 1+100 TO 1+420

PROJECT No.

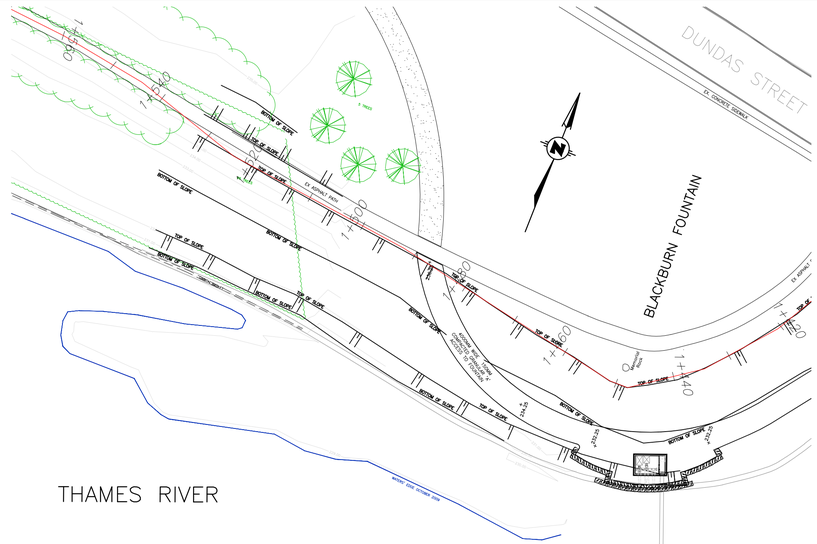
SHEET No.
5

PLAN FILE No.

Job No. DWG No. JOB NAME

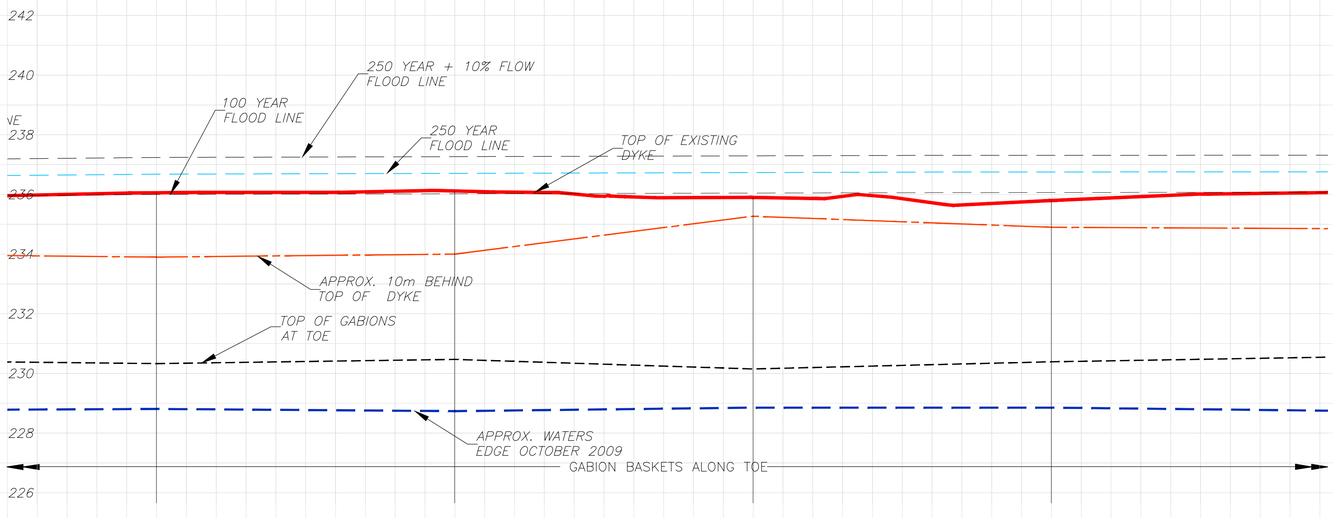


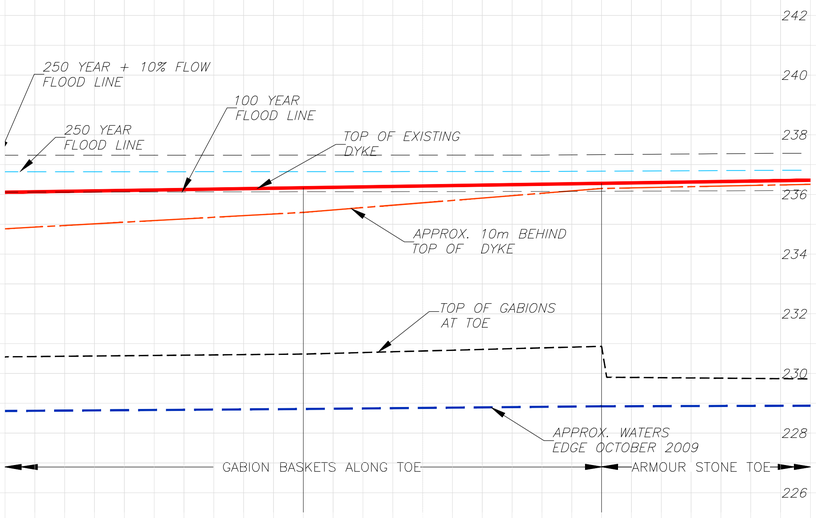
WHARNCLIFFE



NOTES:
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2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.

LABATT PARK/FORKS





STATION	1+780	1+760	1+740	1+720	1+700	1+680	1+660	1+640	1+620	1+600	1+580	1+560	1+560	1+540	1+520	1+500	1+480	1+460	1+440	1+420
TOP OF EXISTING DYKE		236.1			236.1			235.9		235.8				236.1		236.2		236.4		
250 YEAR FLOOD LINE		236.68							236.75									236.77		236.81
APPROX. 10m BEHIND TOP OF DYKE		233.90			234.00			235.30		234.90				234.85		235.40		236.20		
TOE OF DYKE		230.33			230.47			230.15		230.39				230.54		230.65		230.91		

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DESIGN S.J.
DRAWN BY D.B.
CHECKED C.G.
APPROVED N.O.
DATE SEPT. 2, 2015

165630035

No.	REVISIONS	DATE	CONSULTANT

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London CANADA
CORPORATION OF THE CITY OF LONDON

SCALE
HORZ 1:500
VERT 1:50

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

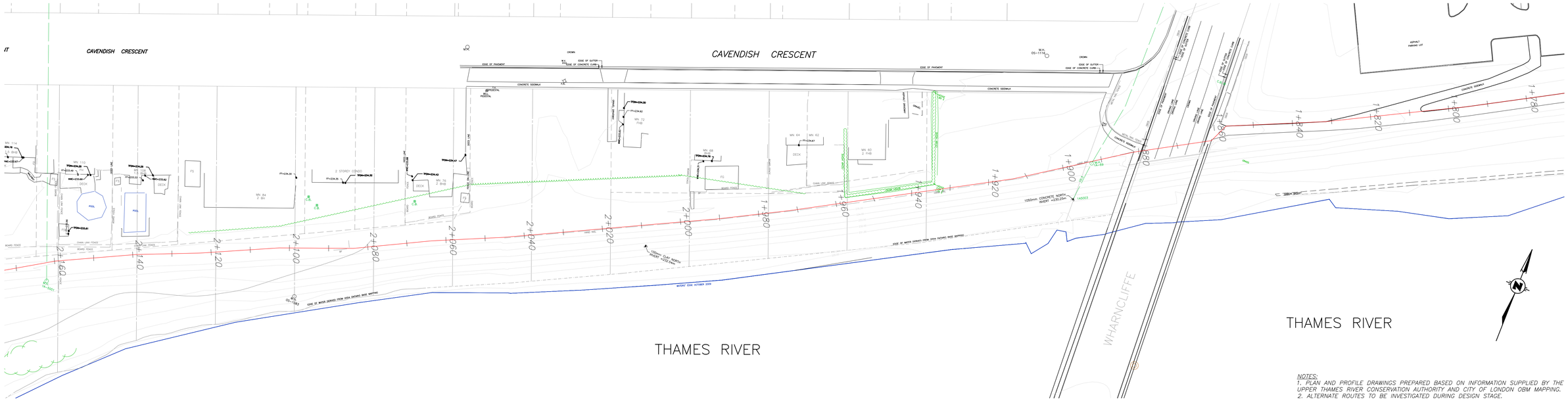
WHARNCLIFFE & LABATT PARK/ FORKS AREA
STA 1+420 TO 1+780

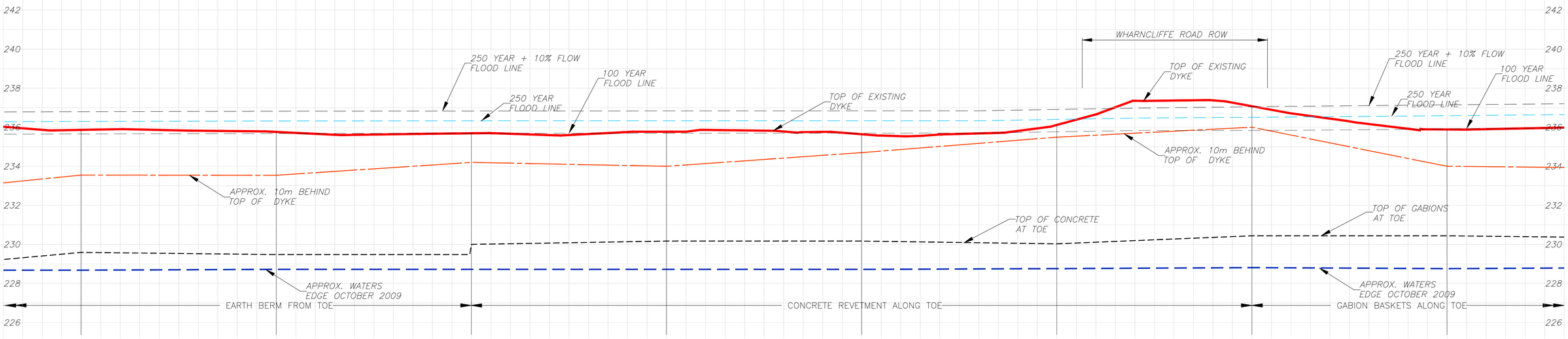
PROJECT No.

SHEET No.
6

PLAN FILE No.

Job No. DWG No. JOB NAME





STATION	TOP OF EXISTING DYKE	250 YEAR FLOOD LINE	APPROX. 10m BEHIND TOP OF DYKE	TOE OF DYKE
2+160	235.9		233.55	229.59
2+140				
2+120				
2+100	235.8	236.32	233.54	229.48
2+080				
2+060	235.7	236.33	234.20	230.05
2+040				
2+020	235.0		234.00	230.16
2+000				
1+980				
1+960	235.3	236.33	234.70	230.17
1+940				
1+920				
1+900	236.1		235.48	230.03
1+880		236.47		
1+860	237.1		236.00	230.44
1+840		236.52		
1+820				
1+800	235.9		234.00	230.37
1+780				

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS
DESIGN S.J.
DRAWN BY D.B.
CHECKED C.G.
APPROVED N.O.
DATE SEPT. 2, 2015

165630035

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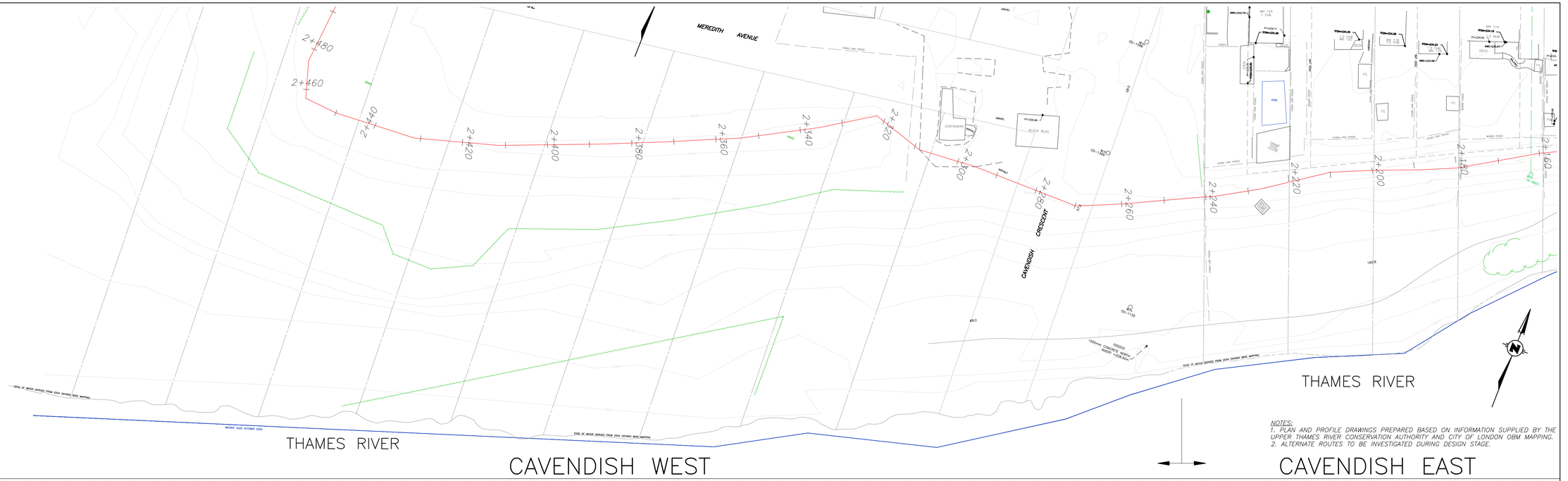
CORPORATION OF THE CITY OF LONDON
London CANADA

SCALE
HORZ 1:500
VERT 1:50

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY
CAVAENDISH EAST & WHARNCLIFFE AREA
STA 1+780 TO 2+160

PROJECT No.
SHEET No. 7
PLAN FILE No.

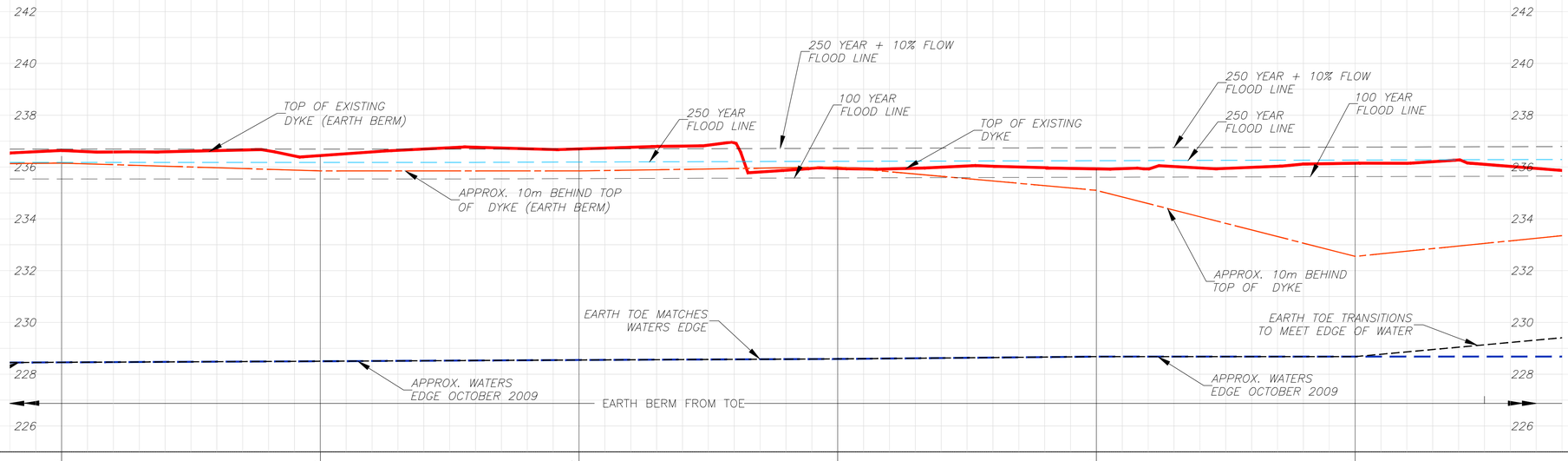
Job No. DWG No. JOB NAME



CAVENDISH WEST

CAVENDISH EAST

NOTES:
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2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



TOP OF EXISTING DYKE								236.6				236.4				236.7				235.9				236.1
250 YEAR FLOOD LINE														236.18				236.21						
APPROX. 10m BEHIND TOP OF DYKE								236.20				235.80				235.85				236.00				235.10				232.50
TOE OF DYKE								228.48				228.50				228.52				228.59				228.66				228.63
STATION	2+460		2+440		2+420		2+400		2+380		2+360		2+340		2+320		2+300		2+280		2+260		2+240		2+220		2+200		2+180		2+160

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

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VERT 1:50

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

CAVENDISH EAST & CAVENDISH WEST AREA
STA 2+160 TO 2+460

PROJECT No.

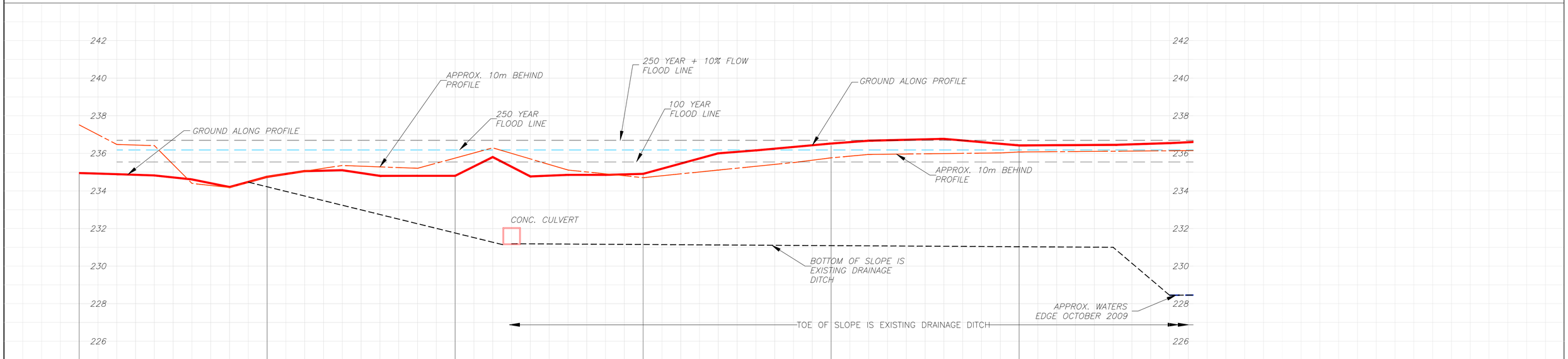
SHEET No.
8

PLAN FILE No.

Job No. DWG No. JOB NAME



CAVENDISH WEST



STATION	2+750	2+740	2+720	2+700	2+680	2+660	2+650	2+640	2+620	2+600	2+580	2+560	2+550	2+540	2+520	2+500	2+480	2+460
TOP OF EXISTING DYKE	234.95			234.75			234.80			234.95			236.52	236.66		236.4		
250 YEAR FLOOD LINE		236.18								236.18								
APPROX. 10m BEHIND TOP OF DYKE	237.50			234.76			235.75			234.85			235.75			236.18		
TOE OF DYKE																		

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN S.J.				
					DRAWN BY D.B.				
					CHECKED C.G.				
					APPROVED N.O.				
					DATE SEPT. 2, 2015				
					165630035				

Job No. DWG No. JOB NAME

CONSULTANT OR DIVISION

Stantec

Stantec Consulting Ltd.
171 Queens Avenue
London ON Canada
N6A 5J7
Tel. 519.645.2007
Fax. 519.645.6575
www.stantec.com

ENGINEER'S STAMP

CORPORATION OF THE CITY OF LONDON

London CANADA

SCALE
HORZ 1:500
VERT 1:50

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

CAVENDISH EAST & CAVENDISH WEST AREA
STA 2+460 TO 2+750

PROJECT No.

SHEET No. 9

PLAN FILE No.

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #3
Thursday September 10, 2015
4:30pm-6:30pm
Kiwanis Community Centre, 78 Riverside Dr., London ON

COMMENT SHEET

Name:
Mailing Address:
Interest (*i.e.* property owner, agency):
Comments:

Please place comments in the comment box provided or submit comments to the following:

Cameron Gorrie, P. Eng.
Project Engineer
Stantec Consulting Ltd.
600 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 675-6650
Fax: (519) 645-6575
Cameron.Gorrie@stantec.com

Personal information collected and recorded at the Public Information Centre or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001 and will be used by City, UTRCA, and Stantec staff in their review of this study. Any written submission, including names and contact information will be made available to the public through the publication of the Master Repair Plan document.

West London Dyke Master Plan Repair Plan
Municipal Class Environmental Assessment
Thursday, September 10, 2015
Public Information Centre #3

SIGN IN SHEET - Please sign in to keep up-to-date on Study progress

NAME	PHONE NUMBER	MAILING ADDRESS & POSTAL CODE	EMAIL ADDRESS
RICHARD DWYER	519-433-3674	9 CUMMINGS AVE N6H 1J6	N/A
J. E. JOHNSTON	519 432-8643	10 CARROTHERS N6H 1J5	N/A
JEAN FARRER	(519) 438-0555	33 RIVERVIEW AVE N6J 1A3	N/A
SHIRLEY CLEMENT	519-672-4644	2 CARROTHERS AVE N6H 1J5	—
Grace Hoekstra	5194351924	77 Albion St N6H 1Z1	gracehoekstra@gmail.com
MARIE BLOSH		43 MAYFAIR DR. N6A 2M7	marieblosh@gmail.com
ROBERT HUBER	519-433-6170	2202 CORONATION DR. N6G 0B9	RHUBER@INFOTECH.com
JEFF LUCAS	647-261-6553	85 WILSON AVE N6X 1W5	jefflucas48@gmail.com
JIM COURTNEY	519 439 9381	150 CENTRAL AVE N6A 1M5	jim.courtney@courtneyroofing.com
Christine Kelsey / Chris Kelsey	519 433-9418	6 Saint Patrick St. N6H 1P3	Chriskelsey16@gmail.com
CHRIS MCINTOSH	519-661-2500 x5862	CITY HALL	cmcintos@london.ca
robyn harvey	519-439-7789	4 Riverview Ave	robynharveyrmt@yahoo.com
Jason Gordon	519-636-5202	60 Blackfriars St	jason.jordan.id@gmail.com
JOHN BRAAM	519-661-2500 x2391	300 Dufferin Ave.	jbraam@london.ca
Scott Mathes	519-661-2500 x4430	300 Dufferin	Smathes@London.ca
Daisy Oliver	5196736737	(64 Cavenish Cres London N6H 1A4)	oops.im.daisy@gmail.com
Michael Abbott	519614[illegible]9460		michaelabbott1@gmail.com

Please print clearly

West London Dyke Master Plan Repair Plan
Municipal Class Environmental Assessment
Thursday, September 10, 2015
Public Information Centre #3

London CANADA

Stantec

UPPER THAMES RIVER CONSERVATION AUTHORITY

SIGN IN SHEET - Please sign in to keep up-to-date on Study progress

NAME	PHONE NUMBER	MAILING ADDRESS & POSTAL CODE	EMAIL ADDRESS
Marylyn Hopper	519 694 4192	6 St. Patrick N6H 1P3	mary.lyn.hopper@gmail.com

Please print clearly

West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #3
Thursday September 10, 2015
4:30pm-6:30pm
Kiwanis Community Centre, 78 Riverside Dr., London ON

COMMENT SHEET

Name: Daisy Oliver

Mailing Address: 64 Cavendish N6H 1A4

Interest (*i.e.* property owner, agency):

Comments:

Interested in changes to the Cavendish East dyke. Would like to be get informed.

Thanks
Daisy

Please place comments in the comment box provided or submit to the following by Thursday, September 24th, 2015:

Cameron Gorrie, P. Eng.
Project Engineer
Stantec Consulting Ltd.
600 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 675-6650
Fax: (519) 645-6575
Cameron.Gorrie@stantec.com

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West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #3
Thursday September 10, 2015
4:30pm-6:30pm
Kiwanis Community Centre, 78 Riverside Dr., London ON

COMMENT SHEET

Name: Christine Kelsey

Mailing Address: 6 Saint Patrick ST.

Interest (*i.e.* property owner, agency): Property owner + gardener (Blackfriars garden)

Comments:

Access to the river on the west side at St. Patrick Street area is important.

Many people currently go up + down the bank to fish, or walk along the river, or to boat.

We also access the water here to clean up garbage that has floated downstream, or been thrown over the edge by uncaring people (or blown over the railing on garbage day).

Animals also go up and down the slope, including small mammals. The geese that nest in the vegetated area walk up the slope with their young to feed during the weeks they are unable to fly.

Please place comments in the comment box provided or submit to the following by Thursday, September 24th, 2015:

Cameron Gorrie, P. Eng.
Project Engineer
Stantec Consulting Ltd.
600 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 675-6650
Fax: (519) 645-6575
Cameron.Gorrie@stantec.com

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West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #3
Thursday September 10, 2015
4:30pm-6:30pm
Kiwanis Community Centre, 78 Riverside Dr., London ON

COMMENT SHEET

Name: Grace Hoekstra

Mailing Address: 77 Albion St. N6H 1Z1

Interest (*i.e.* property owner, agency): property owner.

Comments:

When building the wall & make sure that the river is easy to view. the block on the river side is too wide and makes it difficult to see the turtle that like to sun themselves on the west coast.

Please place comments in the comment box provided or submit to the following by Thursday, September 24th, 2015:

Cameron Gorrie, P. Eng.
Project Engineer
Stantec Consulting Ltd.
600 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 675-6650
Fax: (519) 645-6575
Cameron.Gorrie@stantec.com

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West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #3
Thursday September 10, 2015
4:30pm-6:30pm
Kiwanis Community Centre, 78 Riverside Dr., London ON

COMMENT SHEET

Name: JIM Courtney

Mailing Address: 150 CENTRAL AVE LONDON N6A 1M8

Interest (*i.e.* property owner, agency):

Comments:

INTERESTING OVERVIEW
A LOT OF INFORMATION.
I APPRECIATE THE DISPLAY

Please place comments in the comment box provided or submit to the following by Thursday, September 24th, 2015:

Cameron Gorrie, P. Eng.
Project Engineer
Stantec Consulting Ltd.
600 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 675-6650
Fax: (519) 645-6575
Cameron.Gorrie@stantec.com

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West London Dyke Master Repair Plan
Municipal Class EA

Public Information Centre #3
Thursday September 10, 2015
4:30pm-6:30pm
Kiwanis Community Centre, 78 Riverside Dr., London ON

COMMENT SHEET

Name: RICHARD DWYER

Mailing Address: 9 CUMMINGS AVE N6H 1J6

Interest (*i.e.* property owner, agency):

Comments:

THE "RIVER THAMES"

INSIDE OF THAMES RIVER

Please place comments in the comment box provided or submit to the following by Thursday, September 24th, 2015:

Cameron Gorrie, P. Eng.
Project Engineer
Stantec Consulting Ltd.
600 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 675-6650
Fax: (519) 645-6575
Cameron.Gorrie@stantec.com

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West London Dyke Master Repair Plan
Municipal Class EA

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SEP 17 2015

UPPER THAMES RIVER CONSERVATION AUTHORITY

London CANADA

Stantec

Public Information Centre #3
Thursday September 10, 2015
4:30pm-6:30pm
Kiwanis Community Centre, 78 Riverside Dr., London ON

STANTEC CONSULTING LTD.

COMMENT SHEET

Name: SHIRLEY + JOHN CLEMENT

Mailing Address: 2 CARROTHERS AVE. LONDON N6H 1J5

Interest (*i.e.* property owner, agency): PROPERTY OWNERS

Comments:

We have a long beautiful mature cedar hedge which runs along the east side of our property - between our driveway & the walkway and are worried that the construction will damage this. The hedge has been there for decades - long before we bought the property in 2002. We also have trees planted on the embankment - just west of the walkway - that we value and about which we are worried.

We are also concerned about the enormous cottonwood trees that are around the east end of Cherry St - just west of the walkway. Please confer with the neighbourhood if there are any plans that will damage any of these trees / hedges etc.

Thank you

Shirley Clement
519-672-4694

Please place comments in the comment box provided or submit to the following by Thursday, September 24th, 2015:

Cameron Gorrie, P. Eng.
Project Engineer
Stantec Consulting Ltd.
600 - 171 Queens Avenue
London ON N6A 5J7
Phone: (519) 675-6650
Fax: (519) 645-6575
Cameron.Gorrie@stantec.com

Personal information collected and recorded at the Public Information Centre or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001 and will be used by City, UTRCA, and Stantec staff in their review of this study. Any written submission, including names and contact information will be made available to the public through the publication of the Master Repair Plan document.



Appendix 2.8
Notices

London CANADA



PLANNING APPLICATIONS

Southwest Area Plan – Public Meeting
Tuesday June 15th, 2010 – 7:00 p.m.
City Hall Council Chambers
The Southwest Area Plan was initiated by City Council in 2009 to provide a comprehensive assessment of the opportunities and constraints associated with the long-term planning and development in Southwest London. The Area Plan will provide a basis for Official Plan land use designations and policies to be adopted by City Council, thereby providing a framework for the decisions affecting future land uses, municipal servicing infrastructure, phasing of development and protection of natural heritage resources. The study area consists of lands within the Urban Growth Boundary located south of Southdale Road, east of Dingman Creek, and north of the Highway 402 corridor, comprising a total size of 2,700 hectares. The consulting firms Urban Strategies Inc. and AECOM Canada Ltd. have been retained to undertake preparation of the Area Plan. Community and stakeholder involvement is critical to the success of the study process. Planning Committee will hold a public meeting on June 15 at 7:00 p.m. in the City Hall Council Chambers, 300 Dufferin Avenue. The purpose of the meeting is for Planning Committee to receive an update from the consultant team on stakeholder feedback recorded to date and to receive written or oral submissions from the public on the draft Southwest Area Plan report and related background studies. Hard copies of the draft Area Plan report and background studies are available for review at the Planning Division, 206 Dundas Street, and at the Development Approvals Unit, 6th floor, City Hall, 300 Dufferin Avenue on Monday to Friday, 8:30 a.m. to 4:30 p.m.. These documents can also be viewed at the Lambeth Branch Library, 7112 Beattie Street, the Westmount Branch Library, 3200 Wonderland Road South, and online at: http://www.london.ca/Planning_and_Development/Southwest.htm If you are unable to attend the Public Meeting, you may provide comments or obtain further information by contacting Terry Grawey in the City of London Development Approvals Unit by phone at 519-930-3500; or, by e-mail at tgrawey@london.ca referring to file O-7609.

Downtown Heritage Conservation District Study and Plan
On February 2, 2009 Council approved the Terms of Reference for the Downtown Master Plan process. Since that time the City has received a number of public and agency comments through two public workshops, one public meeting, an on-line survey, individual letters and e-mails and telephone conversations. A Draft Downtown Vision Report and Draft Background Study are currently being circulated for public review. In conjunction with the preparation of a Downtown Master Plan and revised Downtown Urban Design Guidelines, a Downtown Heritage Conservation District Study and Plan were identified as the remaining components of the Master Plan. In the spring of 2010 the City selected a consultant, Stantec Consulting, to complete both the Background Study and Plan. A Steering Committee has recently been established to oversee the work of the consultants. It is expected that a public meeting will be held once a Draft Downtown Heritage Conservation District Background Study is available for public circulation. For more information contact Chuck Parker at (519) 661-2500 Ext. 4648 or e-mail at cparker@london.ca. You can also visit the City's website at www.london.ca to follow both the Downtown Master Plan and Downtown Heritage Conservation District Study and Plan processes.

Public Information Meeting- Wortley Village-Old South Heritage Conservation District
The City has initiated a study of the Wortley Village - Old South neighbourhood to determine its potential as a Heritage Conservation District under Section 41 of the Ontario Heritage Act. Members of the public are invited to attend to hear the initial findings of the consultants, to comment and to identify concerns or questions related to the establishment of the potential Heritage Conservation District. The meeting is scheduled for **June 16, 7:00 p.m. at Wesley-Knox United Church, 91 Askin Street**
Planner - Don Menard 519-661-2500 ext. 0267.

Notice of Public Meeting
The Planning Committee will consider the following matters at a Public Meeting to be held **June 21, 2010**. The meeting will take place in **City Hall, Council Chambers**. If you have any questions or would like to provide comment, please see "Providing Comment" below.

4:30 p.m. - 2470 Bradley Avenue; 2475, 2506, 2525, 2575 Bonder Road; and 2575 Boyd Court (Innovation Park Phase IV Subdivision) – The purpose and effect of this City-initiated Zoning By-law amendment is: to replace the existing LI2(9), h-77*LI2(9), and h-36*LI2(9) Light Industrial Zones, with new Light Industrial Zones and Holding Light Industrial Zones that would permit "Advanced Manufacturing Industrial Uses" and "Advanced Manufacturing Educational Uses"; to add new definitions to Section 2 of the Zoning By-law for "Advanced Manufacturing Industrial Uses" and "Advanced Manufacturing Educational Uses"; and, to add regulations for the new Zones that address a number of site requirements including minimum parking, minimum lot area, minimum lot frontage, minimum yard depths, minimum landscaped open space, maximum height, maximum lot coverage and maximum amount of open storage. The holding provisions that apply to the existing Light Industrial Zones will remain in place. File: Z-7779 Planner: Terry Grawey

Notice of Intent to Remove Holding Provisions
The Planning Committee will consider removing the Holding Provisions as applies to the lands described below at a future Planning Committee Meeting. The Planning Committee will not hear representations from the public on these matters. If you have any questions or comments about this matter, please call the planner identified below.

267 Fanshawe Park Road West - City Council will consider removing the h-5 and h-103 holding provisions as they apply to the subject lands to allow building permits to be issued. The h-5 holding provision is to ensure that development takes a form compatible with adjacent land uses and agreements are entered into following public site plan review. The h-103 holding provision is to ensure that urban design objectives as identified by Council are addressed at the site plan stage. Planning Committee will consider removing the holding provision as it applies to these lands no earlier than June 21, 2010, and only after the Site Plan application has undergone full public review. File H-7778 Planner: Allister MacLean 519-661-3500

3471 to 3497 Morgan Crescent, west side (Lots 39-43 Plan 33M-602) - City Council intends to consider removing the holding (h) provision which was put in place to ensure orderly development of lands and adequate provision of municipal services and that a subdivision agreement or development agreement is entered into. Planning Committee will consider removing the holding provision as it applies to these lands no earlier than June 21, 2010. File: H-7780 Planner: Larry Mottram

PROVIDING COMMENT
Your comments on these matters are important. You may comment by phone, mail, e-mail or fax by calling 519-661-4980, or emailing the planner assigned to the file you are interested in. Mail should be directed to: The City of London, Planning Division, P.O. Box 5035, 300 Dufferin Ave., London, ON, N6A 4L9.
Please note: Comments and opinions submitted on these matters, including the originator's name and address, become part of the public record, may be viewed by the general public and may be published in a Planning Report and Council Agenda.
If a person or public body does not make oral submissions at a public meeting or make written submissions to the City of London before the application is adopted or approved, the person or public body is not entitled to appeal the decision of the Municipal Council or the Approval Authority of the City of London to the Ontario Municipal Board. If a person or public body does not make oral submissions at a public meeting or make written submissions to the City of London before the proposed is adopted or approved, the person or public body may not be added as a party to the hearing of an appeal before the Ontario Municipal Board unless, in the opinion of the Board, there are reasonable grounds to add the person or public body as a party.
ADDITIONAL INFORMATION
If you wish to view additional information or material relating to these applications, the files are available to the public at City Hall, Planning Division, 6th floor, 300 Dufferin Ave., London, ON, Monday to Friday, 8:30am-4:30pm.
If you wish to be notified of the adoption of the proposed Official Plan amendment or the refusal of a request to amend the Official Plan, you must make a written request to the City of London, Clerk's Department, 300 Dufferin Ave., London, ON, N6A 4L9. If you wish to be notified of the approval or refusal of a proposed plan of subdivision, you must make a written request to the Director of Development Planning, City of London, P.O. Box 5035, 300 Dufferin Ave., London, ON, N6A 4L9
Please ensure you reference the File Number or address in all communications.

CONSENTS

The **London Consent Authority** will be considering the following applications for severance no earlier than **June 21, 2010**.

B.026/10 – 281 Piccadilly Street – Western Ontario Therapeutic Community Hostel – Request an easement and right-of-way for mutual driveway over 281 Piccadilly Street in favour of 289 Piccadilly Street.

B.027/10 – 4335 Murray Road – David Murray – Request to sever 1.86 ha with an existing farm dwelling and barns and retain 39 ha for future agricultural use
If a person or public body that files an appeal of a decision of the City of London Consent Authority in respect of the proposed consent does not make written submissions to the Consent Authority, before it gives or refuses to give a provisional consent, the Ontario Municipal Board may dismiss the appeal. If you wish to be notified of the decision of the Consent Authority in respect of the proposed consent you must make a written submission to the City of London Consent Authority, 300 Dufferin Avenue, 6th Floor, London, Ontario, N6A 4L9. Additional information on these applications is available at the Consent Authority Office, Development Planning, Development Approvals Business Unit, 6th Floor, City Hall, 300 Dufferin Avenue, London, Ontario, 519- 930-3500

NOTICES

Cash-In-Lieu of Parkland Dedication Rates
In accordance with By-law Number CP-9 as amended, effective July 1, 2010 the following rates shall apply to each dwelling unit for cash-in-lieu of parkland dedication:

Detached Single	
Up to 11.99m lot frontage	$ 875.00
12m - 14.99m lot frontage	$1130.00
15m - 17.99m lot frontage	$1380.00
18m or greater lot frontage	$1715.00

Where lot frontage is as defined in the Zoning By-law i.e. for irregular lots - measurement taken at building front.

Cluster detached/Semi-detached /duplex	$ 875.00
Attached Rowhousing	$ 540.00
Attached Apartments	$ 290.00

There was no increase in the Statistics Canada London Land index from 2008 to 2009 which resulted in no increase of all rates (average 0.0%).

Notice of Study Commencement/Notice of Public Information Centre – The Corporation of the City of London and the Upper Thames River Conservation Authority
The West London Dyke is 2374m long and runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the main branch to the west side of the Wharncliffe Road Bridge. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities. Construction of the West London Dyke began in the 1880s, with extensions, reinforcements, and height increases occurring at least twice by the early 1900s. Since 2004, various inspections, studies and rehabilitation projects have been carried out on the West London Dyke, including the replacement of approximately 350 m of the dyke north from the Queens Avenue Bridge in 2007 and construction of the Dundas/Queens Pedestrian Underpass in 2009. The UTRCA and the City of London are undertaking a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment (EA) Act. The UTRCA has retained Stantec Consulting Ltd. to complete this study in accordance with the requirements of the Municipal Class EA document developed by the Municipal Engineers Association (October 2000 as amended in 2007). The Municipal Class EA process includes a public and review agency consultation, an evaluation of alternative solutions, and an assessment of the impacts of the proposed improvements. Public consultation is a key component of this study. The first public information centre will be held Wednesday June 16, 2010. This event is an opportunity for interested persons to learn more about the Master Planning Process and to provide input and comment to the City and the UTRCA. The Public Information Centre details are as follows:

Date: June 16, 2010
Time: 6:00 – 9:00 p.m.
Location: Kiwanis Community Centre, 78 Riverside Drive
Inquiries are welcome and may be directed to:
Rick Goldt, C.E.T.
Supervisor, Water Control Structures
UTRCA
1424 Clarke Road
London, ON N5V 5B9
Tel: 519-451-2800 ext. 244
Fax: 519-451-1188
OR
Billy Haklander, P. Eng.
Stormwater Management Unit
City of London
300 Dufferin Ave., 9th Floor
London, ON N6A 4L9
Tel: 519-661-2500 ext. 5862
Fax: 519-661-2355
OR
Nelson Oliveira, P. Eng. Project Manager
Associate, Environmental Infrastructure
Stantec Consulting Ltd.
800-171 Queens Avenue
London, ON N6A 5J7
Tel: 519-645-2007 ext. 240
Fax: 519-645-6575

Elgin Area
Primary Water Supply System

Notice of a Public Open House - Pipeline Twinning - Elgin Area Water Supply System
Project Description:
The Elgin Area Primary Water Supply System (EAPWSS) is twinning the existing water supply pipeline from the Elgin Area Water Treatment Facility on Dexter Line to the Terminal Reservoir and Pump Station on the east side of St. Thomas. The EAPWSS supplies potable municipal water to the City's of London and St. Thomas, the Municipalities of Bayham, Central Elgin and Southwold, the Town of Aylmer, and the Township of Malahide. Pipeline twinning design will take place in 2010 with construction in 2011.
You are invited to attend an Open House where we will be providing people with updated information on the Project and answering questions.
DATE: Tuesday, June 15, 2010
TIME: 6 – 8:30 p.m. (Presentation at 7:00 p.m. followed by a Question & Answer session)
PLACE: St. Joseph Catholic Secondary School, 100 Bill Martyn Parkway, St. Thomas, ON, N5R 6A7
Project Contact and Information:
To learn more about the project or to communicate and concerns you have please call 1-877-950-2929 or e-mail eapwss.service@aecom.com. Visit our website at http://www.watersupply.london.ca/.

TENDERS & PROPOSALS

TENDER10-102 – Wonderland Road South/ Bradley Avenue Intersection Improvements
Closing Date: 12:00 noon, Wednesday, June 23, 2010
Tender documents may be obtained **after 12:00 noon, on June 9, 2010** from Stantec Consulting Ltd., 171 Queens Avenue, Suite 800, London, ON, 519-645-2007. Each tender must be accompanied by a bid deposit in the amount of Eighty Thousand Dollars ($80,000).

TENDER10-104 – Operational Improvements – Secondary Collectors
Closing Date: 12:00 noon, Wednesday, June 23, 2010
Tender documents may be obtained after **12:00 noon, on June 9, 2010** from Purchasing and Supply Division, 267 Dundas Street, 4th Floor, London, ON, 519-661-2500 Ext. 4900. Each tender must be accompanied by a bid deposit in the amount of Twenty Thousand Dollars ($20,000.00).

TENDER10-105 – Pavement Preservation – Rout & Seal
Closing Date: 12:00 noon, Wednesday, June 23, 2010
Tender documents may be obtained after **12:00 noon, on June 9, 2010** from Purchasing and Supply Division, 267 Dundas Street, 4th Floor, London, ON, 519-661-2500 Ext. 4900.

Note: The City of London Fair Wage Policy is applicable to all the above projects. All documents purchased are $100.00 by cheques payable to the City Treasurer, City of London, unless specified differently. All tenders listed above are not available to be downloaded from the Internet at this time.

RFP10-20 - Gordon Sanitary Trunk Sewer Rehabilitation
Closing Date: 12:00 noon, local time, Wednesday, June 23, 2010
RFP documents may be obtained **after 9:00am on June 8, 2010** from Dillon Consulting Limited, 130 Dufferin Avenue, Suite 1400, London, ON, 519-438-6192, where documents can be obtained upon payment of a **$25.00** non-refundable Administrative Fee by cheque made payable to the City Treasurer, City of London for the construction of the following: The sewer rehabilitation project includes up to 800 metres of 900 mm to 1200 mm diameter concrete pipe using a cured-in-place pipe (CIPP) liner solution, up to 18 maintenance hole structures using a corrosion prevention solution as well as all sewer by-passing, alterations to maintenance hole chambers, traffic control, public notifications and boulevard, easement and road restoration. Proposal submissions, sealed in envelopes, will be received at the office of Dillon Consulting Limited, 130 Dufferin Avenue, Suite 1400, London, ON, 519-438-6192 no later than **12:00 noon, local time, June 23, 2010**. A site visit has been scheduled for **June 15 at 2:00 p.m.** on Emery Street east of Ridgewood Crescent. Each proposal must be accompanied by a bid deposit in the amount of One Hundred and Fifty Thousand Dollars ($150,000.00). The City of London Fair Wage Policy is applicable to this project.

London
CANADA



PLANNING APPLICATIONS

Southwest Area Plan – Public Meeting – Tuesday, June 15, 2010 – 7:00 p.m. City Hall Council Chambers
The Southwest Area Plan was initiated by City Council in 2009 to provide a comprehensive assessment of the opportunities and constraints associated with the long-term planning and development in Southwest London. The Area Plan will provide a basis for Official Plan land use designations and policies to be adopted by City Council, thereby providing a framework for the decisions affecting future land uses, municipal servicing infrastructure, phasing of development and protection of natural heritage resources. The study area consists of lands within the Urban Growth Boundary located south of Southdale Road, east of Dingman Creek, and north of the Highway 402 corridor, comprising a total size of 2,700 hectares. The consulting firms Urban Strategies Inc. and AECOM Canada Ltd. have been retained to undertake preparation of the Area Plan. Community and stakeholder involvement is critical to the success of the study process. Planning Committee will hold a public meeting on Tuesday June 15th commencing at 7:00 p.m. in the City Hall Council Chambers, 300 Dufferin Avenue. The purpose of the meeting is for Planning Committee to receive an update from the consultant team on stakeholder feedback recorded to date and to receive written or oral submissions from the public on the draft Southwest Area Plan report and related background studies. Hard copies of the draft Area Plan report and background studies are available for review at the Planning Division, 206 Dundas Street, and at the Development Approvals Unit, 6th floor, City Hall, 300 Dufferin Avenue on Monday to Friday, 8:30 a.m. to 4:30 p.m.. These documents can also be viewed at the Lambeth Branch Library, 7112 Beattie Street, the Westmount Branch Library, 3200 Wonderland Road South, and online at http://www.london.ca/Planning_and_Development/Southwest.htm If you are unable to attend the Public Meeting, you may provide comments or obtain further information by contacting Terry Grawey in the City of London Development Approvals Unit by phone at 519-930-3500; or, by e-mail at tgrawey@london.ca referring to file O-7609.

Public Information Meeting- Wortley Village-Old South Heritage Conservation District
The City has initiated a study of the Wortley Village - Old South neighbourhood to determine its potential as a Heritage Conservation District under Section 41 of the *Ontario Heritage Act*. Members of the public are invited to attend to hear the initial findings of the consultants, to comment and to identify concerns or questions related to the establishment of the potential Heritage Conservation District. The meeting is scheduled for **Wednesday, June 16, 7:00 p.m. at Wesley-Knox United Church, 91 Askin Street.** Planner - Don Menard (519-661-2500 ext. 0267)

Notice of Community Meeting
London Psychiatric Hospital Lands Area/Secondary Plan and Municipal Class Environmental Assessment – Information Session
Lands bounded by Oxford Street East, Highbury Avenue North, Dundas Street and existing development west of First Street. The consultant retained by ORC, MHBC Planning, is hosting an information session to provide information on the study progress and invite input on the presented materials.
When and What:
June 29, 2010 – Review Urban Design Guidelines, Land Use Concepts, Environmental Assessment Information
Where: North London Optimist Community Centre, Committee Room 2, 1345 Cheapside Street
Time: Panel Displays 6:00 pm – 6:30 pm
Formal Presentation and Input: 6:30 pm – 8:30 pm
Please contact either of the Project Lead members if you would like to be included on the mailing list, have questions or wish to obtain more information on the London Psychiatric Hospital Lands Area/Secondary Plan or the Municipal Class Environmental Assessment, or visit www.london.ca/lph. Barb Debbert, City of London – Senior Planner, bdebbert@london.ca, 519-661-2500 ext. 5345. Carol Wiebe, Project Manager, MHBC Planning, cwiebe@mhbcplan.com, 519-858-2797.

Combined Notice of Application and Notice of Public Meeting
City Wide – The purpose and effect of this Official Plan change is to amend Section 19.12 (Public Participation), to include policies that will allow the City of London to use alternative means of providing public notice, including methods such as electronic notice on the City's website, email or other means.
Planning Committee will consider this application at its meeting on **Monday, July 19, 2010 at 7:00 p.m.** File: O-7792 Planner: Sean Meksula

Notice of Application
The following applications have been received by the City of London. The Planning Committee will be considering these applications at a future public meeting, the date and time of which will be published in Living in the City. If you have any questions or would like to provide comment, please see "Providing Comment" below.
Revised Notice of Application – 660 Sunningdale Road East – Consideration of a revised Plan of Subdivision containing 15 low density residential blocks, 30 low/ medium density residential blocks, 7 mixed use medium density residential blocks, 3 high density residential blocks, 4 park blocks, 8 open space blocks, 1 storm water management block, 4 walkway blocks, 5 reserves/ road widening blocks, served by two new secondary collector roads and 8 local streets. The revised application includes the reconfiguration of roads, development blocks and the stormwater management facility. Possible change to Zoning By-law Z.-1 **FROM** an Urban Reserve (UR4) Zone and an Environmental Review (ER) Zone **TO** a Residential R1 Special Provision (R1-( )) Zone, a Residential R3 Special Provision (R3-( )) Zone, a Residential R9 Special Provision (R9-( )) Zone, a Business District Commercial Special Provision (BDC-( )) Zone and an Open Space Special Provision (OS-( )) Zone to permit a mix of residential and commercial uses, parkettes, streets with reduced road allowances, public rear lanes and a mix of community/residential uses. File: 39T-09501/OZ-7638 Planner: Heather McNeely
765 Eagletrace Drive – The purpose and effect of this application is to approve a Draft Plan of Vacant Land Condominium consisting of 48 residential units. The applicant is requesting approval of a Draft Plan of Vacant Land Condominium and proposes to register a residential Plan of Vacant Land Condominium, creating 48 residential units, and a common element for the driveway and related services. The registration of a Vacant Land Condominium means that each unit will be sold to a future homeowner either before or after the home is constructed. Planning Committee will be considering the implications of dividing the land into units and common elements. The Site Plan application to determine the physical form of development is currently under review for approval (SP 10-006831). File: 39CD-10505 Planner: Allister MacLean

Notice of Intent to Remove a Holding Provisions
The Planning Committee will consider removing the Holding Provisions as applies to the lands described below at a future Planning Committee Meeting. The Planning Committee will not hear representations from the public on these matters. If you have any questions or comments about this matter, please call the planner identified below.
765 Eagletrace Drive - City Council will consider removing the h-54 and h-71 holding provisions as they apply to the subject lands to allow building permits to be issued. The h-54 holding provision is to ensure that the owner implements the necessary noise attenuation measures so that there are no land use conflicts between arterial roads and the proposed residential uses. The h-71 holding provision is to ensure that the development is designed so that the front facade of the dwelling units are oriented to all abutting streets (except where a noise barrier has been approved) and that the recommended building orientation be incorporated into the approved site plan and executed development agreement prior to the removal of the holding h-71 symbol. Removal of the holding provisions that apply to these lands will be heard no earlier than **July 19, 2010.** File H-7790 Planner: Allister MacLean 519-661-3500

PROVIDING COMMENT
Your comments on these matters are important. You may comment by phone, mail, e-mail or fax by calling 519-661-4980, or emailing the planner assigned to the file you are interested in. Mail should be directed to: The City of London, Planning Division, P.O. Box 5035, 300 Dufferin Ave., London, ON, N6A 4L9.
***Please note:** Comments and opinions submitted on these matters, including the originator's name and address, become part of the public record, may be viewed by the general public and may be published in a Planning Report and Council Agenda.*
If a person or public body does not make oral submissions at a public meeting or make written submissions to the City of London before the application is adopted or approved, the person or public body is not entitled to appeal the decision of the Municipal Council or the Approval Authority of the City of London to the Ontario Municipal Board. If a person or public body does not make oral submissions at a public meeting or make written submissions to the City of London before the proposed is adopted or approved, the person or public body may not be added as a party to the hearing of an appeal before the Ontario Municipal Board unless, in the opinion of the Board, there are reasonable grounds to add the person or public body as a party.

ADDITIONAL INFORMATION
If you wish to view additional information or material relating to these applications, the files are available to the public at City Hall, Planning Division, 6th floor, 300 Dufferin Ave., London, ON, Monday to Friday, 8:30am-4:30pm. If you wish to be notified of the adoption of the proposed Official Plan amendment or the refusal of a request to amend the Official Plan, you must make a written request to the City of London, Clerk's Department, 300 Dufferin Ave., London, ON, N6A 4L9. If you wish to be notified of the approval or refusal of a proposed plan of subdivision, you must make a written request to the Director of Development Planning, City of London, P.O. Box 5035, 300 Dufferin Ave., London, ON, N6A 4L9
Please ensure you reference the File Number or address in all communications.

MINOR VARIANCES

The **Committee of Adjustment** for the City of London will meet on **June 28, 2010 at 1:20 p.m.**, on the second floor of City Hall, 300 Dufferin Avenue, London, Ontario for the purpose of hearing the following applications for Minor Variance to Zoning By-law Z.-1 and By-law Township 2000.
1:20 p.m. – A.066/10 – 942 Cherryhaven Drive – James & Michelle English – Request to permit a detached accessory structure in the rear yard with an exterior side yard setback of 0.6m whereas 4.5m is required.
1:30 p.m. – A.067/10 – 431 Richmond Street – Denis Dimitrakopoulos – Request to construct a 3 storey office building with commercial on the main floor with a front yard setback of 0m from the existing road allowance in place of a 2.1m setback required from the ultimate road widening.
1:50 p.m. – A.068/10 – 235 North Centre Road – 235 North Centre Road Inc – Request to permit a tutoring facility whereas such a use is not mentioned under the present zone. Request to maintain a restaurant with a gross floor area of 380.7m² whereas 300m² maximum is permitted. Request to maintain a personal service establishment with a gross floor area of 161.5m² whereas 150m² maximum is permitted. Request to maintain a landscaped open space of 10.2% whereas a minimum of 20% is required. Request to maintain 126 parking spaces whereas 164 are required.
2:00 p.m. – A.069/10 – 75 Golfdale Crescent – Cecily Elliott – Request to permit a rear yard deck with a north interior side yard setback of 0m whereas 1.2m is required.
If you wish to be notified of a decision of the Committee of Adjustment, you must appear in person or by Counsel at the hearing and file a written request with the Secretary-Treasurer of the Committee of Adjustment. An appeal from a decision of the Committee of Adjustment to the Ontario Municipal Board shall be filed within 20 days of making the decision. Any appeal must be filed with the Secretary-Treasurer of the Committee of Adjustment, City of London, 300 Dufferin Avenue, 6th Floor, London, ON N6A 4L9.

NOTICES

Class Environmental Assessment Schedule B - Stoney Creek Trunk Sanitary Sewer Extension (Trossacks Avenue to Highbury Avenue N.) - Project ES4402 - Public Consultation Meeting
The City of London is conducting a Municipal Class Environmental Assessment for the Stoney Creek Trunk Sanitary Sewer Extension (Trossacks Avenue to Highbury Avenue N.). The planning for this project is following in accordance with the requirements of a Schedule B Activity under the Municipal Engineers Association's Class Environmental Assessment (Class EA) document; dated June 2000. The City of London, by way of this notice, is inviting public input and comment. A **Public Consultation Meeting** will be held **June 23, 2010** from **6:00 to 8:00 p.m. at Ridgeview Community Church, 1470 Glenora Drive** with a presentation at 6:15 p.m. This is the third public meeting. The purpose of this public meeting will be to present the updated preferred option with the screening criteria. Please contact IBI Group (Sandra Hayman, P. Eng, 519.472.7328, shayman@ibigroup.com) or the City's Project Manager (Patricia Lupton, P. Eng., 519.661-2500 ext 5613, plupton@london.ca).

Notice of Study Commencement/Notice of Public Information Centre – The Corporation of the City of London and the Upper Thames River Conservation Authority
The West London Dyke is 2374m long and runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the main branch to the west side of the Wharncliffe Road Bridge. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities. Construction of the West London Dyke began in the 1880s, with extensions, reinforcements, and height increases occurring at least twice by the early 1900s. Since 2004, various inspections, studies and rehabilitation projects have been carried out on the West London Dyke, including the replacement of approximately 350 m of the dyke north from the Queens Avenue Bridge in 2007 and construction of the Dundas/Queens Pedestrian Underpass in 2009. The UTRCA and the City of London are undertaking a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment (EA) Act. The UTRCA has retained Stantec Consulting Ltd. to complete this study in accordance with the requirements of the Municipal Class EA document developed by the Municipal Engineers Association (October 2000 as amended in 2007). The Municipal Class EA process includes a public and review agency consultation, an evaluation of alternative solutions, and an assessment of the impacts of the proposed improvements. Public consultation is a key component of this study. The first public information centre will be held Wednesday June 16, 2010. This event is an opportunity for interested persons to learn more about the Master Planning Process and to provide input and comment to the City and the UTRCA. The Public Information Centre details are as follows:
Date: June 16, 2010
Time: 6:00 – 9:00 p.m.
Location: Kiwanis Community Centre, 78 Riverside Drive
Inquiries are welcome and may be directed to:
Rick Goldt, C.E.T.
Supervisor, Water Control Structures
UTRCA
1424 Clarke Road
London, ON N5V 5B9
Tel: 519-451-2800 ext. 244
Fax: 519-451-1188
OR
Billy Haklander, P. Eng.
Stormwater Management Unit
City of London
300 Dufferin Ave., 9th Floor
London, ON N6A 4L9
Tel: 519-661-2500 ext. 5862
Fax: 519-661-2355
OR
Nelson Oliveira, P. Eng. Project Manager
Associate, Environmental Infrastructure
Stantec Consulting Ltd.
800-171 Queens Avenue
London, ON N6A 5J7
Tel: 519-645-2007 ext. 240
Fax: 519-645-6575

Elgin Area
Primary Water Supply System

Notice of a Public Open House - Pipeline Twinning - Elgin Area Water Supply System
Project Description:
The Elgin Area Primary Water Supply System (EAPWSS) is twinning the existing water supply pipeline from the Elgin Area Water Treatment Facility on Dexter Line to the Terminal Reservoir and Pump Station on the east side of St. Thomas. The EAPWSS supplies potable municipal water to the City's of London and St. Thomas, the Municipalities of Bayham, Central Elgin and Southwold, the Town of Aylmer, and the Township of Malahide. Pipeline twinning design will take place in 2010 with construction in 2011. You are invited to attend an Open House where we will be providing people with updated information on the Project and answering questions.
DATE: **Tuesday, June 15, 2010**
TIME: **6 – 8:30 p.m.** ***(Presentation at 7:00 p.m. followed by a Question & Answer session)***
PLACE: **St. Joseph Catholic Secondary School, 100 Bill Martyn Parkway, St. Thomas, ON, N5R 6A7**
Project Contact and Information:
To learn more about the project or to communicate and concerns you have please call 1-877-950-2929 or e-mail eapwss.service@aecom.com. Visit our website at http://www.watersupply.london.ca/.

TENDERS AND PROPOSALS

PROPOSAL 10-17 Supply and Delivery of Cafeteria Chairs
Closing Date: 12:00 noon, THURSDAY, JULY 8, 2010
The City of London is seeking proposals for the supply and delivery of cafeteria chairs for City Hall. There are 120 chairs to be replaced and the new chairs are to match the existing tables. This Proposal is available to be downloaded from the City's website. If unable to download this document, Proposals may be obtained from the Purchasing & Supply, 267 Dundas Street, 4th Floor, London, ON N6A 1H2, 519-661-4900 upon payment of **$25.00** by cheque payable to the City Treasurer, City of London.

TENDER 10-79 Fox Hollow Trunk Sanitary Sewer - Phase I
Closing Date: 12:00 noon, TUESDAY, June 29, 2010
Tender documents may be obtained after 12:00 noon on Tuesday, June 15, 2010 from Stantec Consulting Ltd., 171 Queens Avenue, Suite 800, London, ON 519-645-2007, upon payment of a $100.00 non-refundable Administrative Fee by cheque made payable to the City Treasurer, City of London. Test pits have been scheduled for **June 24, 2010 at 9:00 am.** Each tender must be accompanied by a bid deposit in the amount of $75,000.00 and a letter of Agreement to Bond. The City of London Fair Wage Policy is applicable to this project.

Office, Development Planning, Development Approvals Business Unit, 6th Floor, City Hall, 300 Dufferin Avenue, London, Ontario 519 930-3500.

NOTICES

Public Notice RE: 2012 Budget
The **2012 Draft Capital and Operating Budgets** were tabled at the Strategic Priorities and Policy Committee meeting held on December 5, 2011. The 2012 Property Tax Supported Budget may be viewed at the various Branch Libraries, or in the City Clerk's Office, 3rd Floor, City Hall, 300 Dufferin Avenue. The 2012 Budget can also be viewed on the City's website at www.london.ca. Notice is hereby given that the Council of The Corporation of the City of London intends to adopt the 2012 Property Tax Supported Budget at the Council Meeting to be held on Tuesday, February 21, 2012 commencing at 3:00 p.m. in the Council Chambers. If you have any questions regarding the 2012 Budget please e-mail budget@london.ca. Personal information collected and recorded or submitted in writing on this subject is collected under the authority of the *Municipal Act, 2001*, as amended and will be used by Members of Council and City of London staff in their consideration of the 2012 Budget. Written submissions including names and contact information will be made available to the public, including publishing on the City's website. Questions about this collection should be referred to Cathy Saunders, City Clerk, 519-661-2500 ext. 4937.

Notice of Public Participation Meeting - Operational Improvements - Glenora Drive
The Transportation Division will hold a public information meeting to discuss modified operational improvements for Glenora Drive to be implemented this year in co-ordination with the road resurfacing between Fanshawe and Glengarry. A plan was presented to this area in 2010 but it has been modified in response to public input attained at the 2010 public meeting. This PPM will be held in a drop-in, open house format as follows:
Date: Wednesday, February 15, 2012
Time: 6:00 p.m. to 9:00 p.m.
Location: Northridge Public School, 25 McLean Drive
If you have any comments, questions or concerns, please contact:
Mark Ridley
Senior Technologist
Transportation Division
City of London
300 Dufferin Ave., PO Box 5035
London, ON N6A 4L9
Tel: 519-661-2500 Ext. 4736
Fax: 519-661-4734
Email: mridley@london.ca
OR
Karl Grabowski, P. Eng
Transportation Design Engineer
City of London
300 Dufferin Ave., PO Box 5035
London, ON N6A 4L9
Tel: 519-661-2500 Ext. 5071
Fax: 519-661-4734
Email:kgrabows@london.ca
Personal information collected and recorded at the public meeting or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001 and will be used by members of Council and City of London staff in their review of this matter. Any written submissions, including names and contact information and the report of the meeting, will be made available to the public. Questions about this collection should be referred to Cathy Saunders, City Clerk (519-661-2500 ext. 4937).

[illegible] February, 2012. Cathy Saunders, City Clerk.

Notice of Public Information Centre #2 – West London Dyke Master Repair Plan – The Corporation of the City of London and Upper Thames River Conservation Authority (UTRCA) - The UTRCA and the City of London are undertaking a Master Repair Plan for the West London Dyke covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the *Environmental Assessment Act*. The UTRCA has retained Stantec Consulting Ltd. to complete this study in accordance with the requirements of the Municipal Class EA document developed by the Municipal Engineers Association (October 2000 as amended in 2007). The Municipal Class EA process includes a public and review agency consultation, an evaluation of alternative solutions, and an assessment of the impacts of the proposed improvements. Public consultation is a key component of this study. The second and final public information centre will be held Thursday, February 23, 2012. The objective of this information centre is to outline the principles and project drivers established to guide future requirements relating to repairs/replacement of the West London Dyke. Selection of preferred alternatives based upon environmental components, existing dyke profile, structure and condition, and planning initiatives will also be reviewed. This event is an opportunity for interested persons to provide input and comment to the City and the UTRCA. The Public Information Centre (PIC) details are as follows:
Date: February 23, 2012
Time: 6:00 pm – 9:00 pm (Presentation at 7:00 pm)
Location: Kiwanis Community Centre, 78 Riverside Drive
The presentation material will be available for viewing on the City's website at http://www.london.ca/d.aspx?s=/Sewer_and_Wastewater/WLD.htm after the PIC. Inquiries are welcome and may be directed to:
Rick Goldt, C.E.T., Supervisor
Supervisor, Water Control Structures
UTRCA
1424 Clarke Rd.
London ON N5V 5B9
Ph: 519-451-2800 x244
Fax: 519-451-1188
OR
Billy Haklander, P.Eng.
Environmental Services Engineer
Stormwater Management Unit
Planning, Environmental and Engineering Services Dept
City of London
300 Dufferin Avenue, 9th Floor
London, ON N6A 4L9
Tel: 519-661-2500 x5862
Fax: 519-661-2355
OR
Nelson Oliveira, P.Eng.
Project Manager
Associate, Environmental Infrastructure
Stantec Consulting Ltd.
800-171 Queens Avenue
London, ON N6A 5J7
Tel: 519- 645-2007 Ext. 240
Fax: 519- 645-6575

TENDERS AND PROPOSALS

TENDER 12-19 – Mornington Pond Sediment Removal
[illegible] WEDNESDAY, FEBRUARY

ritten submissions, including names and contact iformation and the report of the meeting, will be iade available to the public. Questions about this ollection should be referred to Catharine Saunders, ity Clerk (519-661-2500 ext. 4937).

lotice of Public Participation Meeting – Proposed mendments to the Clearing of Land By-law, PW-9 to be held on March 6, 2012, not before 4:00 p.m. Council Chambers, City Hall (2nd Floor), 300 Dufferin venue. The Public Safety Committee will hold a ublic participation meeting to receive delegations nd their comments regarding amendments proposed o the Clearing of Land By-law. The proposed mendments are to address garbage and compost ontainment, the location of garbage and compost ontainers and graffiti on residential property. Written ubmissions and requests for delegation status egarding this matter to be included on the Public Safety Committee Agenda for the meeting must be submitted by no later than 9:00 am on Monday, February 27, either delivered or mailed to the City Clerk's Office, Room 308, 300 Dufferin Ave P.O. Box 5035 London, Ontario N6A 4L9. Submissions in accordance with the above-noted deadline may also be e-mailed to jbunn@london.ca Questions regarding the proposed by-law amendments should be directed to Heather Chapman, Coordinator, Municipal Law Enforcement Services 519-661-2500 ext 5292. Personal information collected and recorded at the public meeting or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001, and will be used by members of Council and City of London staff in their review of this matter. Any written submissions, including names and contact information and the report of the meeting, will be made available to the public. Questions about this collection should be referred to Catharine Saunders, City Clerk (519-661-2500 ext. 4937).

Notice of Public Participation Meeting – Proposed By-law to License Methadone Pharmacies and Methadone Clinics - March 6, 2012, not before 4:30 pm, Council Chambers, City Hall (2nd Floor), 300 Dufferin Avenue. The Public Safety Comittee will hold a public participation meeting to receive delegations and their comments regarding a proposed By-law to License Methadone Pharmacies and Methadone Clinics. Written submissions and requests for delegation status regarding this matter to be included on the Public Safety Committee Agenda for the meeting must be submitted by no later than 9:00 am on Monday, February 27, either delivered or mailed to the City Clerk's Office, Room 308, 300 Dufferin Ave P.O. Box 5035 London, Ontario N6A 4L9. Submissions in accordance with the above-noted deadline may also be e-mailed to jbunn@london.ca Questions regarding the proposed by-law should be directed to Orest Katolyk 519-661-2500 ext 4969. Personal information collected and recorded at the public meeting or submitted in writing

Notice of Public Information Centre #2 – West London Dyke Master Repair Plan – The Corporation of the City of London and Upper Thames River Conservation Authority (UTRCA) - The UTRCA and the City of London are undertaking a Master Repair Plan for the West London Dyke covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act. The UTRCA has retained Stantec Consulting Ltd. to complete this study in accordance with the requirements of the Municipal Class EA document developed by the Municipal Engineers Association (October 2000 as amended in 2007). The Municipal Class EA process includes a public and review agency consultation, an evaluation of alternative solutions, and an assessment of the impacts of the proposed improvements. Public consultation is a key component of this study. The second and final public information centre will be held Thursday, February 23, 2012. The objective of this information centre is to outline the principles and project drivers established to guide future requirements relating to repairs/replacement of the West London Dyke. Selection of preferred alternatives based upon environmental components, existing dyke profile, structure and condition, and planning initiatives will also be reviewed. This event is an opportunity for interested persons to provide input and comment to the City and the UTRCA. The Public Information Centre (PIC) details are as follows:

Date: **February 23, 2012**
Time: **6:00 pm – 9:00 pm**
(Presentation at 7:00 pm)
Location: **Kiwanis Community Centre,**
78 Riverside Drive

The presentation material will be available for viewing on the City's website at http://www.london.ca/d.aspx?s=/Sewer_and_Wastewater/WLD.htm after the PIC. Inquiries are welcome and may be directed to:

Rick Goldt, C.E.T., Supervisor
Supervisor, Water Control Structures
UTRCA
1424 Clarke Rd.
London ON N5V 5B9
Ph: 519-451-2800 x244
Fax: 519-451-1188
OR
Billy Haklander, P.Eng.
Environmental Services Engineer
Stormwater Management Unit
Planning, Environmental and Engineering Services Dept
City of London
300 Dufferin Avenue, 9th Floor
London, ON N6A 4L9
Tel: 519-661-2500 x5862
Fax: 519-661-2355
OR
Nelson Oliveira, P.Eng.
Project Manager
Associate, Environmental Infrastructure
Stantec Consulting Ltd.
800-171 Queens Avenue
London, ON N6A 5J7
Tel: 519- 645-2007 Ext. 240
Fax: 519- 645-6575

TENDER 12-02 – Westminster Outdoor Pool and Bathhouse Upgrades
Closing Date: 2:00 pm, WEDNESDAY, MARCH 7, 2012

Note: Any additional information regarding the above tender documents is available to view on the City's website. www.london.ca/biddingopportunities

Public Notices & BIDDING OPPORTUNITIES



London CANADA

PLANNING APPLICATIONS

Notice of Application

The following applications have been received by the City of London. The Planning and Environment Committee will be considering these applications at a future public meeting, the date and time of which will be published in the Londoner. If you have any questions or would like to provide comment, please see "Providing Comment" below.

REVISED 2525 and 2695 Dingman Drive – The purpose and effect of this zoning change is to facilitate the severance of 2525 Dingman Drive for the construction of a new single family home on the east part of 2525 Dingman Drive and the conveyance of the west part of 2525 Dingman Drive to 2695 Dingman Drive. Lands at the south end of the two properties will also be recognized as part of a natural heritage system through the application of open space zoning. Possible change to Zoning By-law Z.-1 on the north part of both 2525 and 2695 Dingman Drive **FROM** Urban Reserve (UR5) Zone **TO** Residential R1 Special Provision (R1-16( )) Zone to permit a single detached dwelling, with a special provision to permit a reduced rear yard setback of 8.5m from the adjacent Open Space (OS4) Zone. Also change Zoning By-law Z.-1 for the south part of 2525 and 2695 Dingman Drive **FROM** the Environmental Review (ER) Zone **TO** Open Space (OS4) Zone. These lands are also subject to an application for consent to sever (B.024/15). File: Z-8512 Planner: B. Debbert. (Dundas)

Community Facility Zone Amendment – City Wide – The purpose and effect of the requested Zoning By-law amendment is to update the permitted uses and applicable definitions for the Community Facility Zone. The possible changes would ensure that the range of land uses permitted in the Community Facility Zone variations allow for the appropriate development of community centres, and clarify what activities are included in the permitted uses as defined by the Zoning By-law. The possible amendment includes **ADDING** any use permitted in the CF1 Zone variation to the CF2 Zone variation; revising the definitions for a "Community Centre", "Recreational Building", "Social Service Establishment", and "Park"; and deleting the definition for a "Community or Recreational Facility". File: Z-8479 Planner: J. Adema (Dundas)

PROVIDING COMMENT

Your comments on these matters are important. You may comment by phone, mail, e-mail or fax by calling 519-661-4980, or emailing the planner assigned to the file you are interested in. Mail should be directed to: The City of London, Planning Division, P.O. Box 5035, 300 Dufferin Ave., London, ON, N6A 4L9.

***Please note**: Personal information collected and recorded at the Public Participation Meeting, or through written submissions on this subject, is collected under the authority of the Municipal Act, 2001, as amended, and the Planning Act, 1990 R.S.O. 1990, c.P.13 and will be used by Members of Council and City of London staff in their consideration of this matter. The written submissions, including names and contact information and the associated reports arising from the public participation process, will be made available to the public, including publishing on the City's website. Video recordings of the Public Participation Meeting may also be posted to the City of London's website. Questions about this collection should be referred to Cathy Saunders, City Clerk, 519-661-2500 ext. 4937.*

If a person or public body does not make oral submissions at a public meeting or make written submissions to the City of London before the application is adopted or approved, the person or public body is not entitled to appeal the decision of the Municipal Council or the Approval Authority of the City of London to the Ontario Municipal Board.

If a person or public body does not make oral submissions at a public meeting or make written submissions to the City of London before the proposed amendment is adopted or approved, the person or public body may not be added as a party to the hearing of an appeal before the Ontario Municipal Board unless, in the opinion of the Board, there are reasonable grounds to add the person or public body as a party.

ADDITIONAL INFORMATION

If you wish to view additional information or material relating to these applications, the files are available to the public at the Planning Division, 206 Dundas Street, or Development Services, 6th floor, City Hall, 300 Dufferin Ave., London, ON, Monday to Friday, 8:30am-4:30pm. The notices indicate the office location of the files. Key maps for the lands described in these applications are not provided as they are available for review at the offices noted above.

****Please ensure you reference the File Number or address in all communications.***

NOTICES

Notice of Public Information Centre #3 – West London Dyke Master Repair Plan - The West London Dyke is 2,374m long and runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the Main Branch to the west side of the Wharncliffe Road Bridge. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities. The UTRCA retained Stantec Consulting Ltd. in 2009 to complete a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. The study was placed on hold in early 2013 pending updates to flood elevation information. With new information now available, Stantec is in the process of completing the Master Repair Plan. This study is being conducted as a Master Plan (Phases 1 and 2) under the Municipal Class Environmental Assessment process (Municipal Engineer's Association, as amended in June 2007 and 2011). Under this process, First Nations, agency and public input is invited for incorporation into the planning and design for this study. The third and final Public Information Centre will be held on:

Date: Thursday, September 10, 2015
Time: 4:30pm to 6:30pm (open house format)
Location: Kiwanis Community Centre, 78 Riverside Drive, London ON

The presentation material will be available for viewing on the City's website at: http://www.london.ca/residents/Environment/EAs/Pages/West-London-Dyke-Master-Repair-Plan.aspx and on the UTRCA's website at http://thamesriver.on.ca/water-management/london-dyke-system after the PIC. If you have any questions, comments or concerns, please contact:

Cameron Gorrie, P.Eng.
Project Engineer
Stantec Consulting Ltd.
600-171 Queens Avenue
London ON N6A 5J7
cameron.gorrie@stantec.com

Rick Goldt, C.E.T.
Supervisor, Water Control Structures
1424 Clarke Road
London ON N5V 5B9
goldtr@thamesriver.on.ca

Chris McIntosh, P.Eng.
Environmental Services Engineer
City of London
300 Dufferin Avenue, P.O. Box 5035
London ON N6A 4L9
cmcintos@london.ca

Interested parties wishing to be added to the project mailing list should also contact one of the above. Following the Public Information Centre, further comments are invited for incorporation into the planning and design of this project and will be received until September 25, 2015.

Personal information collected and recorded at the Public Information Centre or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001 and will be used by City and UTRCA staff in their review of this study. Any written submission, including names and contact information will be made available to the public through the publication of the Master Repair Plan document.

Notice of Study Completion – Wonderland Road South -Class Environmental Assessment Study - The City of London retained MMM Group to complete a Municipal Class Environmental Assessment (Class EA) for the widening of Wonderland Road South from Southdale Road West to Highway 401. This project was conducted in accordance with the 'Schedule C' planning and design process, as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011). A Scoped Environmental Impact Study (EIS) was completed as part of this Class EA. Wonderland Road is a primary gateway entry to London and an important north-south transportation and economic corridor with access to Highways 401 and 402. The Recommended Plan includes interim and ultimate plans for road reconstruction and widening, intersection improvements such as traffic signals and turning lanes, active transportation facilities to support walking and cycling, a roundabout at Dingman Drive, stormwater management, and localized realignment of two municipal drains. The Class EA process included public and agency consultation, an evaluation of alternative planning solutions and design concepts, assessment of potential impacts, and identification of mitigation measures. As part of the consultation program two public meetings were held on January 23, 2014 and December 11, 2014 to provide information on the project and to receive comments. An Environmental Study Report (ESR) has been prepared and will be available for a thirty (30) calendar day public review period starting on **August 24, 2015** at the following locations:

City of London Clerk's Office, 3rd Floor
300 Dufferin Avenue
Hours of Operation:
Mon-Fri: 8:30 AM – 4:30 PM
Sat/Sun: Closed

London Public Library, Westmount Branch
3200 Wonderland Road South
Hours of Operation:
Tues-Thurs: 9:00 AM – 9:00 PM
Fri: 9:00 AM – 6:00 PM
Sat: 9:00 AM – 5:00 PM
Sun-Mon: Closed

If you have any questions or concerns regarding the information provided in the ESR, please provide written comments to the following team members by **September 23, 2015.**

Maged Elmadhoon, M. Eng., P. Eng.
Manager, Transportation Planning
City of London
P.O. Box 5035
London, ON N6A 4L9
Tel: 519-661-2500, ext. 4934
Email: melmadho@london.ca

Gillian Thompson, B.Sc., MCIP, RPP
Consultant Environmental Planner
MMM Group
2655 North Sheridan Way
Mississauga, ON L5K 2P8
Tel: 905-823-8500 ext. 1285
Email: thompsong@mmm.ca

If concerns regarding this project cannot be resolved in discussion with the City of London, a person may request, in writing, that the Minister of the Environment and Climate Change (77 Wellesley Street West, 11th Floor, Toronto ON, M7A 2T5) issue a Part II Order (bump-up) for the project, thereby requiring an elevated scope of study. The Part II Order request must be received by the Minister no later than September 23, 2015 with a copy of the request being sent to the Director, Environmental Approvals Branch, Ministry of the Environment and Climate Change (135 St. Clair Avenue West, 1st Floor, Toronto ON, M4V 1P5) and the City of London. If no Part II Order requests are outstanding by the end of the thirty calendar day review period, the project is considered to have met the requirements of the Environmental Assessment Act, and the City may proceed to subsequent phases of design and construction subject to meeting any commitments documented in the ESR and obtaining the necessary environmental approvals.

FOR YOUR INFORMATION

Water Service Area Financial Plan Available

To comply with Ontario Regulation 453/07 under the *Safe Drinking Water Act, 2002*, a Council approved Water Financial Plan was prepared in 2015 and approved by the Council on May 12, 2015 to ensure the long-term financial sustainability and safety of our drinking water system into the future. The Financial Plan is a summary of various capital and operational programs previously approved by Council. The plan outlines those programs with embedded electronic links that allow readers to further explore the details. It is available online at **london.ca/water**. Hard copies can be ordered and picked up at the Water Engineering Division, 8th Floor, City Hall

TENDER AND PROPOSALS

TENDER 15-93 Greenway WWTP – Ash Upgrades
Closing: 2:00pm, Wednesday, September 16, 2015

TENDER 15-92 Sidewalk Upgrades at IPS Locations
Closing: 2:00pm, Wednesday, September 9, 2015

TENDER 15-78 Traffic Signal Replacement – Hamilton Road at Rectory Street
Closing Date: 2:00 pm, Wednesday, September 16, 2015

Any additional information regarding the above Projects is available to view on the Biddingo website. www.biddingo.com/london





Waverley Mansion values mental fitness and positive energy

John Milner
Special to Londoner

For the past several years, Waverley Retirement Residence (or "Waverley Mansion") has been employing a program called Brain Gym as a way to enhance the quality of life for the residents. Now,

"we want to share this technology with the community," Susan Vrancic, Marketing Manager at the Waverley Retirement Residence, says. Recently, they offered free Brain Gym classes to both residents and the public.

"Brain Gym is an innovative program that supports current brain research about brain placidity," Vrancic explains. Having taught the Brain Gym classes herself, Vrancic has seen first-hand the results of the Brain Gym program. "The amazing thing is how much the lights go on when our residents are involved in the Brain Gym...It makes for healthier and happier seniors."

According to the Waverley Mansion's pamphlet, "Brain Gym consists of 26 simple and pleasant movements aiming at improving learning skills through the use of both brain hemispheres." It was invented by two American researchers, Dr. Paul and Mrs. Gail Dennison "who discovered brain development only happens if the brain is kept active."

Brain Gym also employs Bal-A-Vis-X (BALance/Auditory/Vision eXercises) which is a series of exercises employing sand-filled bags and/or racquetballs for brain and brain/body integration.

Vrancic says the Brain Gym program helps build the residents' confidence, leads to better motor skills, increased balance and helps to improve vision and hearing, memory, coordination and even writing skills. It allows older adults to have an increasing sense of control and independence over their lives.

"It's a really good program," she says. "Because it's more play-oriented, (the residents) don't feel like they're exercising. The hour goes by really fast."

Studies have shown that using Brain Gym slows down or reverses some of the symptoms of aging including lack of concentration, poor recall, limited thinking patterns and seeming inability to learn new material.

Waverley Mansion has been conducting Brain Gym classes for the past half-dozen years on a monthly basis. However, the residents at Waverley Mansion wanted to take part in the Brain Gym program more often. Beginning in the fall, the frequency of the classes will be switching to weekly sessions.

"We've had a very positive response to the Brain Gym program," Vrancic says. "It's all about creating positive energy."

She says that the Brain Gym sessions are also a great way for the community to visit Waverley and meet the residents there. "The residents enjoy bringing people in," Vrancic says, encouraging the community, on behalf of the residents at Waverley to "visit us and find out what the Brain Gym is all about."

Brain Gym is just one of the exercise-based activities that the Residence has on a daily basis, which usually has approximately 20 people involved. "We have all kinds of programs, including Tai Chi, meditation and others. (The residents) have quite a variety of programs to be involved in."

For more information: visit http://www.diversicare.ca/diversicare-brain-gym.shtml

Public Notices & Bidding Opportunities

Assessment Analyst by phone 519 661-5317, by fax 519 661-6518, or by e-mail at mperkows@london.ca

Notice of Intention to pass a By-Law to undertake works as a Local Improvement Section 6 of Ontario Regulation 586/06 - Local Improvements – Priority Lien Status made under the *Municipal Act, 2001*
The Corporation of the City of London intends to pass a by-law to construct as a local improvement Sanitary Sewer, Storm Sewer & Watermain on Eastgate Crescent.
The particulars of the work are as follows:
Estimated Total Cost of the Work:
$427,500.00
City of London's estimated share of the cost:
$142,500.00 33.33%
Estimated cost to be shared among all owners:
$284,997.06 66.67%
Estimated charge per metre of frontage for the lots to be charged:
$621.39
Estimated lifetime of the work is 21 years
Property owners affected by the work can petition Municipal Council not to undertake these works as a local improvement. For a petition to be successful, it must be signed by a majority of the owners of the lots liable to be specially charged, representing at least one-half of the assessment value of the lots liable to be specially charged for the work. If a successful petition is received, the City may not undertake the work as a local improvement within two years after receiving the petition except as provided under Section 7(2) of Ontario Regulation 586/06. Any questions regarding the above matter can be directed to Ms Margo Perkowska, Local Improvement & Assessment Analyst by phone 519 661-5317, by fax 519 661-6518, or by e-mail at mperkows@london.ca

Notice of Public Information Centre #3 – West London Dyke Master Repair Plan -
The West London Dyke is 2,374m long and runs along the west bank of the North Branch of the Thames River from Oxford Street to the forks of the Thames River and then along the west bank of the Main Branch to the west side of the Wharncliffe Road Bridge. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities. The UTRCA retained Stantec Consulting Ltd. in 2009 to complete a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. The study was placed on hold in early 2013 pending updates to flood elevation information. With new information now available, Stantec is in the process of completing the Master Repair Plan. This study is being conducted as a Master Plan (Phases 1 and 2) under the Municipal Class Environmental Assessment process (Municipal Engineer's Association, as amended in June 2007 and 2011). Under this process, First Nations, agency and public input is invited for incorporation into the planning and design for this study. The third and final Public Information Centre will be held on:
Date: Thursday, September 10, 2015
Time: 4:30pm to 6:30pm (open house format)
Location: Kiwanis Community Centre, 78 Riverside Drive, London ON
The presentation material will be available for viewing on the City's website at: http://www.london.ca/residents/Environment/EAs/Pages/West-London-Dyke-Master-Repair-Plan.aspx and on the UTRCA's website at http://thamesriver.on.ca/water-management/london-dyke-system after the PIC. If you have any questions, comments or concerns, please contact:
Cameron Gorrie, P.Eng.
Project Engineer
Stantec Consulting Ltd.
600-171 Queens Avenue
London ON N6A 5J7
cameron.gorrie@stantec.com
Rick Goldt, C.E.T.
Supervisor, Water Control Structures
1424 Clarke Road
London ON N5V 5B9
goldtr@thamesriver.on.ca
Chris McIntosh, P.Eng.
Environmental Services Engineer
City of London
300 Dufferin Avenue, P.O. Box 5035
London ON N6A 4L9
cmcintos@london.ca
Interested parties wishing to be added to the project mailing list should also contact one of the above. Following the Public Information Centre, further comments are invited for incorporation into the planning and design of this project and will be received until September 25, 2015.
Personal information collected and recorded at the Public Information Centre or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001 and will be used by City and UTRCA staff in their review of this study. Any written submission, including names and contact information will be made available to the public through the publication of the Master Repair Plan document.

519 661-4500 | www.london.ca

NOTICE OF STUDY COMPLETION

WEST LONDON DYKE MASTER REPAIR PLAN

The West London Dyke is approximately 2,300 m long and runs along the west bank of the north branch of the Thames River extending north of Oxford Street to the Forks of the Thames River and then along the north bank of the main branch to the west of the Wharncliffe Road Bridge and terminating in Cavendish Park. The West London Dyke is primarily an engineered structure which protects life and property during periods of extreme river flows. The City of London owns the dyke and through an agreement, the Upper Thames River Conservation Authority (UTRCA) undertakes major maintenance activities.

The UTRCA retained Stantec Consulting Ltd. in 2009 to complete a Master Repair Plan covering the next 20-year period to address aging infrastructure, flood protection, public use, and integration of other City initiatives. The study was placed on hold in early 2013 pending updates to flood elevation information. Having incorporated the updated flood elevations, the Master Repair Plan has now been completed.

This study was conducted as a Master Plan (Phases 1 and 2) under the Municipal Class Environmental Assessment process (Municipal Engineer's Association, as amended in June 2007 and 2011). Under this process, First Nations, agency and public input was invited through three public information centres for incorporation into the planning and design for this study. This Notice hereby serves as the Notice of Completion for the Schedule B projects identified within the Master Repair Plan. Potential Schedule C projects identified within the Master Repair Plan will be subject to further evaluation and consultation.

The Master Repair Plan has been completed and is available for review at the following locations during regular business hours from February 25, 2016 until March 29, 2016:

Upper Thames River Conservation Authority	**City of London City Hall, Clerk's Office**	**London Public Library Central Branch**
1424 Clarke Road	300 Dufferin Avenue, 3rd Floor	251 Dundas Street
London ON	London ON	London ON

The document is also available online on both the City of London and UTRCA websites:

http://www.london.ca/residents/Environment/EAs/Pages/West-London-Dyke-Master-Repair-Plan.aspx

http://thamesriver.on.ca/water-management/london-dyke-system

Interested persons may provide written comment to the undersigned within the public review period from February 25, 2016 to March 29, 2016:

Rick Goldt, C.E.T.	**Chris McIntosh, P.Eng.**	**Cameron Gorrie, P.Eng.**
Supervisor, Water Control Structures	Environmental Services Engineer	Project Manager
1424 Clarke Road	City of London	Stantec Consulting Ltd.
London ON N5V 5B9	300 Dufferin Avenue, P.O. Box 5035	600-171 Queens Avenue
goldtr@thamesriver.on.ca	London ON N6A 4L9	London ON N6A 5J7
	cmcintos@london.ca	cameron.gorrie@stantec.com

If concerns arise regarding this project which cannot be resolved in discussion with the UTRCA and City, a person or party may request that the Minister of the Environment and Climate Change make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order). PLEASE NOTE: Part II Order requests cannot be made against the entire Master Plan document, but only against Schedule B project identified within the Master Plan. Requests must be received by the Minister at the address below by March 29, 2016.

Minister of the Environment and Climate Change
77 Wellesley Street West, 11th Floor, Ferguson Block
Toronto ON M7A 2T5

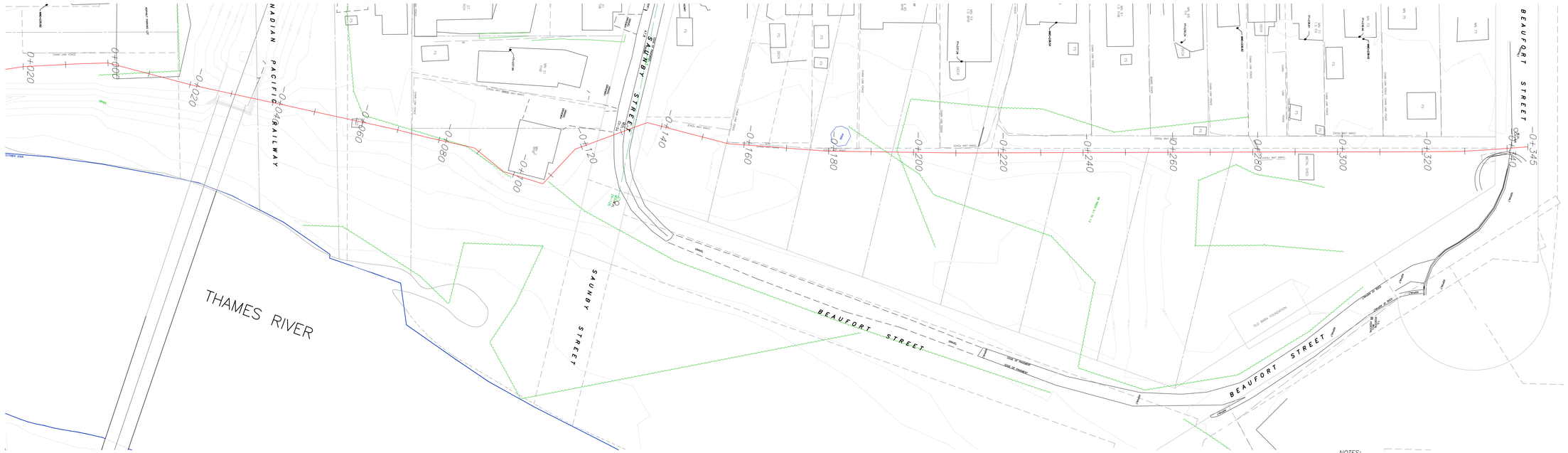
A copy of the request must also be sent to the project team listed above. Subject to comments received as a result of this Notice and the receipt of necessary approvals, design and construction of Schedule B projects within the Master Repair Plan may proceed.

Personal information submitted in writing on this subject is collected under the authority of the Municipal Freedom of Information and Protection of Privacy Act and will be used by City and UTRCA staff in their review of this study. Any written submission, including names and contact information will be made available to the public through the publication of the Master Repair Plan document.



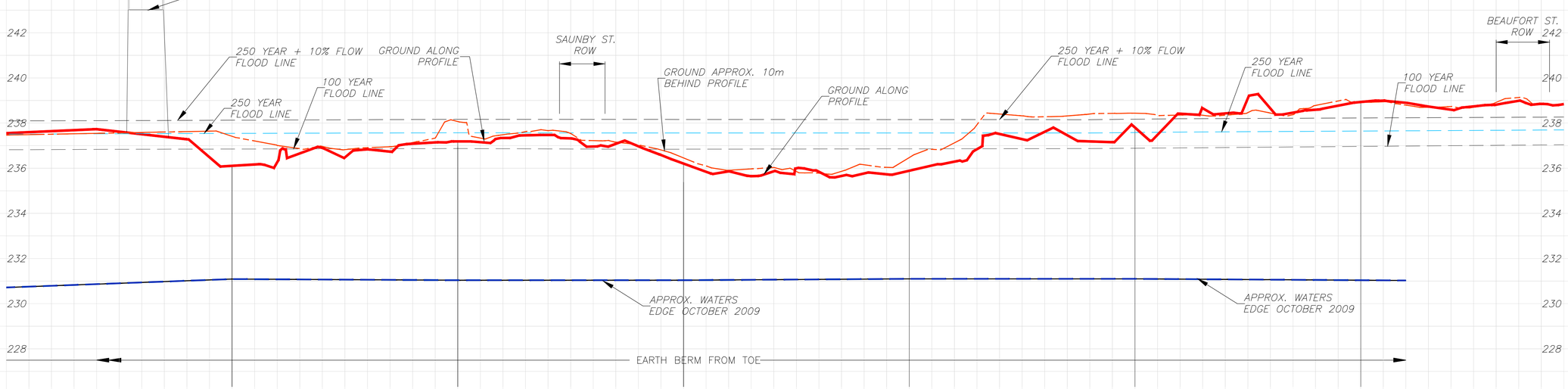
Appendix 4.1

West London Dyke Plan and Profile Drawings



NORTH OXFORD AREA

NOTES:
1. PLAN AND PROFILE DRAWINGS PREPARED BASED ON INFORMATION SUPPLIED BY THE UPPER THAMES RIVER CONSERVATION AUTHORITY AND CITY OF LONDON OBM MAPPING.
2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



STATION	0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180	0+200	0+220	0+240	0+260	0+280	0+300	0+340
TOP OF EXISTING DYKE	237.6		236.1			236.2			236.2		235.9		237.8			238.9	
250 YEAR FLOOD LINE		237.63				237.57		237.56				237.56		237.60			237.69
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TOE OF DYKE	231.72		231.09			231.04			231.05		231.10		231.13			231.01	

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
DATE	SEPT. 2, 2015
	165630035

No.	REVISIONS	DATE	CONSULTANT

CONSULTANT OR DIVISION

Stantec

Stantec Consulting Ltd.
171 Queens Avenue
London ON Canada
N6A 5J7
Tel. 519.645.2007
Fax. 519.645.6575
www.stantec.com

ENGINEER'S STAMP

CORPORATION OF THE CITY OF LONDON
London CANADA

SCALE
HORZ 1:500

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

OXFORD NORTH AREA

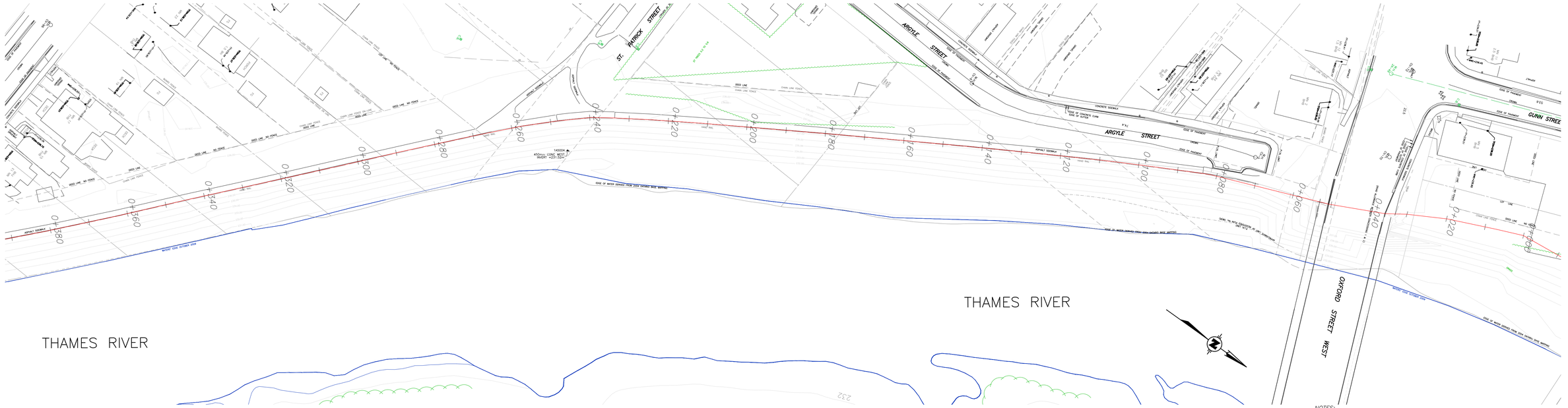
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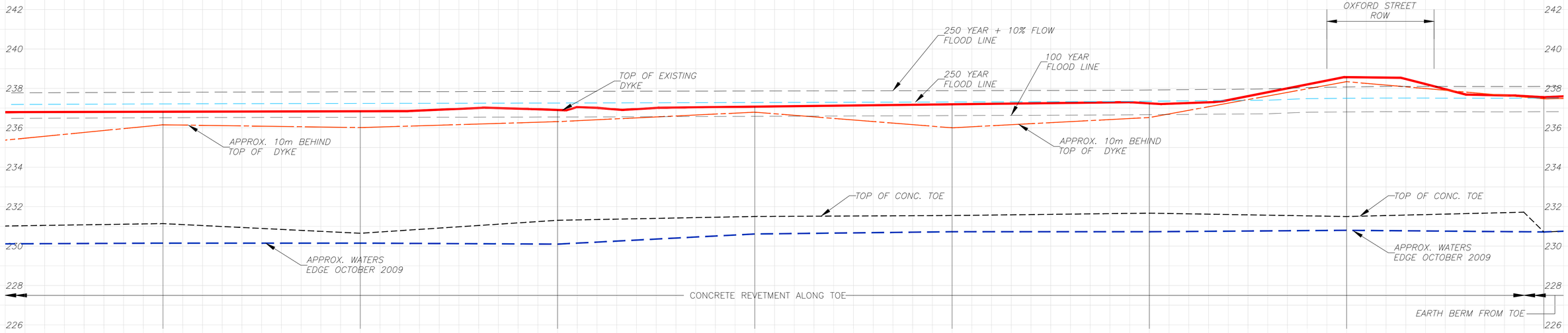
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Job No. DWG No. JOB NAME



ST. PATRICK AREA

NOTES:
1. PLAN AND PROFILE DRAWINGS PREPARED BASED ON INFORMATION SUPPLIED BY THE UPPER THAMES RIVER CONSERVATION AUTHORITY AND CITY OF LONDON OBM MAPPING.
2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



STATION	0+380	0+360	0+340	0+320	0+300	0+280	0+260	0+240	0+220	0+200	0+180	0+160	0+140	0+120	0+100	0+080	0+060	0+040	0+020	0+000
TOP OF EXISTING DYKE		236.8			236.8			236.9		237.1			237.2		237.2		238.6			237.6
250 YEAR FLOOD LINE			237.22				237.26							237.33		237.40	237.48	237.51	237.50	
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TOE OF DYKE		231.14			230.65			231.28		231.51			231.55		231.67		231.50			231.72

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.c.
APPROVED	N.O.
DATE	SEPT. 2, 2015

165630035

No.	REVISIONS	DATE	CONSULTANT

CONSULTANT OR DIVISION

Stantec

Stantec Consulting Ltd.
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Tel. 519.645.2007
Fax. 519.645.6575
www.stantec.com

ENGINEER'S STAMP

CORPORATION OF THE CITY OF LONDON
London CANADA

SCALE
HORZ 1:500

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

ST. PATRICK AREA

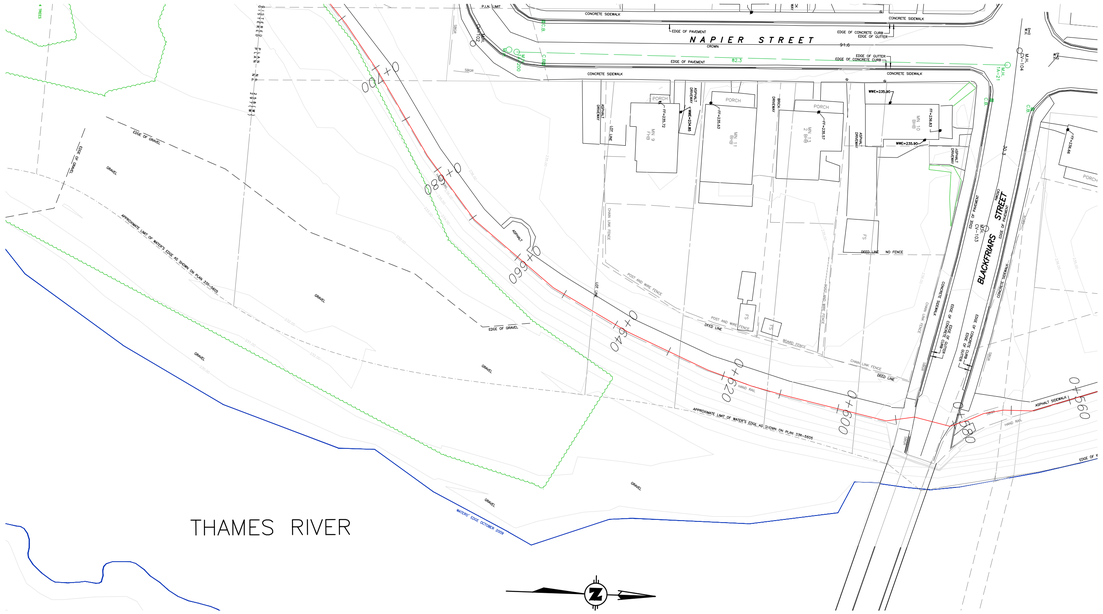
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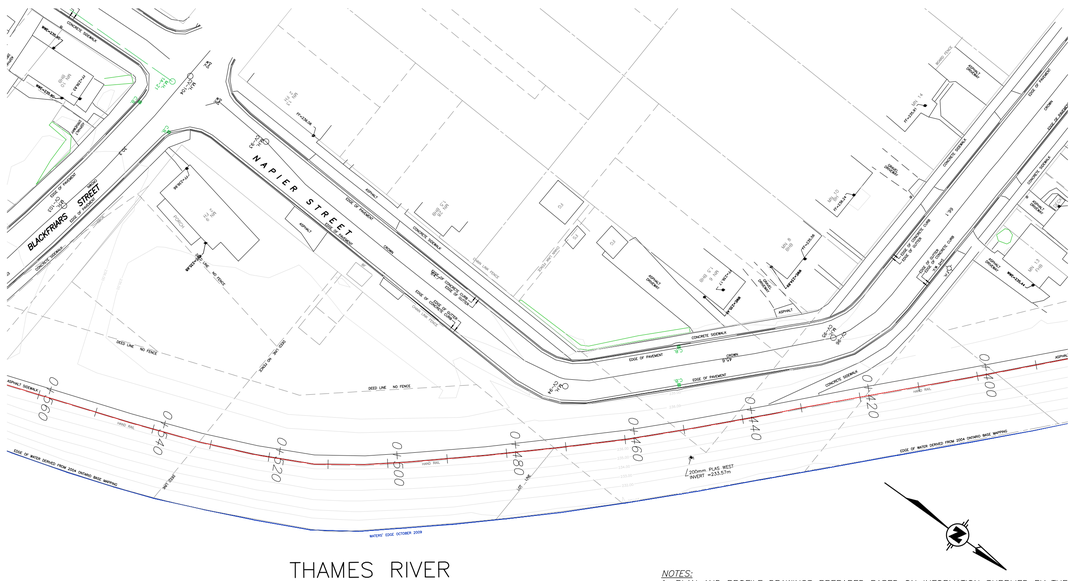
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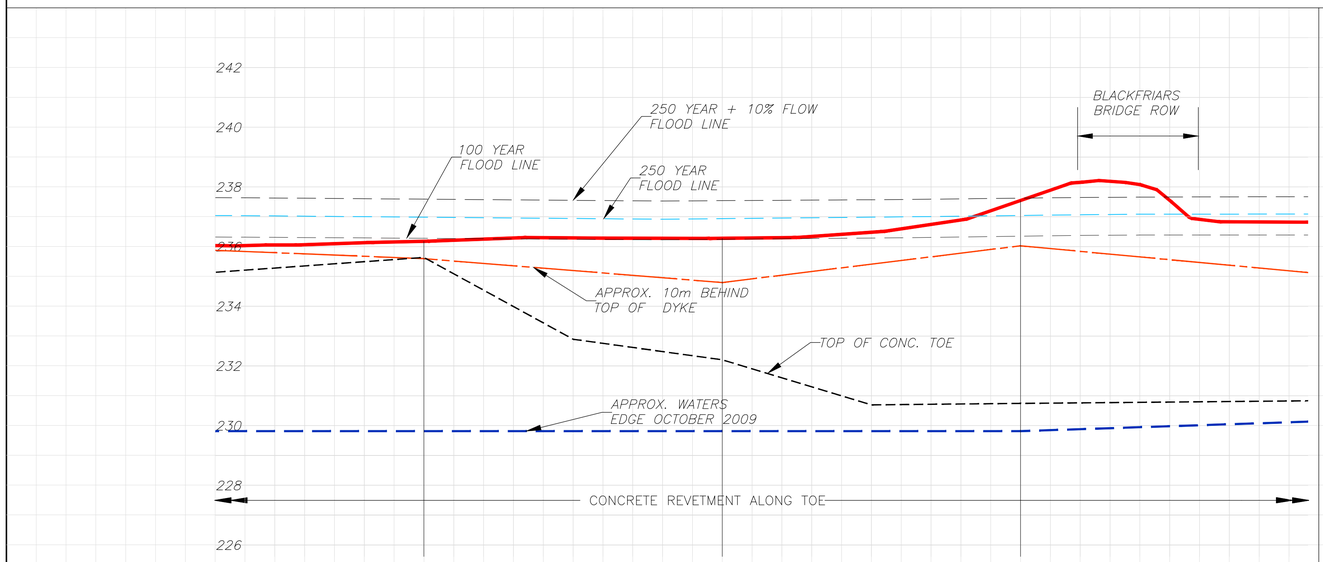
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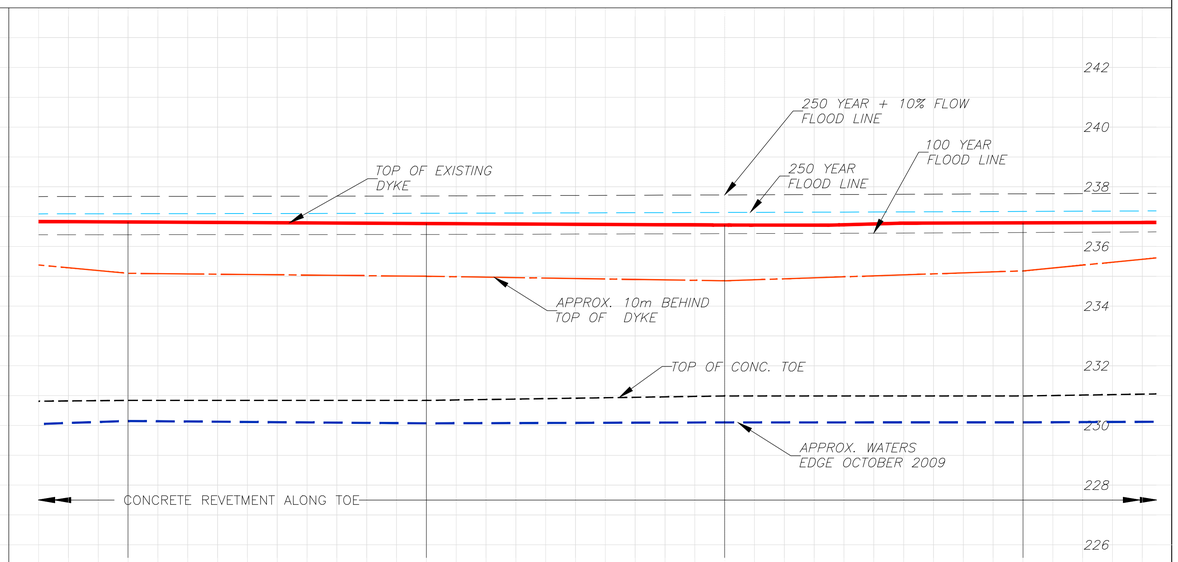




NOTES:
1. PLAN AND PROFILE DRAWINGS PREPARED BASED ON INFORMATION SUPPLIED BY THE UPPER THAMES RIVER CONSERVATION AUTHORITY AND CITY OF LONDON OBM MAPPING.
2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.

BLACKFRIARS AREA





STATION	0+720	0+700	0+680	0+660	0+640	0+620	0+600	0+580	0+560	0+540	0+520	0+500	0+480	0+460	0+440	0+420	0+400	0+380
TOP OF EXISTING DYKE		236.2		236.3			237.5			236.8		236.8		236.7			236.8	
250 YEAR FLOOD LINE			236.92			237.00		237.02	237.09	237.09		237.11	237.15					
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TOE OF DYKE		235.64		232.21			230.75			230.83		230.84		230.98			231.00	

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
DATE	SEPT. 2, 2015
	165630035

No.	REVISIONS	DATE	CONSULTANT

CONSULTANT OR DIVISION

Stantec

Stantec Consulting Ltd.
171 Queens Avenue
London ON Canada
N6A 5J7
Tel. 519.645.2007
Fax. 519.645.6575
www.stantec.com

ENGINEER'S STAMP

CORPORATION OF THE CITY OF LONDON
London CANADA

SCALE
HORZ 1:500
VERT 1:50

TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

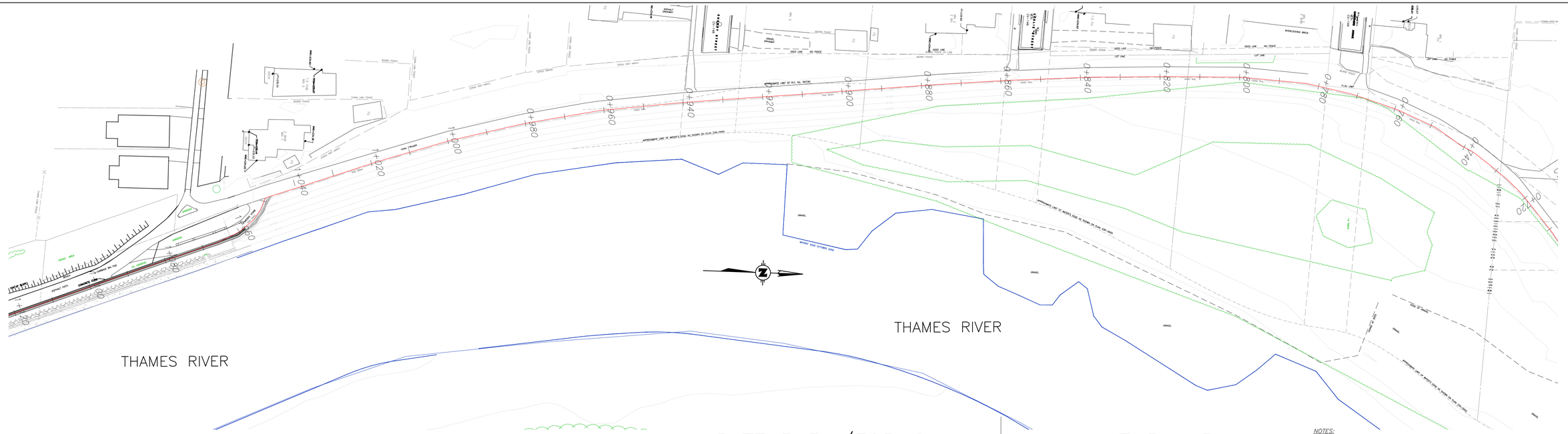
BLACKFRIARS AREA
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PROJECT No.

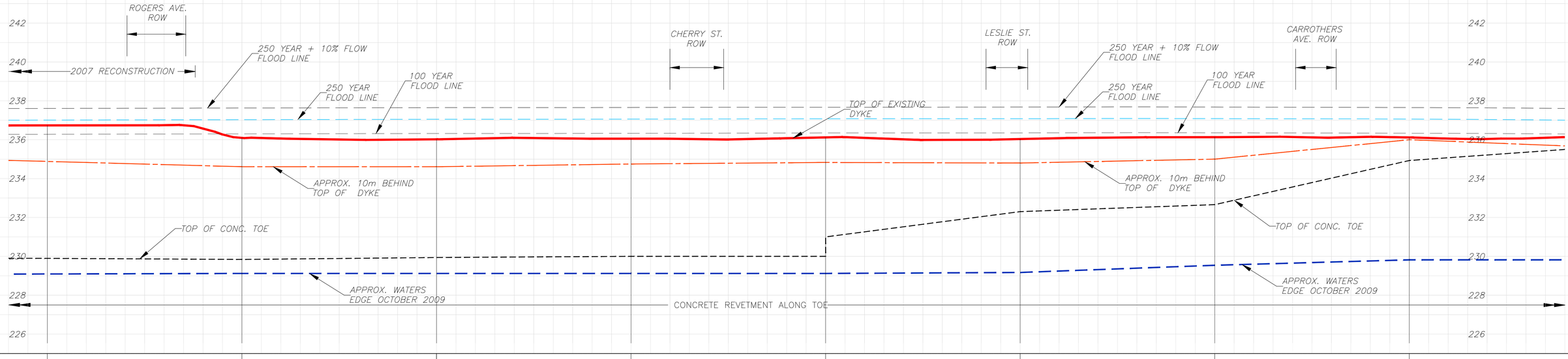
SHEET No.
3

PLAN FILE No.

Job No. DWG No. JOB NAME



NOTES:
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2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



STATION	1+100	1+080	1+060	1+040	1+020	1+000	0+980	0+960	0+940	0+920	0+900	0+880	0+860	0+840	0+820	0+800	0+780	0+760	0+740	0+720
TOE OF DYKE	229.88			229.84		229.94			229.99		231.00			232.30		232.66			234.93	
APPROX. 10m BEHIND TOP OF DYKE	234.95			234.61		234.60			234.75		234.83			234.80		235.00			236.00	
250 YEAR FLOOD LINE						237.05		237.05		237.07		237.08		237.08	237.09			237.07		237.04
TOP OF EXISTING DYKE	236.7			236.1		236.0		236.1		236.1				236.0		236.1			236.1	

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
DATE	SEPT. 2, 2015
	165630035

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London CANADA

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TITLE
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UPPER THAMES RIVER CONSERVATION AUTHORITY

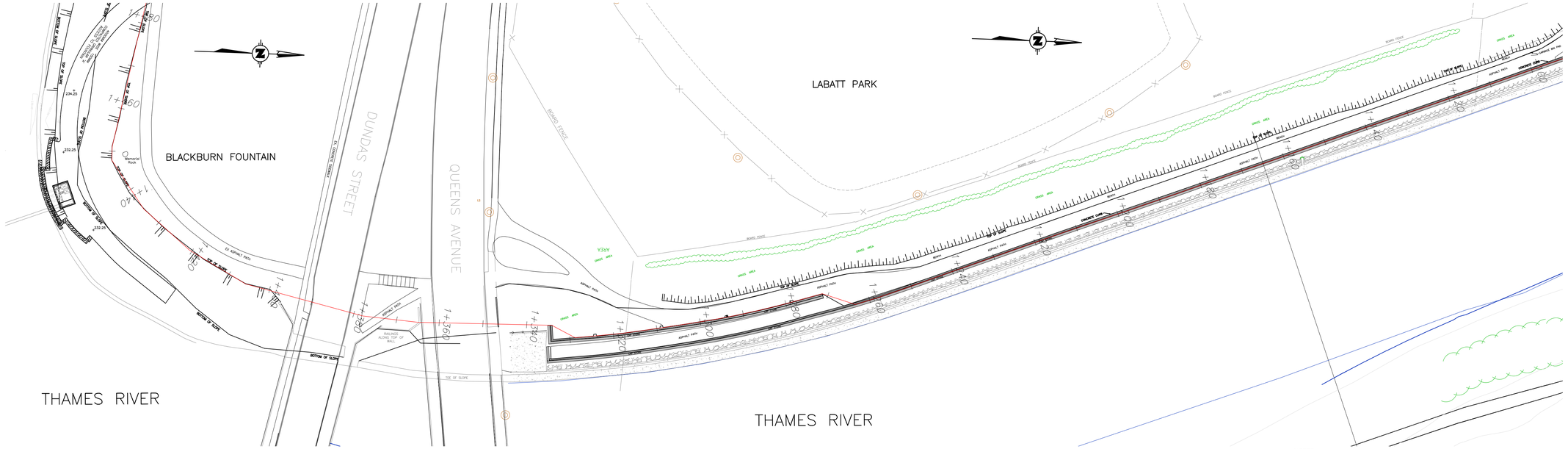
LABATT PARK/FORKS & NATURAL BANK AREA
STA 0+720 TO 1+100

PROJECT No.

SHEET No.
4

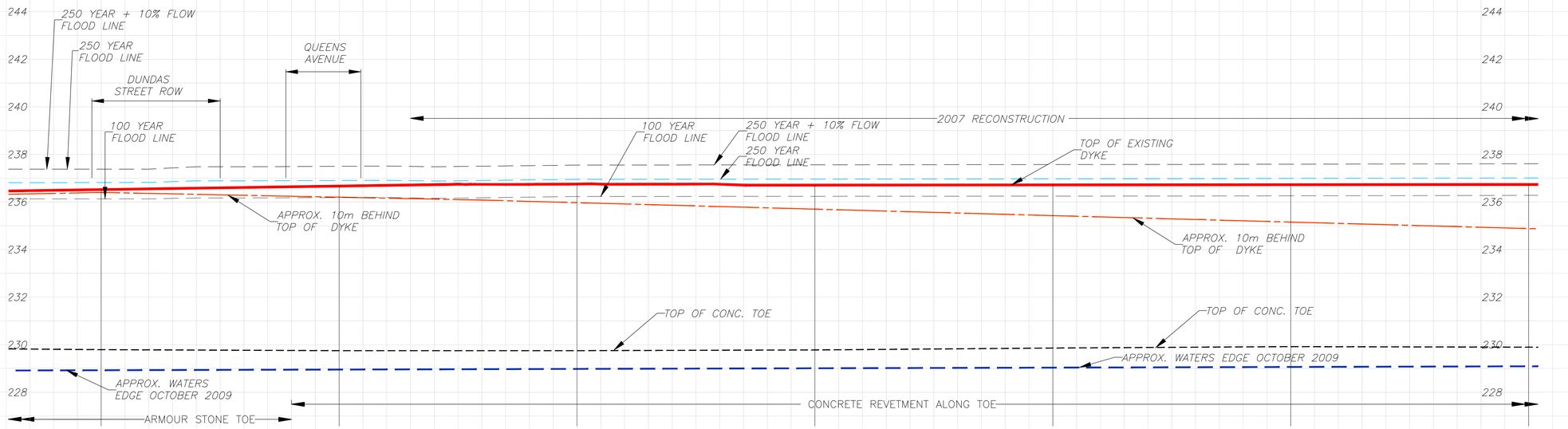
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LABATT PARK/FORKS



STATION	TOP OF EXISTING DYKE	250 YEAR FLOOD LINE	APPROX. 10m BEHIND TOP OF DYKE	TOE OF DYKE
1+420		236.81		
1+400	236.5		236.40	230.21
1+380		236.82		
1+360		236.89	236.08	
1+360		236.89		
1+340	236.7			229.75
1+320		236.91		
1+300	236.8	236.88	235.97	229.75
1+280		236.95		
1+260	236.7		235.70	229.78
1+240				
1+220	236.7		235.43	229.86
1+200				
1+180		236.98		
1+160	236.7		235.15	229.92
1+140		237.00		
1+120				
1+100	236.7		234.95	229.88

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
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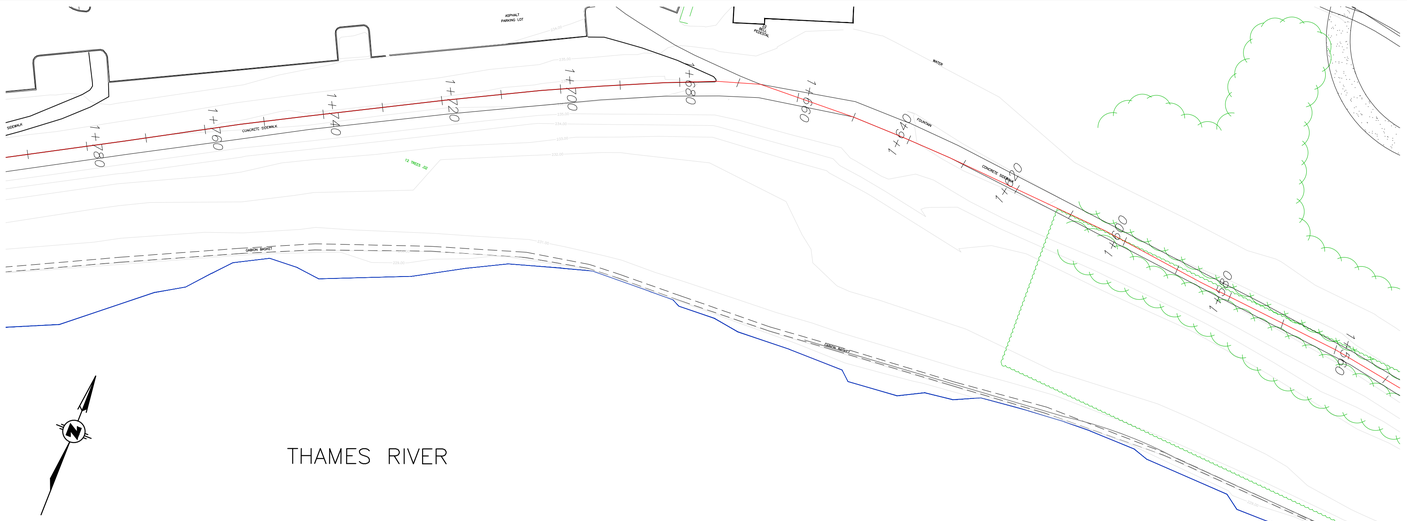
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UPPER THAMES RIVER CONSERVATION AUTHORITY
LABATT PARK/FORKS AREA
STA 1+100 TO 1+420

PROJECT No.

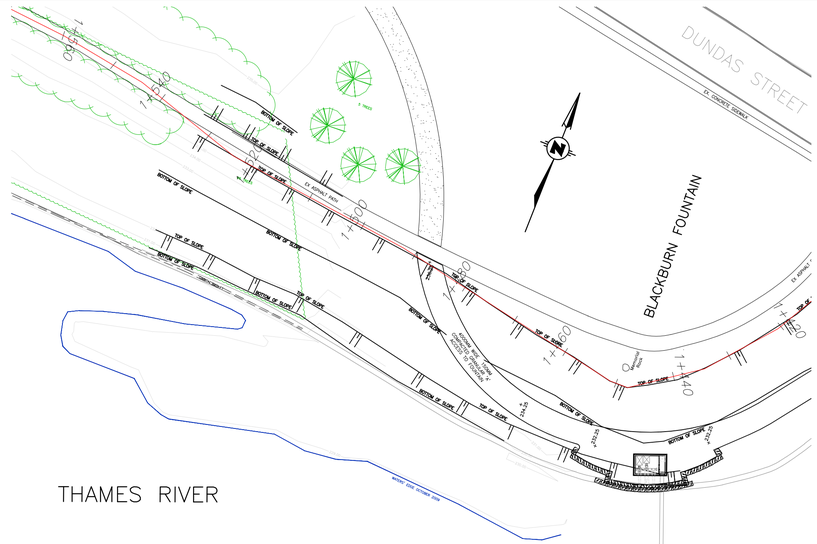
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PLAN FILE No.

Job No. DWG No. JOB NAME

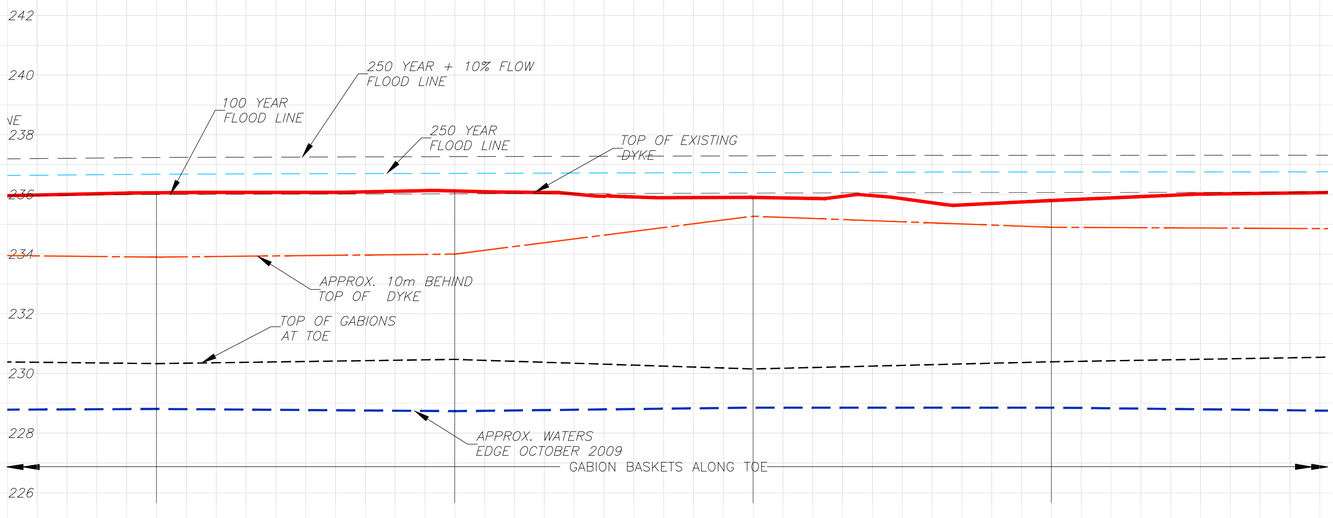


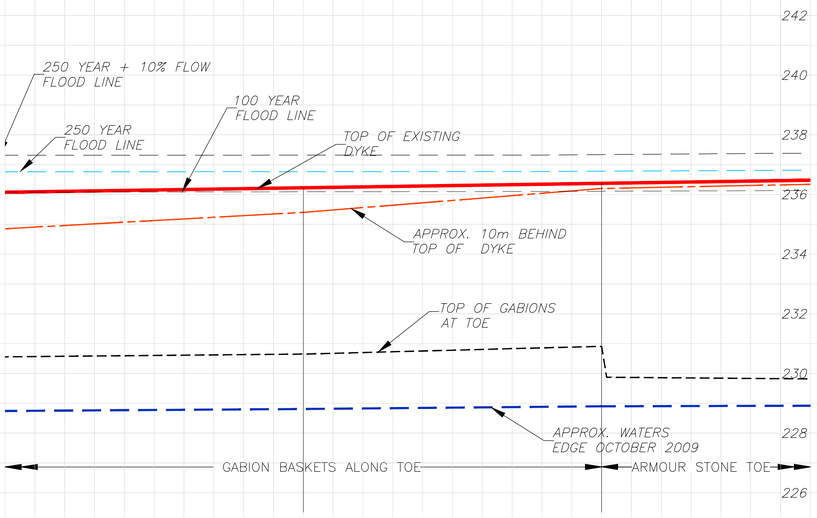
WHARNCLIFFE



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LABATT PARK/FORKS





STATION	TOP OF EXISTING DYKE	250 YEAR FLOOD LINE	APPROX. 10m BEHIND TOP OF DYKE	TOE OF DYKE
1+780	236.1	236.68	233.90	230.33
1+760				
1+740				
1+720				
1+700	236.1		234.00	230.47
1+680				
1+660	235.9		235.30	230.15
1+640				
1+620		236.75		
1+600	235.8		234.90	230.39
1+580				
1+560				
1+560				
1+540	236.1		234.85	230.54
1+520				
1+500	236.2	236.77	235.40	230.65
1+480				
1+460	236.4		236.20	230.91
1+440		236.81		
1+420				

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS
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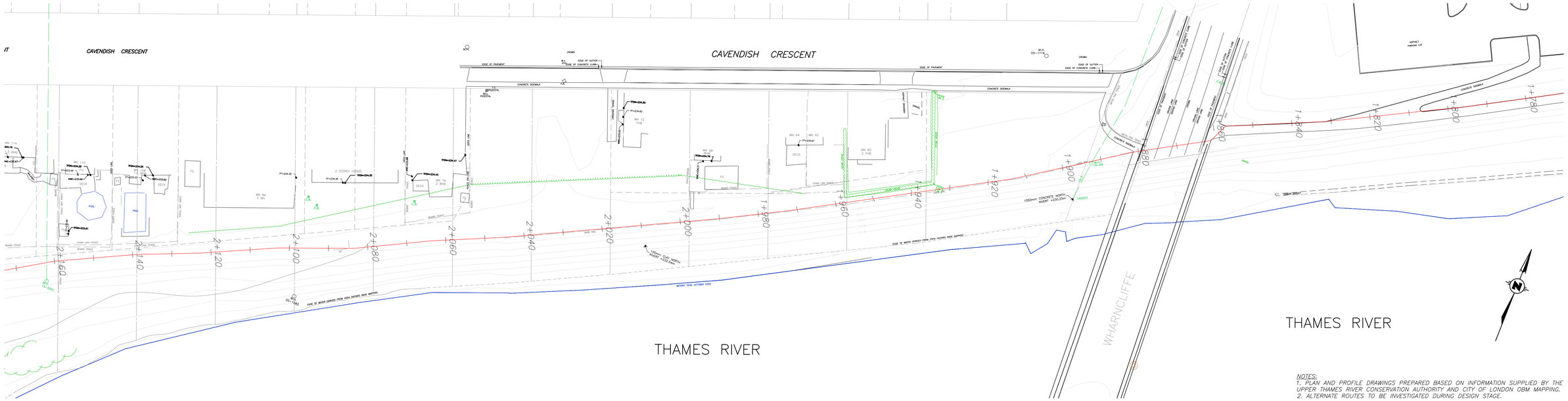
WHARNCLIFFE & LABATT PARK/ FORKS AREA
STA 1+420 TO 1+780

PROJECT No.

SHEET No.
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PLAN FILE No.

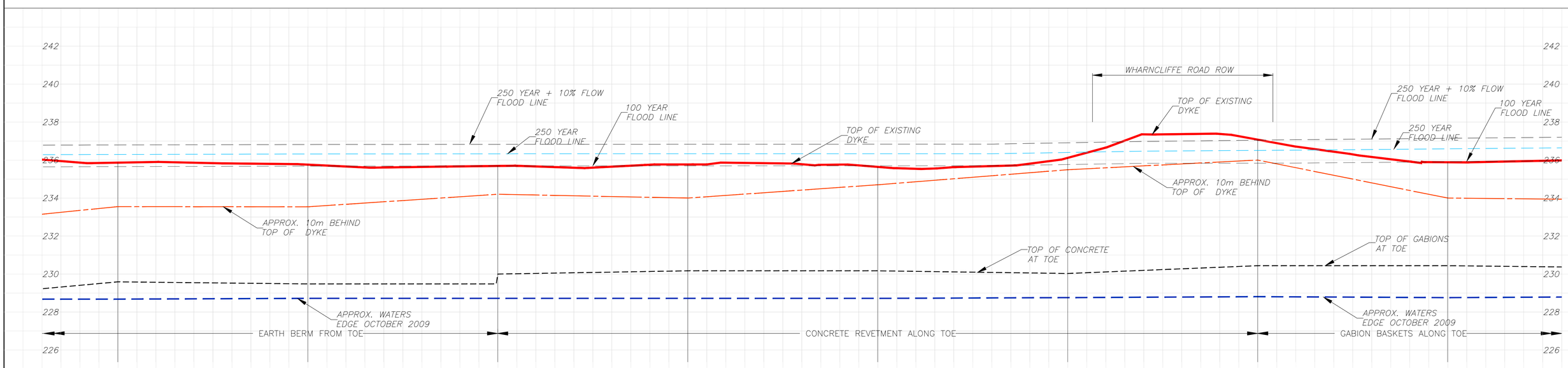
Job No. DWG No. JOB NAME



CAVENDISH EAST

WHARNCLIFFE

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STATION	TOP OF EXISTING DYKE	250 YEAR FLOOD LINE	APPROX. 10m BEHIND TOP OF DYKE	TOE OF DYKE
2+160	235.9		233.55	229.59
2+140				
2+120				
2+100	235.8	236.32	233.54	229.48
2+080				
2+060	235.7	236.33	234.20	230.05
2+040				
2+020	235.0		234.00	230.16
2+000				
1+980				
1+960	235.3	236.33	234.70	230.17
1+940				
1+920	236.1		235.48	230.03
1+900				
1+880	237.1	236.47	236.00	230.44
1+860				
1+840		236.52		
1+820				
1+800	235.9		234.00	230.37
1+780				

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	S.J.
DRAWN BY	D.B.
CHECKED	C.G.
APPROVED	N.O.
DATE	SEPT. 2, 2015
	165630035

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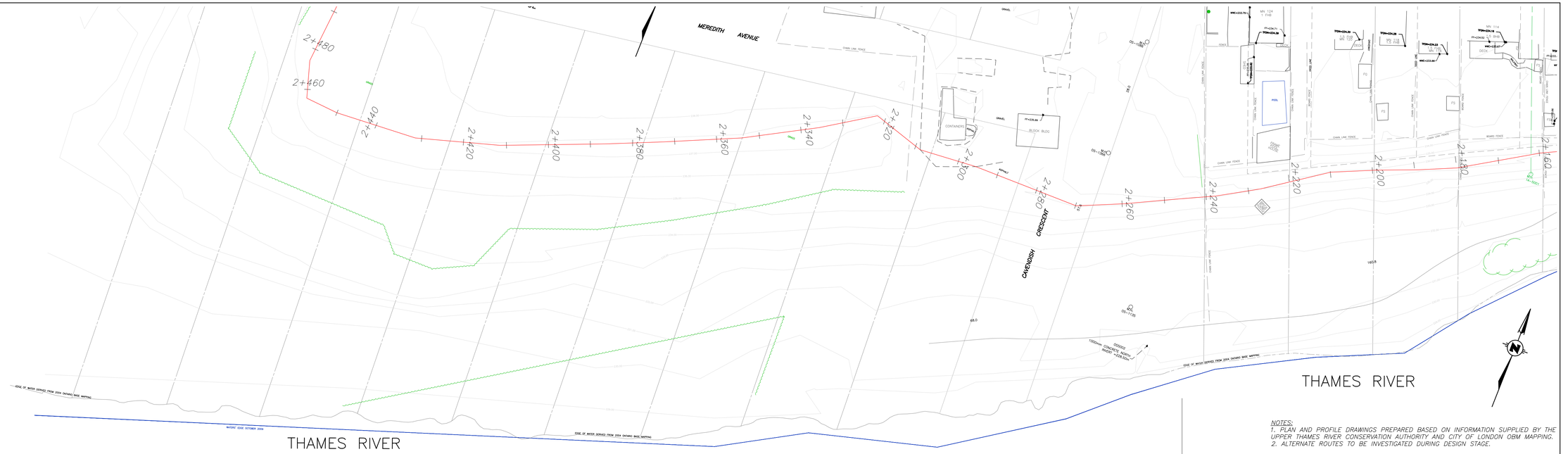
CAVAENDISH EAST & WHARNCLIFFE AREA
STA 1+780 TO 2+160

PROJECT No.

SHEET No.
7

PLAN FILE No.

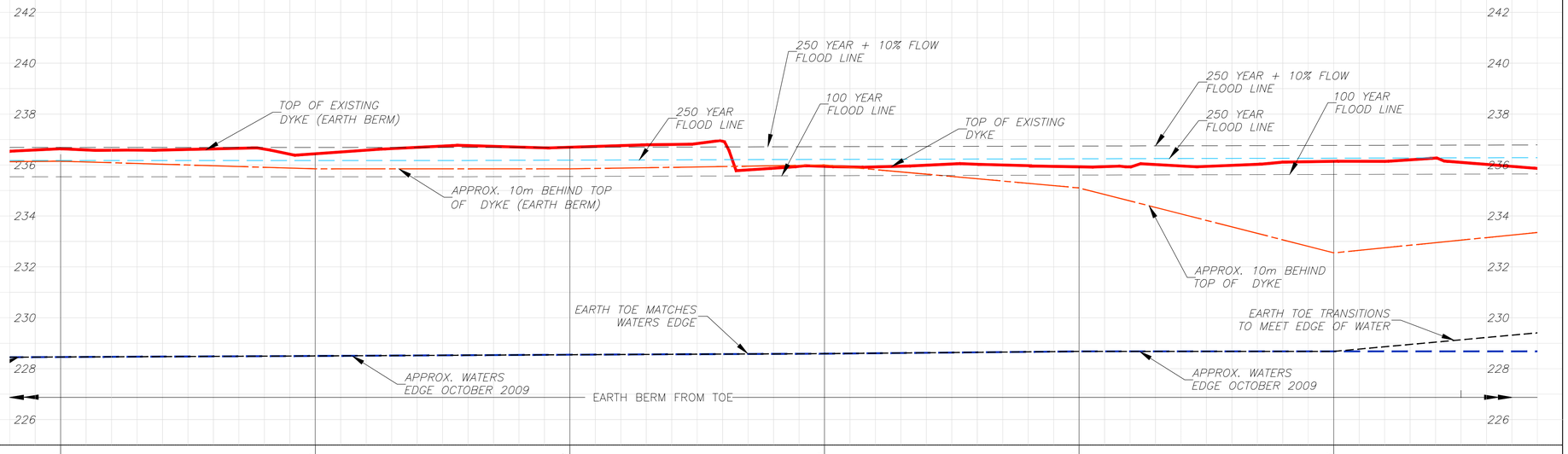
Job No. DWG No. JOB NAME



CAVENDISH WEST

CAVENDISH EAST

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2. ALTERNATE ROUTES TO BE INVESTIGATED DURING DESIGN STAGE.



TOP OF EXISTING DYKE							236.6				236.4				236.7				235.9				235.9				236.1			
250 YEAR FLOOD LINE														236.18				236.21											
APPROX. 10m BEHIND TOP OF DYKE							236.20				235.80				235.85				236.00				235.10				232.50			
TOE OF DYKE							228.48				228.50				228.52				228.59				228.66				228.63			
STATION	2+460		2+440		2+420		2+400		2+380		2+360		2+340		2+320		2+300		2+280		2+260		2+240		2+220		2+200		2+180		2+160

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS
DESIGN S.J.
DRAWN BY D.B.
CHECKED C.G.
APPROVED N.O.
DATE SEPT. 2, 2015

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TITLE
WEST LONDON DYKE
UPPER THAMES RIVER CONSERVATION AUTHORITY

CAVENDISH EAST & CAVENDISH WEST AREA
STA 2+160 TO 2+460

PROJECT No.

SHEET No.
8

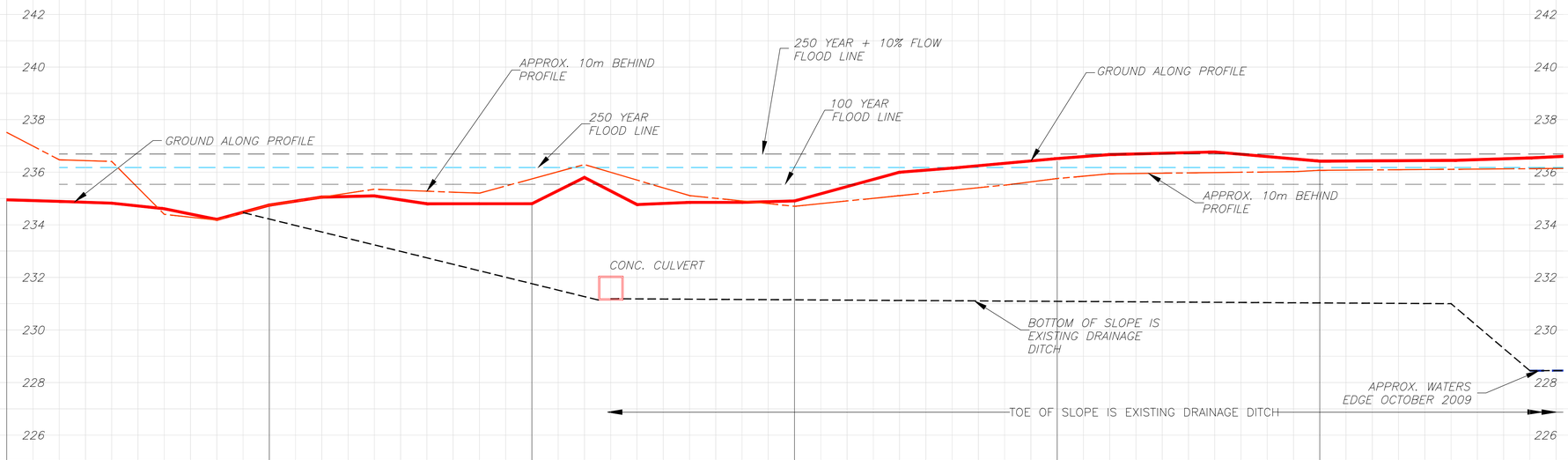
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Job No. DWG No. JOB NAME



CAVENDISH WEST

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STATION	2+750	2+740	2+720	2+700	2+680	2+660	2+650	2+640	2+620	2+600	2+580	2+560	2+550	2+540	2+520	2+500	2+480	2+460
TOP OF EXISTING DYKE	234.95			234.75			234.80			234.95			236.52	236.66		236.4		
250 YEAR FLOOD LINE		236.18								236.18								
APPROX. 10m BEHIND TOP OF DYKE	237.50			234.76			235.75			234.85			235.75			236.18		
TOE OF DYKE																		

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN S.J.				
					DRAWN BY D.B.				
					CHECKED C.G.				
					APPROVED N.O.				
					DATE SEPT. 2, 2015				
					165630035				

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TITLE
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UPPER THAMES RIVER CONSERVATION AUTHORITY

CAVENDISH EAST & CAVENDISH WEST AREA
STA 2+460 TO 2+750

PROJECT No.

SHEET No.
9

PLAN FILE No.



Appendix 6.1
Cultural Heritage Evaluation Report

Cultural Heritage Evaluation Report: West London Dyke Master Repair Plan

Part of Lot 16, Concession 1 and
Part of Lot 16, Concession 2
former Township of London,
Middlesex County,
now City of London, Ontario

Prepared for:
City of London
300 Dufferin Avenue
P.O. Box 5035
London, ON N6A 4L9

and

Upper Thames River
Conservation Authority
1424 Clarke Road
London, ON N5V 5B9

Prepared by:
Stantec Consulting Ltd.
49 Frederick Street
Kitchener, ON N2H 6M7
Tel: (519) 579-4410
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Glossary

Built Heritage Resource (BHR)	A single building, structure, monument, installation, or remains determined to be of cultural heritage value or interest following evaluation according to *Ontario Regulation 9/06*, protected under the *Ontario Heritage Act*, or listed by local, provincial or federal jurisdictions. This may include residences, barns, bridges, and similar features (based on definition provided in the 2014 *Provincial Policy Statement* (PPS) (Government of Ontario 2014)).
Cultural Heritage Landscape (CHL)	A defined geographical area modified by human activities and determined to be of cultural heritage value or interest (CHVI) following evaluation according to *Ontario Regulation 9/06*, protected under the *Ontario Heritage Act*, or listed by local, provincial or federal jurisdictions. This may include grouping(s) of individual heritage features such as structures, spaces, archaeological sites and natural elements, which together form an important type of heritage form, distinctive from that of its constituent elements or parts (based on definition provided in the PPS).
Cultural Heritage Evaluation Report (CHER)	The present study.
Heritage attributes	The component(s) of a Heritage Resource that define its CHVI. These may include, but are not limited to, principal features, characteristics, context, and appearance of a Heritage Resource (based on definition provided in the PPS).
Cultural Heritage Resource	Built or cultural resources where CHVI has been determined according to *Ontario Regulation 9/06*. Prior to evaluation, resources identified to be 40 years of age or older are considered to be *potential* heritage resources. There are two categories of Heritage Resources: Built Heritage Resources and Cultural Heritage Landscapes. The term Heritage Resource is used exclusively unless assessing the CHVI of a potential heritage resource.
Protected Heritage Property	As used herein refers to properties which are designated under, or subject to an easement made under, the *Ontario Heritage Act*, as well as properties identified by provincial authorities and proscribed public bodies as a provincial heritage property. In

	addition, protected heritage property includes those identified as such by federal or international authorities including, but not limited to, Parks Canada or UNESCO (based on definition provided in the PPS).
Protected Property	Protected Heritage Properties as well as any property previously identified by municipal staff or provincial agencies as containing, or having the potential to contain, cultural heritage value or interest. This includes properties identified on municipal registers, lists, or inventories of potential heritage resources.

1.0 INTRODUCTION

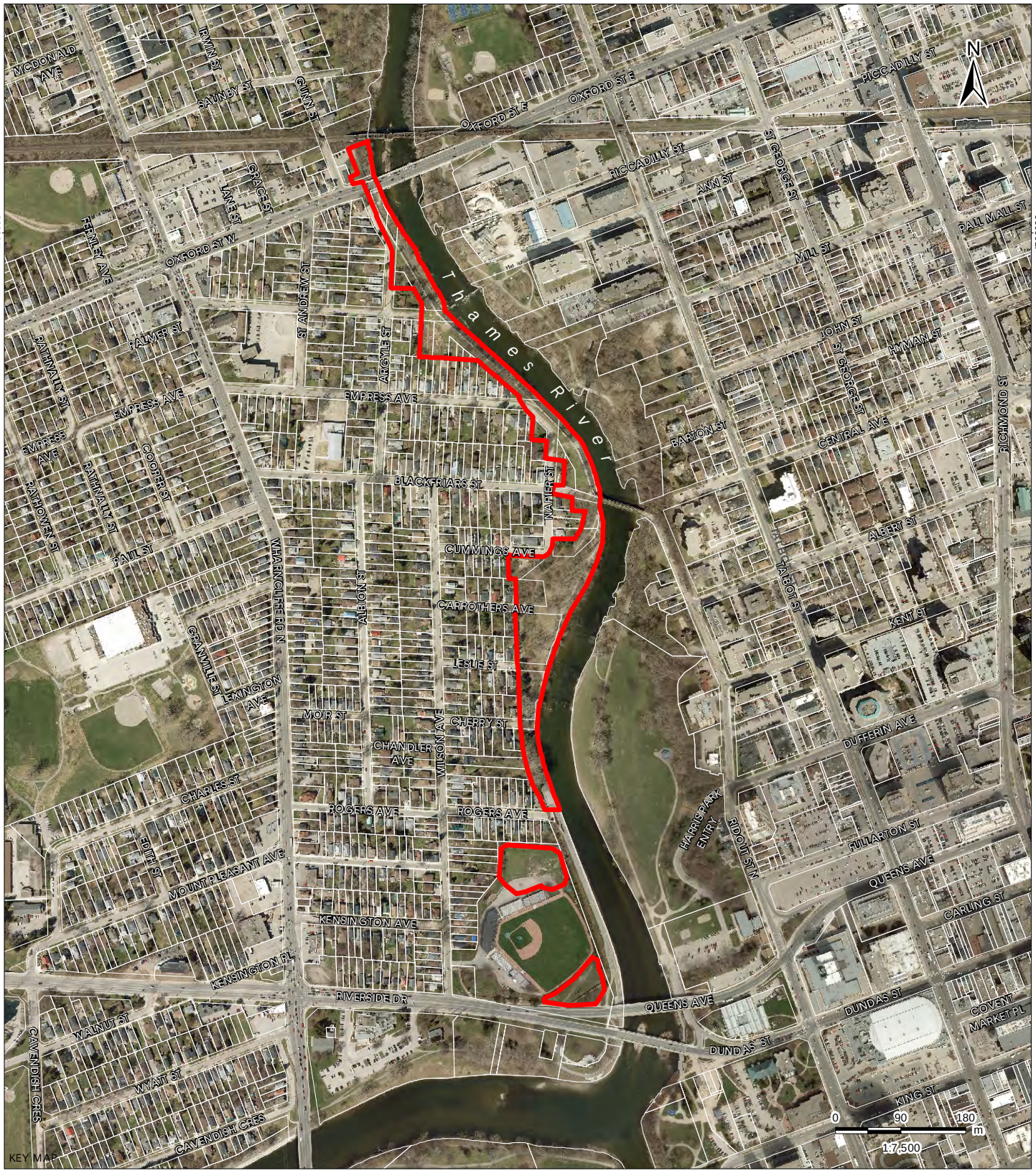
1.1 STUDY PURPOSE AND OBJECTIVES

Stantec Consulting Ltd. (Stantec) was retained by the Upper Thames River Conservation Authority (UTRCA) in partnership with the City of London (the City) to produce a Cultural Heritage Evaluation Report (CHER) for the proposed West London Dyke (WLD) Master Repair Plan in the City of London, Ontario. The CHER forms part of the preliminary planning and design process for a Schedule B Municipal Class Environmental Assessment (Class EA). The UTRCA and City have initiated the Class EA to develop and refine an approach to dyke repairs along the north branch of the Thames River between approximately Oxford Street and Queens Avenue (the Project).

The focus of the Class EA is the dyke which forms the western boundary of the Thames River between Oxford Street and Queens Avenue. Situated adjacent to the downtown core of the City, the study area forms a linear boundary along the Thames River and includes properties immediately adjacent to the river. In order to undertake the appropriate repairs to the dyke, a study area has been developed within which all Project activities are anticipated to take place (Figure 2).

As part of the Class EA this CHER has been completed to identify heritage resources, including built heritage and cultural heritage landscapes, present within the study area. Potential heritage resources were identified through consultation and a pedestrian survey, inventoried, and evaluated according to *Ontario Regulation* (O. Reg.) *9/06*, the criteria for determining cultural heritage value or interest (CHVI). A land use history was completed to provide a cultural context for the study area and to provide a background upon which to base evaluations. Where CHVI was identified, the resource was mapped and recommendations made for further study, where relevant, as the Class EA studies progress. The objectives of the CHER are summarized below:

- Prepare a land use history of the study area for use in the identification and evaluation of heritage resources;
- Identify potential heritage resources within the study area through a preliminary property inspection from accessible roadways;
- Evaluate the CHVI of the potential heritage resources to determine the number of heritage resources present; and
- Prepare recommendations for future work where heritage resources were identified.



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Revised: 2015-06-18 By: kbuchanan

June 2015
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Legend

- Study Area
- Parcel

Client/Project

Upper Thames River Conservation Authority - West London Dyke Heritage Impact Assessment

Figure No.

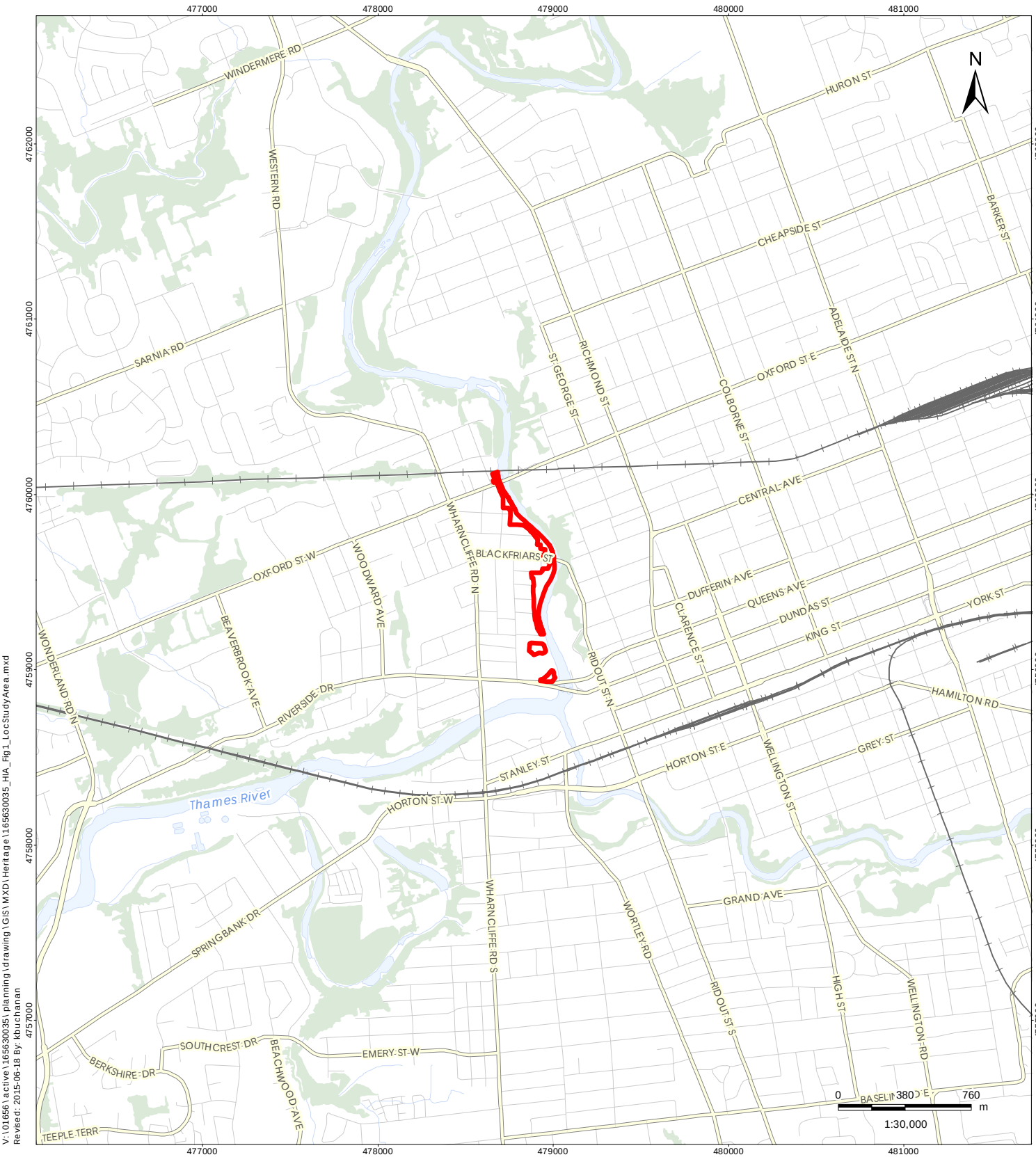
2

Title

Study Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2014.



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Revised: 2015-06-18 By: kbuchanan

June 2015
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Legend

- Study Area
- Parcel

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Upper Thames River Conservation Authority - West London Dyke Heritage Impact Assessment

Figure No.

1

Title

Location of Study Area

2.0 METHODOLOGY

2.1 REGULATORY REQUIREMENTS

The requirement to consider cultural heritage in Municipal Class EAs is discussed in the Municipal Class Environmental Assessment Manual (MCEA Manual) and the 2014 Provincial Policy Statement (PPS). The MCEA Manual considers the cultural environment, including built heritage resources and cultural heritage landscapes as well as archaeological resources, as one in a series of environmental factors to be considered when undertaking an MCEA, particularly when describing existing and future conditions, development alternatives, and determination of the preferred alternative.

The MCEA Manual further suggests that cultural heritage resources that retain heritage attributes should be identified early in the EA process and avoided where possible. Where avoidance is not possible, potential effects to these attributes should be identified and minimized. Adverse impacts should be mitigated according to provincial and municipal guidelines. It is suggested that this happen early in the process so that potential impacts to significant features can be included in an understanding of Project impacts and plans established to mitigate these impacts.

In addition to requirements outlined in the MCEA Manual, provisions made under the PPS were also considered in the preparation of the study. Section 2.6 of the PPS addresses cultural heritage in the land use planning process and as such was considered. The applicable provisions include:

> *2.6.1 - Significant built heritage resources and significant cultural heritage landscapes shall be conserved.*
>
> *2.6.3 - Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.*
>
> (PPS 2014:29)

In accordance with PPS requirements, the presence of a protected property situated within or adjacent to lands where change is proposed requires consideration of the effects of the Project to the heritage property and, where necessary, demonstration that the heritage attributes of that protected heritage property will be conserved. Where a property was identified as protected through listing or registration on a municipal list, registry, or inventory, an evaluation of CHVI is required to determine whether it meets the criteria of significance as described within the PPS. Properties which are designated under the *Ontario Heritage Act* are considered

significant. Where a Heritage Conservation District (HCD) is identified, a review was undertaken to identify properties situated within, and adjacent to, the study area. These properties were included in the CHER to address Project related impacts on the significant properties.

2.2 MUNICIPAL AND AGENCY CONSULTATION

Listings of provincially and locally designated properties, districts and easements for each municipality were collected from the City, the Ontario Heritage Trust (OHT), and the Ministry of Tourism, Culture and Sport (MTCS). Consultation with these interested agencies and municipalities was undertaken to determine the presence of designated, listed, or registered heritage properties within the study area.

Recognition of protected properties varies greatly and is dependent on the level of CHVI identified or, in some cases, the level of investigation undertaken. For the purpose of this study, any property previously identified by municipal staff or provincial agencies as containing, or having the potential to contain, cultural heritage value or interest was determined to be a protected property.

2.3 FIELD PROGRAM

Pedestrian surveys were conducted on April 15, 2015 and June 9, 2015 from publicly accessible roadways, sidewalks, and pedestrian trails. At that time the study area was surveyed for potential and protected heritage resources, including both potential built heritage resources and components of cultural heritage landscapes. Where identified, these were photographed and their locations recorded. Characteristics of each potential and protected heritage resource were noted while in the field and recorded.

In general, buildings and structures of more than 40 years of age were evaluated during the surveys for their potential to satisfy O.Reg. 9/06 criteria. The use of the 40 year threshold is generally accepted by both the federal and provincial authorities as a preliminary screening measure for CHVI. This practice does not imply that all buildings and structures more than 40 years of age are inherently of significant heritage value, nor does it exclude exceptional examples constructed within the past 40 years of being of significant cultural heritage value.

2.4 EVALUATION OF CULTURAL HERITAGE VALUE OR INTEREST

The criteria for determining CHVI is defined by O. Reg. 9/06. Each potential heritage resource was considered both as an individual structure and as cultural landscape. Where CHVI was identified, a structure or landscape was assigned a cultural heritage resource (CHR) number and the property was determined to contain a heritage resource. Evaluations for each property are contained within **Appendix A**.

2.4.1 Ontario Regulation 9/06

In order to identify CHVI at least one of the following criteria must be met:

1. The property has design value or physical value because it:
    i. is a rare, unique, representative or early example of a style, type, expression, material or construction method;
    ii. displays a high degree of craftsmanship or artistic merit; or
    iii. demonstrates a high degree of technical or scientific achievement.
2. The property has historical value or associative value because it:
    i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community;
    ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture; or
    iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.
3. The property has contextual value because it:
    i. is important in defining, maintaining or supporting the character of an area;
    ii. is physically, functionally, visually or historically linked to its surroundings; or
    iii. is a landmark.

3.0 HISTORICAL DEVELOPMENT

3.1 INTRODUCTION

The study area is historically linked to Middlesex County and the former London Township in an area once known as Petersville, located presently in the City of London, Ontario. The study area is comprised of an approximately two kilometre (km) north-south corridor of land beginning near the intersection of Oxford Street and Gunn Street and ending approximately at Queens Avenue and Riverside Drive (Figure 1). The following sections outline the historical development of the study area from the time of settlement to the 20th century.

3.2 PHYSIOGRAPHY

The southern half of the study area is located within the physiographic region known as the London Annex of the Caradoc Sand Plain. The region is surrounded by the Stratford Till Plain to the north, the Mount Elgin Ridges to the east and the Ekfrid clay plain to the south and west. In its entirety, the region comprises approximately 482 square kilometres in the heart of southwestern Ontario. This region is characterized by fine sandy loam which appears on the finer sands that are deep and well drained while the main soil type is Berrien sandy loam which has very wet subsoil. Along the terraces of the Thames River is the Burford gravelly loam, which can be a productive soil if properly drained (Chapman and Putnam 1984:146).

The northern half of the study area is located within the physiographic region known as the Stratford Till Plain. The region is surrounded by the Dundalk Till Plain to the north, the Waterloo Hills to the east, the London Annex of the Caradoc Sand Plain to the south and the Horseshoe Moraines to the west. The region is comprised of 2,200 square kilometres in the centre of southwestern Ontario. The region is characterized by brown calcareous silty clay with the soil having a Grey Brown Luvisolic profile resulting in surface soils either of silt or clay loam. The soils of the region are naturally fertile and are considered fit for agricultural purposes (Chapman and Putnam 1984:133-134).

The physiographic and soil characteristics of the study area have influenced subsequent land use throughout its history. In the southern half the study area in the London Annex physiographic region, the gravelly terraces along the Thames River from Delaware to London were characterized by orchards and market gardens (Chapman and Putnam 1984:146). In the northern half of the study area in the Stratford Till Plain physiographic region, 81% of the land was used for crop growing with an output focus on grain corn, hay and wheat (Chapman and Putnam 1984:135).

The closest water source to the study area is the Thames River, located on its eastern border. The Thames River is a natural divide between the historic City of London and the old neighbourhoods west of the river including those of the study area. Use of the Thames River has evolved over time from being a transportation route used by early settlers, to an industrial power

source to support the early mills of the area, and finally to becoming used for recreational purposes throughout the 20th and 21st centuries.

3.3 SURVEY AND EARLY SETTLEMENT

The study area is historically located in the former London Township, which was one of the 10 original townships of Middlesex County established in 1793. Provincial Land Surveyor Mahlon Burwell began the survey of London Township in 1810. The survey progressed slowly and was put on hold due to the War of 1812. The survey resumed in 1818 and concluded in the spring of 1819. London Township was surveyed based on the double front survey system, popular between 1815 and 1829 (Dean 1969) (Plate 1). Lots were divided into 200 acre parcels and arranged in 16 concessions and three additional concessions that are broken due to the Thames River.

It was in 1818 that Colonel Talbot began assigning lots to immigrants in London Township. Often, settlers were given 100 acres, half of a surveyed lot. Colonel Talbot knew it was difficult for these first settlers in the township to obtain money. Therefore, it was often 10 to 15 years after they settled on land that Colonel Talbot collected fees and obtained a deed. In 1819 the assessment returns shows the population of London Township as 170 people, mainly of British descent, jumping in 1820 to 464 people, and by 1851 it jumped to 6,735 with over half having been born in the township (Rosser 1975).

With its strategic location at the forks of the Thames River, the township saw an influx of immigrants around the settlement area known as London which was located on the township's southern boundary, east of the river. After initial settlement in 1826, the population of London grew to 1,816 in 1840, becoming an incorporated village the same year. In 1847, London became a town and later an incorporated city in 1855 with a population over 10,000 (Page and Co. 1878:8). By 1878, the city core was roughly bounded by Thames River to the west and south, Huron Street to the north, and Adelaide Street North to the east (Figure 2).

3.4 19TH CENTURY LAND USE

Land use of the study area underwent a significant change throughout the 19th century from largely agriculture in nature to a developed residential neighbourhood by the end of the century. At the time of settlement in the 1820s to mid-century, land of the study area was used primarily for agriculture purposes. The presence of the Thames River enriched the soil of the study area, making it one of the most nutritious soils found in London Township. In particular, along the western bank of the Thames River, the land was optimal for fruit growing as evidenced by the market garden that was once located at 81 Wilson Avenue (Grainger 2002:321). As a whole, 70% of the land in London Township was considered first class for agricultural purposes with an output focus of wheat and oats (Ontario Agricultural Commission 1880:353).

Land use of the study area began to change in 1854 when Samuel Peters bought land from farmers and subdivided the area into lots. The area was first known as "Bridge Town" after the steel truss bridge over the Thames River. The bridge would become known as Blackfriars Bridge,

a local landmark and National Historic Site. Bridge Town would later be re-named to Petersville, after its founder (Grainger 2002:319). Residential homes soon appeared in and around the study area east of Wharncliffe Road North between the late 1850s and 1870s. By the early1870s, Petersville had grown into a bustling hamlet with residential neighbourhoods and a commercial area located northwest of the study area that included 26 businesses, a hotel, two grocery stores, a school, a post office, and the North Branch Flour Mills of Hilliard and Saunby (Grainger 2002:319). In 1875, Petersville became an incorporated village. In 1881, Petersville combined with the small village of Kensington to the west to form the Village of London West. London West and its residential dwellings became working class neighbourhoods with residents working in nearby cement, broom, shoe and steel factories as well as at the nearby brewery, mill and courthouse (Grainger 2002:320). The majority of these places of businesses were located east of London West across the Thames River in the City of London.

Throughout the 19th century, London, which became an incorporated city in 1855, became one of the largest administrative and industrial centres of southwestern Ontario which resulted in an urban landscape with an increasingly industrial character. With London being the administrative centre of Middlesex County, a Court House was built in 1829 on Ridout Street North at the east of the Thames River. The Court House brought many officials and officers to take up residence in the area (Page and Co. 1878:8), resulting in the building of many 19th century homes, including the Eldon House which still stands today on Ridout Street North along the eastern bank of the Thames River.

By the mid-19th century, London had become a large industrial centre. This is evident by the presence of distilleries and manufacturing shops and plants in and around London. To help support the industries of the city to ship goods, railways were constructed in 1854 and 1858 by the Great Western Railway Company and the Port Sarnia Railway Company, respectively. The two railways greatly stimulated London's growth by giving the city rail access to markets in Sarnia, Toronto and Niagara Falls while also giving the city its industrial character. Another railway was constructed in 1889 by the Ontario and Quebec Railway Company. This railway was built north of the city and provided rail access to Chatham and Windsor (ArcGIS 2014:online).

As the population of the city grew and spread outward, the boundaries of the City of London extended as it began to annex surrounding neighbourhoods. London East, primarily an industrial centre, was annexed to the city in 1885. London South was annexed to the city in 1890 and London West was annexed in 1897 (Grainger 2002:281). The communities of London South and West consisted of small commercial cores and residential neighbourhoods, the first of the kind in the township. The annexation of these communities initiated a shift of land use and character of the city as a whole as the City of London adopted low-density residential neighbourhoods, a stark contrast to the high-rise administrative buildings and large manufacturing plants already established around the city.

3.5 20TH CENTURY LAND USE

Land use of the study area throughout the 20th century remained largely unchanged as it remained urban in nature. Urban development, both residential and commercial, continued to grow in the former London West area in the first half of the 20th century.

Between 1900 and 1915, many residential houses were built by local builders in the old London West area. West of the study area in the former village of Kensington, Victory Houses were built for returning soldiers and their families in the late 1940s and early 1950s (Heritage Resources Centre 2009:25). Population of the former London West area fluctuated throughout the 20th century, once reaching a total population of 5,490 in 1991 (City of London 1993:26). By 1957, much of the study area and immediate surroundings was developed with residential units.

Along with an increase in residential development, the urban nature around the study area saw an increase in commercial land use. The existing commercial corridor northwest of the study area established in the latter half of the 19th century had continued to grow and develop into the 20th century, making the area along Oxford Street West and Wharncliffe Road a more defined commercial corridor. Other commercial land use is concentrated at the intersection of Wharncliffe Road and Riverside Drive where a range of services are located (City of London 1993:41).

Throughout the second half of the 20th century, land use in the City of London evolved with more land devoted to residential uses(in the form of high-rise apartments and condominiums) to accommodate a growing population and to institutional uses (post-secondary schools). This is in stark contrast to the study area and its immediate surroundings where a stable population and minimal changes in land use is evident. As a result, the London West area provides a present day insight to residential neighbourhoods of the late 19th and early 20th centuries.



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Revised: 2015-06-18 By: kbuchanan

June 2015
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Stantec

Legend

Approximage Location of Study Area

Client/Project

Upper Thames River Conservation Authority - West London Dyke Heritage Impact Asssessment

Figure No.

4

Title

Study Area, 1878

Notes

1. Historical information not to scale.
2. London Township map from Page, H.R. and Co. 1878. *Illustrated Historical Atlas of the County of Middlesex, Ont.* Toronto.

4.0 RESULTS

4.1 AGENCY AND MUNICIPAL CONSULTATION

In order to identify protected properties the OHT, MTCS, and City were consulted. Michael Sawchuck, Manager, Acquisitions and Conservation Services with the OHT, reported that there are no conservation easement properties in the vicinity of the study area. Deborah Hossack, Registrar, Register Developer, Heritage Advisor with MTCS reported that there are no properties on the List of Provincial Heritage Properties within the vicinity of the study area (Table 1).

Table 1 Identified and Protected Heritage Resources with the Study Area

Location/Municipal Address	Level of Recognition
2 Oxford Street West	Designated under Part V of the *Ontario Heritage Act*
64 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
62 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
60 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
56 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
54 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
52 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
48 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
46 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
44 Argyle Street	Designated under Part V of the *Ontario Heritage Act*
9 St. Patrick Street	Designated under Part V of the *Ontario Heritage Act*
6 St. Patrick Street	Designated under Part V of the *Ontario Heritage Act*
2 St. Patrick Street	Designated under Part V of the *Ontario Heritage Act*
37 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
35 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
33 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
31 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
29 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
27 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
25 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
23 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
21 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
19 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
17 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*

Location/Municipal Address	Level of Recognition
15 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
13 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
6 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
8 Empress Avenue	Designated under Part V of the *Ontario Heritage Act*
28 Napier Street	Designated under Part V of the *Ontario Heritage Act*
13 Blackfriars Street	Designated under Part V of the *Ontario Heritage Act*
9 Blackfriars Street	Designated under Part V of the *Ontario Heritage Act*
10 Blackfriars Street	Designated under Part V of the *Ontario Heritage Act*
14 Napier Street	Designated under Part V of the *Ontario Heritage Act*
13 Napier Street	Designated under Part V of the *Ontario Heritage Act*
11 Napier Street	Designated under Part V of the *Ontario Heritage Act*
9 Napier Street	Designated under Part V of the *Ontario Heritage Act*
6 Napier Street	Designated under Part V of the *Ontario Heritage Act*
2 Cummings Avenue	Designated under Part V of the *Ontario Heritage Act*
10 Cummings Avenue	Designated under Part V of the *Ontario Heritage Act*
1 Carrothers Avenue	Designated under Part V of the *Ontario Heritage Act*
2 Carrothers Avenue	Designated under Part V of the *Ontario Heritage Act*
3 Leslie Street	Designated under Part V of the *Ontario Heritage Act*
2 Leslie Street	Designated under Part V of the *Ontario Heritage Act*
3 Cherry Street	Designated under Part V of the *Ontario Heritage Act*
2 Cherry Street	Designated under Part V of the *Ontario Heritage Act*
6 Cherry Street	Designated under Part V of the *Ontario Heritage Act*
81 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
79 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
5 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
1 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
2 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
4 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
6 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
8 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
10 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
12 Rogers Avenue	Designated under Part V of the *Ontario Heritage Act*
57 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
51 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
49 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
47 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*

Location/Municipal Address	Level of Recognition
45 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
43 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
41 Wilson Avenue	Designated under Part V of the *Ontario Heritage Act*
25 Wilson Avenue (Labatt Park)	Designated under Part IV and V of the *Ontario Heritage Act*
St. Patrick Street Viewshed	Heritage attribute of the Blackfriars-Petersville HCD
Empress Avenue Viewshed	Heritage attribute of the Blackfriars-Petersville HCD
Blackfriars Street Viewshed	Heritage attribute of the Blackfriars-Petersville HCD
Carrothers Avenue Viewshed	Heritage attribute of the Blackfriars-Petersville HCD
Leslie Street Viewshed	Heritage attribute of the Blackfriars-Petersville HCD
Cherry Street Viewshed	Heritage attribute of the Blackfriars-Petersville HCD
Rogers Avenue Viewshed	Heritage attribute of the Blackfriars-Petersville HCD
Blackfriars Street Bridge	Designated under Part IV of the *Ontario Heritage Act*

As a result of the consultation one HCD designated under Part V of the *Ontario Heritage Act* was identified. Kyle Gonyou, Heritage Planner, with the City, identified the Blackfriars/Petersville HCD to be situated within and adjacent to the study area. Two documents are available related to the HCD including *Blackfriars/Petersville Heritage Conservation District Study Report* (Golder 2014) and *Blackfriars-Petersville Heritage Conservation District Plan and Guidelines* (Golder 2014). Following review, a total of 64 properties within the HCD were identified for inclusion in the CHER (Figure 4). In addition to properties identified for review, seven viewsheds were identified as heritage attributes which contribute to the heritage character of the HCD, as was Blackfriars Bridge, a municipally designated and nationally significant structure (Golder 2014). A summary of previously identified properties is provided in Table 1 and the heritage attributes identified in the HCD are provided below:

- Various renditions of Ontario Cottage dwellings and similar styles;
- Dwellings that have survived the 1883 and 1937 floods, respectively;
- Modest, economical home building styles and techniques that are representative of the area's early working-class settlers;
- Building characteristics common to the district including form, massing, type, scale, roof pitches, and setbacks;
- Architectural details including buff brick materials, keyhole windows and historic fenestration, coloured and stained glass transoms, fanlights, London doors, porches, and bargeboard and gable detailing;
- Early historic suburban development patterns represented by the narrow internal streets, grids, walkable nature of the area, and survey types;
- Proximity and historical relationship with the Thames River;
- Long viewsheds along the narrow streets that terminate with views of the Thames River dyke system;

- Associated greenways along the Thames River dyke system;
- Enclosure provided by street trees and mature trees within the front and back yards of residential properties;
- Public greenspaces and parks;
- Blackfriars Bridge;
- Labatt Park;
- Jeanne-Sauvé Public School (former Empress Avenue School); and
- St. Georges Anglican Church. (Golder 2014)

4.2 FIELD PROGRAM

As described in Section 2.3, a pedestrian survey of the study area was undertaken to identify potential heritage resources situated within the study area and confirm the presence of previously identified protected properties. Where identified, the site was photographically documented from publicly accessible roadways. Detailed property descriptions can be found in Appendix A.

During the course of the survey, a total of 74 sites, including 65 individual sites, seven viewsheds and two cultural landscapes, were identified as containing potential heritage resources (Figure 5). The vast majority of individual potential heritage resources identified were residential (60), with two recreation sites, two transportation sites, and one vacant lot also identified. Of 74 sites identified, 64 had been previously identified as part of the Blackfriars/Petersville HCD. The 10 potential resources not previously identified include two transportation resources both of which are bridges, one cultural landscape, and seven viewsheds.

At the outset of the study, the Blackfriars/Petersville HCD was determined to be situated within and adjacent to the study area. The HCD is generally bounded by the Thames River to the east and south, Oxford Street West to the north, and Wharncliffe Road North to the west while selected properties on the western side of Wharncliffe Road North are also included (Golder 2014). The properties contained within the HCD are designated under Part V of the *Ontario Heritage Act*.

Following identification in the field, a review of the *Blackfriars-Petersville Heritage Conservation District Plan and Guidelines* was undertaken to determine the status of each property identified in relation to the HCD. In order to distinguish between properties which define the district and those who are included simply as a result of a position within the district, the *Blackfriars-Petersville Heritage Conservation District Plan and Guidelines* provides a distinction between contributing and non-contributing resources. A summary of the status of each property within the HCD is provided in Table 2 and each type of resource is described below:

> ***Contributing Resource**: a property, structure, landscape element, or other attribute of a Heritage Conservation District that supports the identified cultural heritage values, character, and/or integrity of the HCD. Contributing resources*

are subject to the polices and guidelines for conservation, alteration, and demolition.

***Non-Contributing Resource**: a property, structure, landscape element, or other feature of an HCD that does not support the overall cultural heritage value, character, and/or integrity of the HCD; Noncontributing resources are subject to policies to alterations and new construction; Guidelines for noncontributing resources are intended to ensure that those properties do not compromise the cultural heritage values of the HCD as a whole by adding further inappropriate changes to a property, structure, landscape element, or other feature; relevant guidelines emphasize compatibility, sympathy, and respect.*

(Golder 2015)

Table 2 Contributing and Non-Contributing Resources

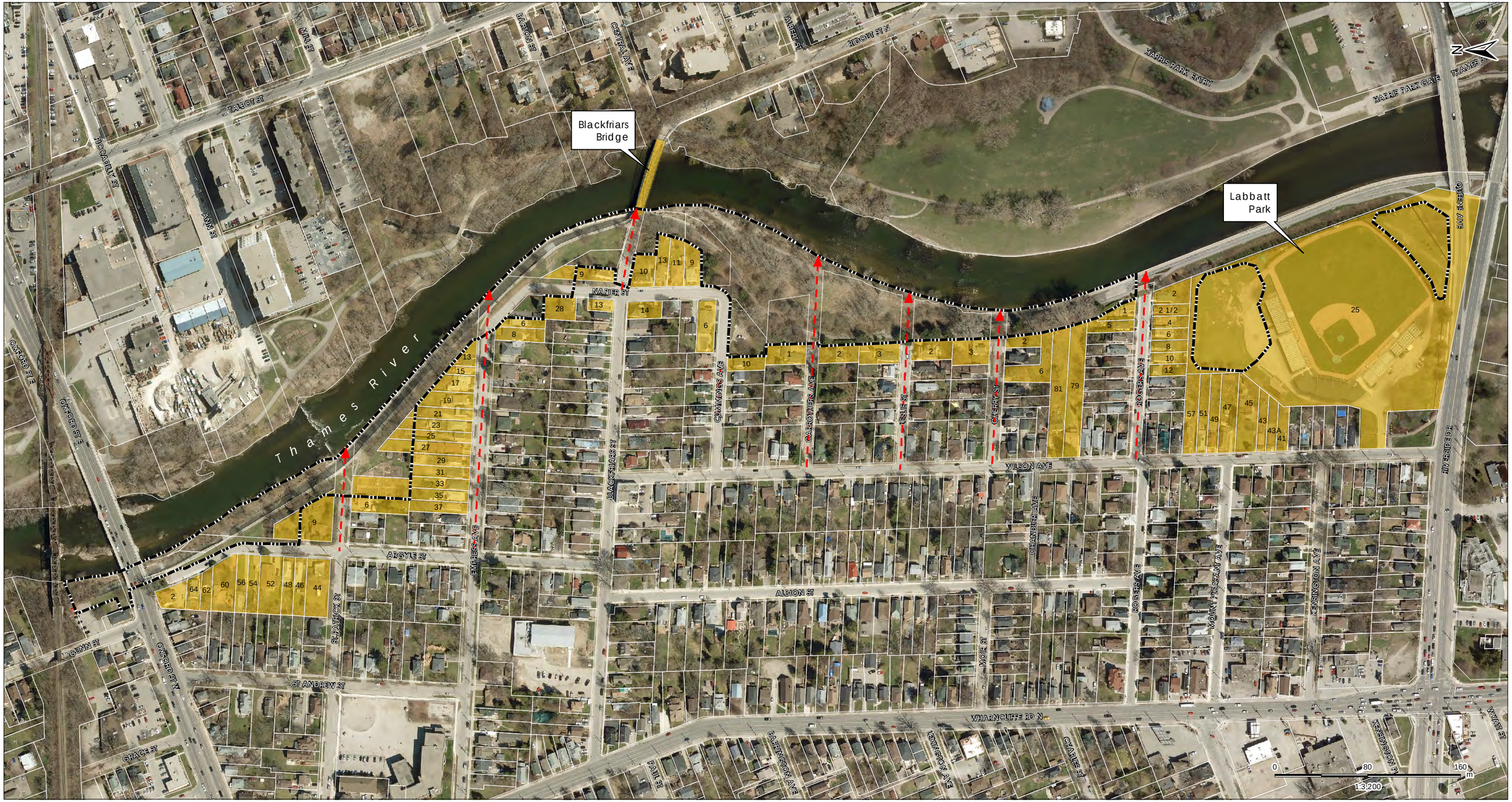
Location/Municipal Address	HCD Property Status
2 Oxford Street West	Contributing
64 Argyle Street	Contributing
62 Argyle Street	Contributing
60 Argyle Street	Contributing
56 Argyle Street	Contributing
54 Argyle Street	Contributing
52 Argyle Street	Non-Contributing
48 Argyle Street	Contributing
46 Argyle Street	Contributing
44 Argyle Street	Non-Contributing
9 St. Patrick Street	Contributing
6 St. Patrick Street	Contributing
2 St. Patrick Street	Contributing
37 Empress Avenue	Contributing
35 Empress Avenue	Contributing
33 Empress Avenue	Contributing
31 Empress Avenue	Contributing
29 Empress Avenue	Non-Contributing
27 Empress Avenue	Non-Contributing
25 Empress Avenue	Contributing
23 Empress Avenue	Contributing
21 Empress Avenue	Contributing
19 Empress Avenue	Contributing

Results
July 24, 2015

Location/Municipal Address	HCD Property Status
17 Empress Avenue	Contributing
15 Empress Avenue	Contributing
13 Empress Avenue	Contributing
6 Empress Avenue	Contributing
8 Empress Avenue	Contributing
28 Napier Street	Contributing
13 Blackfriars Street	Contributing
14 Blackfriars Street	Contributing
9 Blackfriars Street	Contributing
10 Blackfriars Street	Contributing
13 Napier Street	Contributing
11 Napier Street	Contributing
9 Napier Street	Contributing
6 Napier Street	Non-Contributing
2 Cummings Avenue	Contributing
10 Cummings Avenue	Contributing
1 Carrothers Avenue	Contributing
2 Carrothers Avenue	Contributing
3 Leslie Street	Contributing
2 Leslie Street	Contributing
3 Cherry Street	Contributing
2 Cherry Street	Contributing
6 Cherry Street	Contributing
81 Wilson Avenue	Contributing
79 Wilson Avenue	Non-Contributing
5 Rogers Avenue	Contributing
1 Rogers Avenue	Contributing
2 Rogers Avenue	Contributing
4 Rogers Avenue	Contributing
6 Rogers Avenue	Contributing
8 Rogers Avenue	Contributing
10 Rogers Avenue	Contributing
12 Rogers Avenue	Contributing
57 Wilson Avenue	Contributing
51 Wilson Avenue	Contributing
49 Wilson Avenue	Contributing

Results
July 24, 2015

Location/Municipal Address	HCD Property Status
47 Wilson Avenue	Contributing
45 Wilson Avenue	Contributing
43 Wilson Avenue	Contributing
41 Wilson Avenue	Contributing
25 Wilson Avenue (Labatt Park)	Contributing



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Revised: 2015-06-23 By: kbuchanan

June 2015
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Stantec

Legend

- Study Area
- Parcel
- Viewsheds Identified with Heritage Attributes
- Properties Identified with Heritage Attributes (with street address)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, 2014.

Client/Project

Upper Thames River Conservation Authority
West London Dyke
Heritage Impact Assessment

Figure No.

4

Title

Identified Heritage Attributes Within or Abutting Study Area According to HCD Plan



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Revised: 2015-06-23 By: kbuchanan

June 2015
165630035

Stantec

Legend

- Study Area
- Parcel
- Potential Heritage Resource

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, 2014.

Client/Project

Upper Thames River Conservation Authority
West London Dyke
Heritage Impact Assessment

Figure No.

5

Title

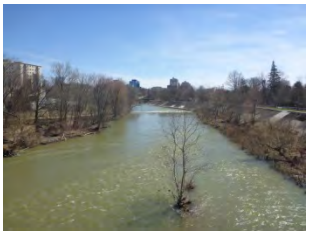
Potential Heritage Resources Within or Abutting Study Area

4.3 EVALUATION OF CULTURAL HERITAGE VALUE OR INTEREST

Where a potential heritage resource was identified within the study area, an evaluation of the CHVI of the property was undertaken. As described in Section 2.4, each potential heritage resource was evaluated according to O. Reg. 9/06, the criteria for determining CHVI. In addition, each potential heritage resource was considered both as an individual structure and as part of a landscape. Where CHVI was identified, a structure or landscape was assigned a heritage resource number and the property was determined to contain a heritage resource. Detailed evaluations for each property are contained within Appendix A.

Following evaluation, 65 heritage resources were identified on properties within the study area (Figure 5). A summary of all properties assessed and corresponding CHR number, where appropriate, is provided in Table 3. The majority of heritage resources identified are built heritage resources categorized as residential structures.

Table 3 Determination of Cultural Heritage Value or Interest, According to Ontario Regulation 9/06

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
Railway Bridge north of Gunn Street and Oxford Street	Yes	1	Bridge: steel truss, abutments, earth embankment.	
Thames River from Oxford Street to approximately Blackfriars Street	Yes	2	River: association with the historical development of London and historically linked to its surroundings.	
2 Oxford Street West	Yes	3	Residence: cross gable, central gable window, yellow brick exterior, symmetrical in design.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
St. Patrick Street Viewshed	Yes	4	Viewshed: Clear unobstructed view of Thames River embankment, Thames River pedestrian pathway and east side of the Thames River in the distance.	
9 St. Patrick Street	Yes	5	Residence: one and one half storey, brick exterior, hipped roof, hipped dormer window. Relationship of residence to road and surrounding residences.	
6 St. Patrick Street	Yes	6	Residence: relationship of residence to road and surrounding residences.	
2 St. Patrick Street	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
Empress Avenue Viewshed	Yes	7	Viewshed: Clear unobstructed view of Thames River embankment, Thames River pedestrian pathway and east side of the Thames River in the distance.	
37 Empress Avenue	Yes	8	Residence: one storey, front gable, hipped roof, front decorated gable. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
35 Empress Avenue	Yes	9	Residence: one and one half storey, hipped roof, brick exterior, hipped dormer window. Relationship of residence to road and surrounding residences.	
33 Empress Avenue	Yes	10	Residence: one storey, hipped pyramidal low pitched roof. Relationship of residence to road and surrounding residences.	
31 Empress Avenue	Yes	11	Residence: one storey, hipped roof, steeply pitched centre gable. Relationship of residence to road and surrounding residences.	
29 Empress Avenue	Yes	12	Residence: one and one half storey, steeply pitched gable window. Relationship of residence to road and surrounding residences.	
27 Empress Avenue	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
25 Empress Avenue	Yes	13	Residence: one and one half storey, front gable, yellow brick exterior. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
23 Empress Avenue	Yes	14	Residence: setback of the building is contextually linked with the road its surroundings. Relationship of residence to road and surrounding residences.	
21 Empress Avenue	Yes	15	Residence: one storey, hipped roof. Relationship of residence to road and surrounding residences.	
19 Empress Avenue	Yes	16	Residence: one storey, side gable roof, centre gable. Relationship of residence to road and surrounding residences.	
17 Empress Avenue	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
15 Empress Avenue	Yes	17	Residence: setback of the residence is contextually linked with the road its surroundings. Relationship of residence to road and surrounding residences.	
13 Empress Avenue	Yes	18	Residence: one storey, hipped pyramidal roof. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
8 Empress Avenue	Yes	19	Residence: one storey, hipped roof, symmetrical design. Relationship of residence to road and surrounding residences.	
6 Empress Avenue	Yes	20	Residence: one and one half storey, front gable, medium pitched roof. Relationship of residence to road and surrounding residences.	
28 Napier Street	Yes	21	Residence: one and one half storey, side gable, steep pitched centre gable window.	
9 Blackfriars Street	Yes	22	Residence: two storey, timber siding, front gable. Relationship of residence to road.	
Blackfirars Street Viewshed	Yes	23	Viewshed: Clear unobstructed view of the Blackfriars Street Bridge, as well as Thames River embankment on either side and the pedestrian pathway and east side of the Thames River in the distance.	
10 Blackfriars Street	Yes	24	Residence: one and one half storey, cross gable, brick exterior, pyramidal roof, centre gable window.	

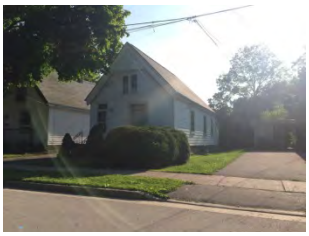
Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
13 Napier Street	Yes	25	Residence: two storey, hipped roof, three bay, centre gable window, paired roof brackets. Relationship of residence to road and surrounding residences.	
11 Napier Street	Yes	26	Residence: one storey, hipped roof, small centre gable. Relationship of residence to road and surrounding residences.	
9 Napier Street	Yes	27	Residence: one storey, cross gable, centre steep gable. Relationship of residence to road and surrounding residences.	
Blackfriars Street Bridge	Yes	28	Bridge: - prominent location spanning the Thames River providing a gateway between the downtown and former London West areas, of the City of London; - orientation to Ridout Street; - gentle curve that augments the bridge's narrow width, texture of the wooden deck and streamlined elegance of its bowed profile; - reinforced bowstring bridge construction, based on an 1870 prototype by the Wrought Iron Bridge Company; - wrought-iron construction including the low parabolic chord that tops the bridge; - unsupported length of 212 feet; - pin connections and lattice girders; and - timber deck beams.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
6 Napier Street	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
2 Cummings Avenue	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
10 Cummings Avenue	Yes	29	Residence: contextually linked to the road and its surroundings. Relationship of residence to road and surrounding residences.	
Carrothers Avenue Viewshed	Yes	30	Viewshed: View of dead-end street overlooking Thames River embankment and Thames River pedestrian pathway.	
1 Carrothers Avenue	Yes	31	Residence: one storey, side gable. Relationship of residence to road and surrounding residences.	
2 Carrothers Avenue	Yes	32	Residence: one and one half storey, side gable, brick exterior, gothic gable window. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
Leslie Street Viewshed	Yes	33	Viewshed: View of dead-end street overlooking Thames River embankment and Thames River pedestrian pathway.	
3 Leslie Street	Yes	34	Residence: one and one half storey, front gable, pyramidal roof, fish scaling shingles, decorative gable. Relationship of residence to road and surrounding residences.	
2 Leslie Street	Yes	35	Residence: one and one half storey, side gable, yellow brick, projecting centre bay, front door with arched sidelights and half circled transom light. Relationship of residence to road and surrounding residences.	
Cherry Street Viewshed	Yes	36	Viewshed: View of dead-end street overlooking Thames River embankment and Thames River pedestrian pathway.	
3 Cherry Avenue	Yes	37	Residence: one and one half storey, yellow brick siding, decorative shingle siding, decorative gable. Relationship of residence to road and surrounding residences.	
2 Cherry Street	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	

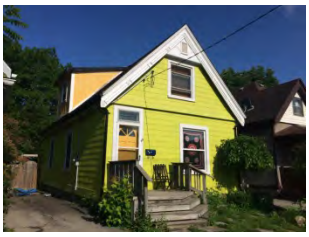
Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
6 Cherry Street	Yes	38	Residence: one and one half storey, yellow brick, two gables, steep pitched roof. Relationship of residence to road and surrounding residences.	
81 Wilson Avenue	Yes	39	Residence: one and one half storey, side gable, brick structure, centre gable window, stone foundation.	
79 Wilson Avenue	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
Rogers Avenue Viewshed	Yes	40	Viewshed: Clear unobstructed view of Thames River embankment, Thames River pedestrian pathway and east side of the Thames River with the downtown visible in the distance.	
1 Rogers Avenue	Yes	41	Residence: one and one half storey, front gable, brick structure, steep pitched roof. Relationship of residence to road and surrounding residences.	
2 Rogers Avenue	Yes	42	Residence: One and one half storey, brick structure, pyramidal roof. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
25 Wilson Avenue (Labatt Park)	Yes	43	Park: Placement of the field and clubhouse in relation to each other. Historical value in the continual use of the diamond in current position. Landmark along the Thames River corridor.	 
13 Blackfirars Street	Yes	44	Residence: setback of the building is contextually linked with the road its surroundings. Relationship of residence to road and surrounding residences.	
14 Napier Street	Yes	45	Residence: one storey, cross gable, steeply pitched centre gable. Relationship of residence to road and surrounding residences.	
64 Argyle Street	Yes	46	Residence: relationship of residence to road and surrounding residences.	
62 Argyle Street	Yes	47	Residence: one and one half storey, steep pitched gambrel roof. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
60 Argyle Street	Yes	48	Residence: relationship of residence to road and surrounding residences.	
56 Argyle Street	Yes	49	Residence: relationship of residence to road and surrounding residences.	
54 Argyle Street	Yes	50	Residence: relationship of residence to road and surrounding residences.	
52 Argyle Street	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
48 Argyle Street	Yes	51	Residence: one and one half storey, decorative wood shingles, decorative gable detailing.	
46 Argyle Street	Yes	52	Residence: one and one half storey, front gable, steep pitched roof, shed dormer window.	

Results
July 24, 2015

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
44 Argyle Street	No	N/A	CHVI was not identified; therefore heritage attributes were not identified.	
5 Rogers Avenue	Yes	53	Residence: one and one half storey, multiple front gables, gabled dormer window. Relationship of residence to road and surrounding residences.	
4 Rogers Avenue	Yes	54	Residence: one and one half storey, front gable, hipped roof, yellow brick exterior, decorative wood shingles, gable detailing. Relationship of residence to road and surrounding residences.	
6 Rogers Avenue	Yes	55	Residence: Relationship of residence to road and surrounding residences.	
8 Rogers Avenue	Yes	56	Residence: one storey, brick exterior, gable window. Relationship of residence to road and surrounding residences.	
10 Rogers Avenue	Yes	57	Residence: one storey, hipped roof, front gable with detail, brick exterior. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
12 Rogers Avenue	Yes	58	Residence: Relationship of residence to road and surrounding residences.	
57 Wilson Avenue	Yes	59	Residence: one and one half storey, brick exterior, front gable, hipped roof, fish scaling shingles, decorative gable. Relationship of residence to road and surrounding residences.	
49 Wilson Avenue	Yes	60	Residence: one and one half storey, front gable, decorative gable and roof trim. Relationship of residence to road and surrounding residences.	
47 Wilson Avenue	Yes	61	Residence: one and one half storey, hipped roof, front gable window. Relationship of residence to road and surrounding residences.	
45 Wilson Avenue	Yes	62	Residence: one and one half storey, side gable, centre gable window, yellow brick exterior, symmetrical design.	
43 Wilson Avenue	Yes	63	Residence: one and one half storey, front gable, gambrel roof. Relationship of residence to road and surrounding residences.	

Municipal Address	CHVI	CHR	Heritage Attributes	Photograph
41 Wilson Avenue	Yes	64	Residence: two storey, brick exterior, low pitched hipped roof, shed dormer. Relationship of residence to road and surrounding residences.	
51 Wilson Avenue	Yes	65	Residence: one and one half storey, front gable, decorative gable and roof trim. Relationship of residence to road and surrounding residences.	



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Revised: 2015-06-23 By: kbuchanan

June 2015
165630035

Stantec

Legend
- Study Area
- Parcel
- Identified Heritage Resource (with ID number)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, 2014.

Client/Project
Upper Thames River Conservation Authority
West London Dyke
Heritage Impact Assessment

Figure No.
6

Title
Identified Heritage Resources

5.0 RECOMMENDATIONS

5.1 EVALUTION OF PREFERRED ALTERNATIVES

The information contained within this Report should be incorporated into the Environmental Study Report and the subsequent evaluation of design alternatives. The preferred approach selection and detailed design should consider heritage resources identified within this CHER and depicted in Figure 5.

5.2 ISOLATION AND BUFFER ZONES

Generally, heritage resources identified within this Report should be avoided during the proposed upgrades and extensions of municipal services. Although the effect of traffic and construction vibrations on historic period structures is not fully understood, negative effects have been demonstrated on buildings with a setback of less than 40 metres from the curbside (Crispino and D'Apuzzo 2001; Ellis 1987; Rainer 1982; Wiss 1981). Given the heritage attributes identified and the vicinity of potential Project activities, a 50 metre buffer should be established surrounding each of the heritage resources and all construction activity should be avoided within that area to prevent indirect impacts associated with vibrations, where feasible. Where this is not feasible, additional assessment is required as described in Section 5.3.

5.3 HERITAGE IMPACT ASSESSMENT

Where CHVI has been identified and proposed construction activity is positioned within the 50 metre buffer zone, additional assessment is required to determine the impacts of the upgrades and extension of municipal services on the heritage resources identified and the heritage attributes described. In addition, where viewsheds may be altered as a result of the Project, further assessment of the impacts to the heritage attributes identified for each viewshed is required. This analysis should be contained within a Heritage Impact Assessment (HIA). Where potential negative impacts to heritage attributes are identified, strategies should be prepared to mitigate the impacts on heritage resources.

The HIA represents the second phase of what is typically a three phase process. The present report represents Phase 1. The execution of the recommendations contained within the HIA represents Phase 3. When completed, the process will have identified heritage resources within the study area, assessed the impacts of the Project on the heritage resources, and mitigated any anticipated negative impacts. In general, Phase 2 could be undertaken during the detailed design phase of the Project and Phase 3 would be undertaken upon receipt of regulatory approval, generally prior to the project construction phase.

5.4 DEPOSIT COPIES

To assist in the retention of historic information, copies of this report should be deposited with local repositories of historic material as well as with municipal and regional planning staff. Therefore, it is recommended that this report be deposited at the following location:

City of London Public Library
London Room
Central Library
251 Dundas Street
London, Ontario, N6A 6H9

6.0 CLOSURE

This report has been prepared for the sole benefit of the Upper Thames River Conservation Authority and the City of London, and may not be used by any third party without the express written consent of Stantec Consulting Ltd. Any use which a third party makes of this report is the responsibility of such third party.

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

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APPENDIX A CULTURAL HERITAGE RESOURCE/LANDSCAPE RECORD FORM

Municipal Address:

Railway Bridge north of Gunn Street and Oxford Street



Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Transportation

Associated Dates:

Late 19th century

Description:

The resource includes a steel truss railway bridge

The steel truss railway bridge provides rail transportation across the northern branch of the Thames River, just north of Oxford Street. The bridge is three spans in length and is supported by stone abutments in earth embankments. Vegetation including trees and shrubs are visible on both landings of the bridge.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of 19th century construction and design of steel truss bridges. Once popular but increasingly rare example of steel trestle railway bridge.

Historical or Associative Value:

Associated with the railway development and 19th century development of the city.

Contextual Value:

None identified.

Identified Heritage Attributes:

Bridge: steel truss, abutments, earth embankment.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/3/2015

Heritage Resource/Landscape Number:

CHR-1

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

Thames River from Oxford Street to approximately Blackfriars Street



Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Cultural Landscape

Associated Dates:

N/A

Description:

The stream of the Thames River flows west through southwestern Ontario, crossing into the City of London where the north and south branches of the river meet.

The Thames River runs along the eastern border of the study area, pictured here on the Oxford Street West bridge looking southward. A concrete dyke runs along the western bank of the Thames River, while a naturalized side is visible on the eastern bank. Vegetation including trees, grass, and shrubs is visible on both banks of the river.

The Thames River is designated as a Canadian Heritage River.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

Associated with the City of London's settlement, industrial, and recreational history.

Contextual Value:

The Thames River is physically, functionally, and historically linked to its surroundings.

Identified Heritage Attributes:

River: association with the historical development of London and historically linked to its surroundings.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/3/2015

Heritage Resource/Landscape Number:

CHR-2

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

2 Oxford Street West

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1880s



Description:

The property contains a residence.

The residence is a one and one half storey cross gable structure with a centre gable window. The residence has half yellow brick/half modern siding and sits on an undetermined foundation. The residence has a centre gable window with fish scaling shingles. On the front symmetrical façade of the residence, there is a front door with a circular awning that is placed in between two windows with green shutters. There are two large windows on the east side of the residence. At the rear of the residence is a front gable wing with multiple windows.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Gothic Revival residential design.

Historical or Associative Value:

None identified.

Contextual Value:

Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: cross gable, central gable window, yellow brick exterior, symmetrical in design.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/3/2015

Heritage Resource/Landscape Number:

CHR-3

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Municipal Address:

St. Patrick Street Viewshed

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Viewshed

Associated Dates:

N/A



Description:

East view from St. Patrick Street of the Thames River corridor.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The viewshed is important in defining and maintaining the character of the area as well as its physical, functional, and historic links to the surrounding neighbourhood.

Identified Heritage Attributes:

Viewshed: Clear unobstructed view of Thames River embankment, Thames River pedestrian pathway, and east side of the Thames River in the distance.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/3/2015

Heritage Resource/Landscape Number:

CHR-4

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

9 St. Patrick Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1854 (Golder 2014a)



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a low hipped roof. The red brick residence sits on a concrete foundation. A hipped dormer window protrudes from the roof of the residence, facing St. Patrick Street. Two windows and a door are situated underneath a full width covered porch. The porch has half-brick walls and is supported by brick piers.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, brick exterior, hipped roof, hipped dormer window. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/3/2015

Heritage Resource/Landscape Number:

CHR-5

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Municipal Address:

6 St. Patrick Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid to late 20th century



Description:

The property contains a residence.

The residence is a one and one half storey multi-front gable structure with modern siding that sits on a concrete foundation. The residence has a projecting front gable that contains an entry door facing west. Multiple modern windows are visible on the front façade.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of residence is contextually linked with its surroundings.

Identified Heritage Attributes:

Residence: Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/18/2015

Heritage Resource/Landscape Number:

CHR-6

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Municipal Address:

2 St. Patrick Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Cultural Landscape

Associated Dates:

Undetermined



Description:

The property contains a community garden. A timber fence surrounds the garden.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

Empress Avenue Viewshed

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Viewshed

Associated Dates:

N/A



Description:

East view from Empress Avenue of the Thames River corridor.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The viewshed is important in defining and maintaining the character of the area as well as its physical, functional, and historic links to the surrounding neighbourhood.

Identified Heritage Attributes:

Viewshed: Clear unobstructed view of Thames River embankment, Thames River pedestrian pathway, and east side of the Thames River in the distance.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-7

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Municipal Address:

37 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one storey structure with a hipped roof and a front gable window. The residence has modern siding and sits on a concrete foundation. On the front façade of the residence, there is a decorated front gable, a window and front door situated within an inset porch. A brick chimney stack is visible on the west side of the building.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of residence is contextually linked with its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, front gable, hipped roof, front decorated gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/3/2015

Heritage Resource/Landscape Number:

CHR-8

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

35 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one and one half storey hipped roof structure with a hipped dormer window. The residence has brick siding and sits on a concrete foundation. A full front covered wooden porch and concrete pillars are situated on the front façade of the building along with a front door and a single pane window. A brick chimney stack is present on the building's west façade.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, hipped roof, brick exterior, hipped dormer window. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/3/2015

Heritage Resource/Landscape Number:

CHR-9

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

33 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one storey structure with a hipped pyramidal low pitched roof. The residence has modern siding and sits on a rusticated concrete block foundation. A covered full width wooden porch that contains a front door and an offset window with three panes fronts the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, hipped pyramidal low pitched roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-10

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

31 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1860s



Description:

The property contains a residence.

The residence is a one storey hipped roof residence with a low pitched roof and steeply pitched centre gable. The residence has modern siding and sits on a concrete foundation. The front façade of the residence is symmetrical in design with two equal sized windows with dark shutters on either side of the centered front door. At the rear of the residence is a front gable addition with multiple windows.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Gothic Revival Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, hipped roof, steeply pitched centre gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-11

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

29 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880-1890s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched roof. The residence has modern siding and sits on a concrete foundation. On the west façade of the residence is a gable containing a steeply pitched gable window. On the front façade there are two upper storey windows, one lower storey window and a door with sidelight.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century Gothic Revival residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, steeply pitched gable window. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-12

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

27 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid-20th century



Description:

The property contains a residence.

The residence is a two storey structure with a hipped pyramidal low pitched roof. The residence has brick siding on the lower half and stucco siding on the upper half. The residence sits on a concrete foundation. The residence has an attached single door garage. On the front façade of the residence are two large upper storey windows and a door with sidelights on the lower storey.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

25 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1874 (Golder 2014b)



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a medium pitched roof. The yellow brick siding residence sits on an undetermined foundation. The gabled roof has decorative bargeboard detailing. The front façade has two upper storey windows, two lower storey windows, and a door with transom light.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Unique example of materials and style used in late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, yellow brick exterior. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-13

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

23 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one storey cross gable structure on a T-plan with a low pitched hipped roof. A centre gable projects to serve as a covering for the front porch. On the front façade of the residence there is a door with one window on each side. The residence has modern siding and sits on a concrete foundation. Along the eastern side of the residence a door and two windows are visible.

A separate residence is located at the rear of the property. Based on fire insurance plans, the residence was built sometime between 1915 and 1922.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: setback of the building is contextually linked with the road and its surroundings. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-14

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

21 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one storey structure, symmetrical in design, with a low pitched hipped roof. The residence has modern siding and sits on a modern raised concrete foundation that has multiple basement windows.

On the front façade of the residence there is a modern door with a raised entry porch. On either side of the door is one window with simple white trim.

A one storey addition is attached to the rear of the original residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Ontario Cottage design.

Historical or Associative Value:

None identified.

Contextual Value:

The building is contextually linked with the road and its surroundings. Popular Ontario Cottage design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, hipped roof, symmetrical design. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-15

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

19 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1860s



Description:

The property contains a residence.

The residence is a one storey side gable structure with a medium pitched roof and centre gable. The residence has modern siding and sits on an undetermined foundation. On the symmetrical front façade, a window with dark shutters and a door sit underneath an awning. Multiple windows surround the residence. A brick chimney stack is visible on the west façade of the building and a wooden fence stretches east from the residence to the property line.

A one storey addition is attached to the rear of the original residence. Two outbuildings are situated at the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Gothic Revival Cottage design.

Historical or Associative Value:

None identified.

Contextual Value:

The building is contextually linked with the road and its surroundings. Popular Gothic Revival Cottage design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, side gable roof, centre gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/5/2015

Heritage Resource/Landscape Number:

CHR-16

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

17 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Undetermined



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a shed roof. The residence has modern siding and sits on a concrete foundation. A side addition is attached to the west of the original residence. A covered porch with wood railings and pillars, along with a front door and large bay window, is situated on the front façade of the residence. The residence has a west sloping roofline that contains four sunroof windows. A window is visible on the upper storey of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

15 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one storey front gable structure with a medium pitched roof. The residence has modern siding and sits on a rusticated concrete block foundation. On the front façade of the residence, there are two paired windows with yellow shutters that sit underneath a full width covering. The pointed gable contains decorative finial detailing.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: setback of the residence is contextually linked with the road and its surroundings. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-17

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

13 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one storey structure with a low pitched hipped pyramidal roof. The residence has modern siding and sits on a concrete foundation. On the front façade of the residence, there is a window with three panes and a front door. Concrete steps lead up to the front door. Two windows are on the east side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Ontario Cottage design.

Historical or Associative Value:

None identified.

Contextual Value:

The building is contextually linked with the road and its surroundings. Popular Ontario Cottage design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, hipped pyramidal roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-18

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

8 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850s



Description:

The property contains a residence.

The residence is a one storey structure, symmetrical in design, with a low pitched hipped roof. The residence has brick siding and sits on an undetermined foundation. A front orange door sits underneath a small modern awning. Two windows with brick voussoirs are situated on either side of the front door. A modern addition with modern siding is situated at the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Ontario Cottage design.

Historical or Associative Value:

None identified.

Contextual Value:

The building is contextually linked with the road and its surroundings. Popular Ontario Cottage design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, hipped roof, symmetrical design. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-19

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

6 Empress Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850-1860s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a medium pitched roof. The residence has modern siding and sits on a concrete foundation. A covered porch with a steel railing is situated on the front façade along with a single pane window, a smaller window and a front door. On the upper storey underneath a pointed gable is a small window and another small opening that is bordered. A chimney stack is visible on the east side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, medium pitched roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-20

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

28 Napier Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1860s



Description:

The property contains a residence.

The residence is a one and one half storey side gable structure with a medium pitched roof and a steep pitched centre gable window. The residence has brick siding and sits on an undetermined foundation. Front porch contains 10 modern windows and covers the front façade.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Gothic Revival residential design.

Historical or Associative Value:

None identified.

Contextual Value:

Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, side gable, steep pitched centre gable window.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-21

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

9 Blackfriars Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850 -60s (Golder 2014b)



Description:

The property contains a residence.

The residence is a two storey front gable structure with medium pitched hipped roof, with cedar shake shingles, and a centre gable attic window. The residence has timber siding and sits on a rusticated concrete block foundation. The residence has numerous windows: five on the east side and four on the front façade. A front door with wooden steps and railings is present on the front façade. A side entry is visible on the east side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century residential design.

Historical or Associative Value:

The residence is associated with Daniel Collins, who owned an ice business selling ice from the Thames River and was a prominent and influential member of the community. Collins constructed a community hall and was very active in local politics (Golder 2014b).

Contextual Value:

The building is contextually linked with the road and its surroundings. Design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: two storey, timber siding, front gable. Relationship of residence to road.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/4/2015

Heritage Resource/Landscape Number:

CHR-22

Municipal Address:

Blackfriars Street Viewshed

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Viewshed

Associated Dates:

N/A



Description:

East view from Blackfriars Street of the Thames River and the Blackfriars Street bridge.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The viewshed is important in defining and maintaining the character of the area as well as its physical, functional, and historic links to the surrounding neighbourhood.

Identified Heritage Attributes:

Viewshed: Clear unobstructed view of the Blackfriars Street Bridge, as well as Thames River embankment on either side and the pedestrian pathway and east side of the Thames River in the distance.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-23

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

10 Blackfriars Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1890 – 1920



Description:

The property contains a residence.

The pyramidal roof residence is a one and one half storey front gable structure with red brick exterior that sits on a rusticated concrete block foundation. A front covered porch with a wooden balustrade is supported by concrete stone pillars. Under the porch is a front door and window. A window with three panes is visible on the upper storey. A one storey modern addition with modern siding is attached to the original rear of the structure.

A centre gable window is present on the south side of the residence, facing Napier Street, along with multiple modern windows on the lower storey and basement. A brick chimney stack is visible on the south façade of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, cross gable, brick exterior, pyramidal roof, centre gable window.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/8/2015

Heritage Resource/Landscape Number:

CHR-24

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

13 Napier Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1873 (Golder 2014b)



Description:

The property contains a residence.

The three bay residence is a two storey structure with a hipped roof and steep centre window gable. The residence has a yellow brick exterior and sits on a stone foundation. The residence has wide eaves that are supported by paired roof brackets. The front façade has three upper storey windows, and two lower storey windows and a front door that are underneath a porch covering with a small centre gable. The porch covering is supported by decorated piers.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century Gothic Revival residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The building is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: two storey, hipped roof, three bay, centre gable window, paired roof brackets. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/5/2015

Heritage Resource/Landscape Number:

CHR-25

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

11 Napier Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850 – 1860s



Description:

The property contains a residence.

The residence is a one storey structure with a low pitched hipped roof. The residence has brick siding and sits on a stone foundation. The front wooden porch has an extended covering with a small centre gable. On the front façade of the residence, there is a front door positioned in between two windows.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, hipped roof, small centre gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/8/2015

Heritage Resource/Landscape Number:

CHR-26

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

9 Napier Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1850 – 1860s



Description:

The property contains a residence.

The residence is a one storey cross gable structure, with low pitched roof and a steep centre gable. The side gable front portion of the residence, symmetrical in design, has a front door and a window on either side. The rear front gable portion of the house has a window on each side. The residence has modern siding and sits on a rusticated concrete block foundation.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Gothic Revival Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, cross gable, centre steep gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/8/2015

Heritage Resource/Landscape Number:

CHR-27

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

Blackfriars Street Bridge

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Transportation

Associated Dates:

1875



Description:

The Blackfriars Street Bridge is a single span reinforced wrought-iron bowstring bridge that connects Blackfriars Street from the western bank of the Thames River to Ridout Street north at the eastern bank of the Thames River. It is designated under Part IV of the *Ontario Heritage Act* and is the oldest remaining of its kind.

The curved bowstring bridge is undergoing review to determine future uses due to substantial structural improvements required. The bridge has a narrow wooden deck and is constructed of wrought-iron painted light green. The central structure and surrounding chain-link fence has been erected to prohibit vehicular traffic but maintain pedestrian access.

The below description is taken verbatim from the Canadian Register of Historic Places (http://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=10079), based on the City of London By-Law L. S. P. 3140-106.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

The Blackfriars Bridge is a fine example of bowstring construction and one of the few such bridges still standing, in Canada. It was designed and fabricated to an American prototype that was first patented by the Wrought Iron Bridge Company of Ohio, in 1870. Wrought iron was chosen because of its excellent qualities of strength, malleability and resistance to corrosion. A low parabolic chord tops the bridge and gives it a sense of floating above the river, as it extends over the Thames River, for an unsupported 212 feet. Other distinctive features of this style of bridge construction include; the pin connections, the timber decking and the lattice girders.

Historical or Associative Value:

Formerly the principle [sic] link between the City of London and its hinterland, the Blackfriars Bridge was the first iron bridge, in London, to span the Thames River. Constructed, in 1875, under the supervision of local contractor Isaac Crouse, it replaced the last of several wooden bridges that had spanned the river, at this location, since 1826. None of these bridges could withstand the severe spring flooding. By 1889, all wooden bridges, in London, were replaced with iron structures and only the Blackfriars Bridge remains.

Contextual Value:

The Blackfriars Bridge is a landmark, in the City of London, and has been a source of inspiration to local artists, writers, photographers, and historians for many years. The gentle curve of Ridout Street onto the east side entrance of the bridge augments the experimental qualities inherent in the structure, including its narrow width, the texture of the wooden deck and the streamlined elegance of its bowed profile. These characteristics and the steep, well-treed riverbanks and parkland create a rural feel in this downtown location.

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Identified Heritage Attributes:

- prominent location spanning the Thames River providing a gateway between the downtown and former West London areas, of the City of London

- orientation to Ridout Street

- gentle curve that augments the bridge's narrow width, texture of the wooden deck and streamlined elegance of its bowed profile

- reinforced bowstring bridge construction, based on an 1870 prototype by the Wrought Iron Bridge Company

- wrought-iron construction including the low parabolic chord that tops the bridge

- unsupported length of 212 feet

- pin connections and lattice girders

- timber deck beams

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/8/2015

Heritage Resource/Landscape Number:

CHR-28

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

6 Napier Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid to late 20th century



Description:

The property contains a residence.

The residence is a modern one storey cross gable structure with modern red modern siding that sits on a concrete foundation. Modern windows, including a large bay window on the front façade, are visible on the south and east sides of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/9/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

2 Cummings Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Recreation

Associated Dates:

Mid to late 20th century



Description:

The property contains a park.

The park has a modern play structure within a circular sandpit. Two wooden benches are situated around the sandpit. There is a trail on the eastern portion of the property that runs along the western bank of the Thames River.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/11/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

10 Cummings Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid-20th century



Description:

The property contains a residence.

The residence is a one storey cross gable structure with a low pitched roof. The residence sits on a concrete foundation and has modern siding. On the front façade of the residence, there are two windows (one modern) and a door underneath a flat green awning. A chimney stack is visible on the east side of the residence.

A carport is situated on the west side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: contextually linked to the road and its surroundings. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/11/2015

Heritage Resource/Landscape Number:

CHR-29

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

Carrothers Avenue Viewshed

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Viewshed

Associated Dates:

N/A



Description:

East view from Carrothers Avenue of the Thames River corridor.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The viewshed is important in defining and maintaining the character of the area as well as its physical, functional, and historic links to the surrounding neighbourhood.

Identified Heritage Attributes:

Viewshed: view of dead-end street overlooking Thames River embankment and Thames River pedestrian pathway.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 7/6/2015

Heritage Resource/Landscape Number:

CHR-30

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

1 Carrothers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1870 – 1890s



Description:

The property contains a residence.

The residence is a one storey side gabled structure with modern siding that sits on a concrete foundation. The side gable residence faces away from the road towards the west. A small covered porch with door is situated between two bay windows. On the front façade, facing the road, there are two windows with black shutters and a smaller window underneath a simple decorative gable.

An attached double car garage with a single door entrance is situated at the rear of the residence. The garage addition forms an L-shape with the original residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings.

Identified Heritage Attributes:

Residence: one storey, side gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-31

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

2 Carrothers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1870s (Golder 2014b)



Description:

The property contains a residence.

The residence is a one and one half storey, side gable, three bay structure with brick exterior that sits on a concrete foundation. On the front façade, there is a pointed window underneath a gothic style gable with decorative bargeboard on the upper storey. On the lower storey, there is a font door with sidelights underneath a small covered gable with one window on each side. On the east façade of the residence, there is a lower storey bay window with paired decorative brackets and two windows on the upper storey. All windows have red trim and simple decorative brick voussoirs.

A modern two storey addition is situated at the rear of the residence. West of the residence, a wooden fence runs along the property.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century Georgian residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, side gable, brick exterior, gothic gable window. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-32

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

Leslie Street Viewshed

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Viewshed

Associated Dates:

N/A



Description:

East view from Leslie Street of Thames River corridor.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The view from the street is contextually linked to the Thames River corridor.

Identified Heritage Attributes:

Viewshed: view of dead-end street overlooking Thames River embankment and Thames River pedestrian pathway.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-33

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

3 Leslie Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1870 – 1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a medium pitched pyramidal roof. The residence has modern siding and sits on a rusticated concrete block foundation. On the front façade, there is a small inset porch with front door, a lower storey window with dark shutters and a small upper storey window surrounded by fish scaling shingles that sits underneath a detailed gable. On the east façade are situated two windows with dark shutters as well as a modern sunroom addition that sits on a concrete foundation. On the west façade, there are two windows with dark shutters. A brick chimney stack is visible and appears to be in the centre of the residence.

A detached two bay door garage is situated at the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, pyramidal roof, fish scaling shingles, decorative gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-34

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

2 Leslie Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1870s (Golder 2014b)



Description:

The property contains a residence

The residence is a one and one half storey, symmetrical in design, side gable, three bay yellow brick structure that sits on an undetermined foundation. The residence has a projecting centre bay with an upper storey arched window underneath a gothic style gable and a front door. The front door has arched sidelights and transom light. On the front façade, there are two windows with green shutters. On each end of the residence, there is a window on the upper storey. All windows have simple decorative brick voussoirs. The steep pitched roof has two added sun roofs.

A front gable addition is attached to the rear of the original residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century Italianate residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, side gable, yellow brick, projecting centre bay, front door with arched sidelights and half circled transom light. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-35

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

Cherry Street Viewshed

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Viewshed

Associated Dates:

N/A



Description:

East view from Cherry Street of the Thames River corridor.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The viewshed is important in defining and maintaining the character of the area as well as its physical, functional, and historic links to the surrounding neighbourhood.

Identified Heritage Attributes:

Viewshed: view of dead-end street overlooking Thames River embankment and Thames River pedestrian pathway.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-36

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

3 Cherry Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched roof. The residence has yellow brick siding on the lower storey and textured decorative shingles on the upper storey. The residence sits on an undetermined foundation.

On the front façade on the lower storey, there is a red door in the middle of two windows with brick voussoirs. On the upper storey, there is a window with decorative brackets that sits underneath a pointed detailed gable with decorative trim.

A modern one and one half storey addition with modern siding is attached to the rear of the original residence. A large wooden deck, with access from the second storey of the modern addition, is situated on the east side of the residence. A detached garage with one bay door and one side door is situated at the rear of the modern addition.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of materials used in late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of residence is contextually linked with its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, yellow brick siding, decorative shingle siding, decorative gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-37

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

2 Cherry Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

N/A

Associated Dates:

N/A



Description:

The property contains an empty lot.

The pictured outbuilding is not within the property boundary.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

6 Cherry Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable yellow brick structure with a steep pitched roof that sits on a rusticated concrete block foundation. A covered front porch wraps around the southwest corner of the residence. The porch is supported by columns that sit on rusticated concrete blocks. On the front façade of the lower storey there is one window, a front door and a small window. On the upper storey there is one window and a small attic window. All of the windows have brick voussoirs. On the east side of the residence, there is a small hipped dormer window while on the west side of the residence, there is a projecting two storey gable with three windows.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative example of materials and style used in late 19th century residential design

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, yellow brick, two gables, steep pitched roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-38

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

81 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1860s



Description:

The property contains a residence.

The residence is a one and one half storey, symmetrical in design, side gable, three bay residence. The residence has brick exterior and a steep pitched roof and sits on a stone foundation. On the front façade, there is a steep pitched centre gable window. On the lower storey, there is a font door with transom and sidelights. All windows have simple brick voussoirs.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Gothic Revival residential design.

Historical or Associative Value:

The house was built by Alexander Leslie, who purchased 20 acres of land from John Kent in 1863 which he later subdivided to form Leslie Street, Cherry Street, and Rogers Avenue. Alexander Leslie was a prominent nursery and market gardener (Golder 2014b).

Contextual Value:

Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, side gable, brick structure, centre gable window, stone foundation.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-39

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

79 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid to late 20th century



Description:

The property contains a residence.

The residence is a two storey, side gable structure with a hipped roof. The residence has both brick and modern siding and sits on a concrete foundation. On the lower storey of the front façade, there are multiple windows varying in size. The front door is placed within an inset porch. On the upper storey, there is a separate gable with numerous windows. A chimney stack is situated roughly in the centre of the residence. A modern addition to the original appears to be attached at the rear.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

Rogers Avenue Viewshed

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Viewshed

Associated Dates:

N/A



Description:

East view from Rogers Avenue of the Thames River corridor.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The viewshed is important in defining and maintaining the character of the area as well as its physical, functional, and historic links to the surrounding neighbourhood.

Identified Heritage Attributes:

Viewshed: Clear unobstructed view of Thames River embankment, Thames River pedestrian pathway and east side of the Thames River with the downtown visible in the distance.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-40

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

1 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched roof and white painted brick siding. The residence sits on a brick foundation. On the front façade, there is an upper floor window under the pointed gable, two lower storey windows, and a front door. The windows have dark coloured trim and shutters. The residence has a small front porch with aluminum railings and concrete steps. There is a modern one storey addition with a window attached to the west side of the residence. A fence with concrete supports and iron railings is situated on the front of the property.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, brick structure, steep pitched roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-41

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

2 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey structure with a pyramidal hipped roof with a hipped dormer. The brick residence sits on a rusticated concrete block foundation. A front covered porch with white wooden railings and wooden steps, two windows, and a front door are situated along the front façade of the residence. On the west side of the residence, there are two windows along with three basement windows. A chimney stack is visible on the east side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, brick structure, pyramidal roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-42

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

25 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Recreational

Associated Dates:

Late 19th century

Description:

The property contains a baseball diamond and multiple outbuildings including a clubhouse and a multi-purpose storage facility. The park contains 8.7 acres of land and includes an all-natural grass field surrounded by 5,200 seats of stadium seating.

The clubhouse is a one storey side gable lumber building with a low pitched hipped roof. On the front façade, there are two doors and two rectangular windows.

The park is designated under Part IV of the *Ontario Heritage Act*. The below description is taken verbatim from the City of London By-Law L. S. P. 3237 (a)-319.





Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

The existing white-frame, cottage-style clubhouse (*circa*1937) is one of the few clubhouses of its type, remaining in the region. Its exterior remains largely unaltered. Originally, both the teams and umpires used it as a changeroom.

Historical or Associative Value:

Labatt Park is London's oldest sporting facility and is believed to be the oldest baseball grounds in continuous use (*in situ*) in North America, and hence, the world. In 1877, W. J. Reid bought a swampy river flat in London West, drained and laid out a baseball diamond and grandstand, and named it Tecumseh Park. London's earliest professional baseball team, the Tecumsehs, were founding members of the International League and won the championship in 1877. Oil baron J. J. Englehart was the primary financial backer of the Tecumsehs and also owned a hotel of the same name. In 1892, W. J. Reid constructed a third of a mile brick dust bicycle track and many professional and amateur bicycle races were held. Former Mayor George Wenige frequently raced on the bicycle track. London's first moving picture was shown at Tecumseh Park in 1895. In 1932, it was the site of a huge civic reception for "Silent Sandy" Sommerville, the first Canadian golfer to win the U.S. amateur title. Over the years, the park has been used for football games, university and collegiate sports meets, political rallies, boxing programs and winter ice-skating. London won the pennant of the Michigan-Ontario Baseball League in 1920, 1921 and 1922. The Labatt family bought the park in 1936 and donated it and $10,000 for improvements to the City of London resulting in the name change to Labatt Park.

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The flood of 1937 swept away the original grandstand and outbuildings, which were replaced with the existing frame team clubhouse. The London Army team won the Canadian Sandlot Congress title in 1943 and 1944. On September 29, 1948, the London Majors won the World Sandlot title over the Fort Wayne Generals, with the fielder Russ Evon ("Ruthless Russell" or "Russell the Muscle") and catcher Jack Fairs. The London Majors continue on in the Inter-County League as the longest-serving tenant of Labatt Park. The Class AA London Tigers, an affiliate of the Detroit Tigers, played here from 1989 to 1993 and won the Eastern League championship in 1990. In 1990, the park won the "Beam Clay Award" as the best natural grass ballpark in North America.

Over the years, many famous sports personalities have changed there, including Connic Mack in 1943, Hall of Famer Fergie Jenkins in 1984/85 and Oscar "Lefty" Judd. The current London Majors continue to use the old team clubhouse and it remains a significant landmark structure to London's rich sports history.

Contextual Value:

None identified.

Note: When Labatt Park was designated under the *Ontario Heritage Act*, contextual value was not considered in the evaluation of significance. Therefore, the reasons for designation provided verbatim from the City's by-law do not address contextual value as it was not a requirement at the time. However, it should be noted that Labatt Park is physically, functionally, visually and historically linked to its surrounds. In addition, it is a local and national landmark.

Identified Heritage Attributes:

Park: placement of the field and clubhouse in relation to each other. Historical value in the continual use of the diamond in current position. Landmark along the Thames River corridor.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-43

Municipal Address:

13 Blackfirars Street

Former Township or County:

London Township

Municipality:

City of London



Resource Type:

Residence

Associated Dates:

Early 21st century

Description:

The property contains a multi-residential building.

The multi-residential building is a modern two storey, hipped roof, red brick structure that sits on a concrete foundation. Two modern doors and multiple windows surround the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings.

Identified Heritage Attributes:

Residence: setback of the building is contextually linked with the road and its surroundings. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/18/2015

Heritage Resource/Landscape Number:

CHR-44

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

14 Napier Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

c1869 (Golder 2014b)



Description:

The property contains a residence.

The residence is a one storey cross gable structure with a low pitched hipped roof with a steeply pitched centre gable. The residence has modern siding and sits on a concrete foundation. The facade that faces Blackfriars Street has two windows with dark shutters and a visible outline of where a door was once located, but is now bordered in siding.

On the cross side gable, facing Napier Street, is an inset porch with a door and two windows. At the rear of the residence is a detached single door garage with a side door and two windows. A wooden fence encircles the backyard of the property.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of mid-19th century Gothic Revival Ontario Cottage residential design.

Historical or Associative Value:

The house was built for William Donoughy c. 1869. Donoughy was likely responsible for the construction of numerous residences throughout the neighbourhood during the mid-19th century (Golder 2014b).

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, cross gable, steeply pitched centre gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/15/2015

Heritage Resource/Landscape Number:

CHR-45

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

64 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid-20th century



Description:

The property contains a residence.

The residence is a one and one half storey side gable structure with a medium pitched roof. A shed dormer window with three panes protrudes from the roof, facing Argyle Street. The residence has modern siding and sits on a rusticated concrete block foundation. On the front façade, there is a four pane bay window and an inset porch with a door and two small windows. A brick chimney stack is visible on the north side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings.

Identified Heritage Attributes:

Residence: Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 7/15/2015

Heritage Resource/Landscape Number:

CHR-46

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

62 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Early 20th century



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched gambrel roof. The residence sits on a rusticated concrete block foundation and has brick exterior on the lower storey and modern siding on the upper storey. On the front façade of the upper storey are two windows and one small attic window. On the lower storey underneath a covered porch that is supported by brick columns is a three pane window and a front door.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of early 20th century Edwardian residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings.

Identified Heritage Attributes:

Residence: one and one half storey, steep pitched gambrel roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 7/16/2015

Heritage Resource/Landscape Number:

CHR-47

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

60 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid-20th century



Description:

The property contains a residence.

The residence is a one storey cross gable structure with a low pitched red shingle hipped roof. The residence has timber siding and sits on an undetermined foundation. On the front façade of the front gable, there are multiple modern windows.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The residence is contextually linked with its surroundings.

Identified Heritage Attributes:

Residence: Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-48

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

56 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Undetermined



Description:

The property contains a residence.

The residence is a one storey side gable structure with a low pitched roof, light blue and white modern siding that sits on an undetermined foundation. There is a lower projecting separate gable with three large pane windows with white shudders at the front of the residence. A cement chimney stack is on the south side of the residence. A deck with wooden railings and steps is attached to the south side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The residence is contextually linked with its surroundings.

Identified Heritage Attributes:

Residence: Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-49

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

54 Argyle Street

Former Township or County:

London Township

Municipality:

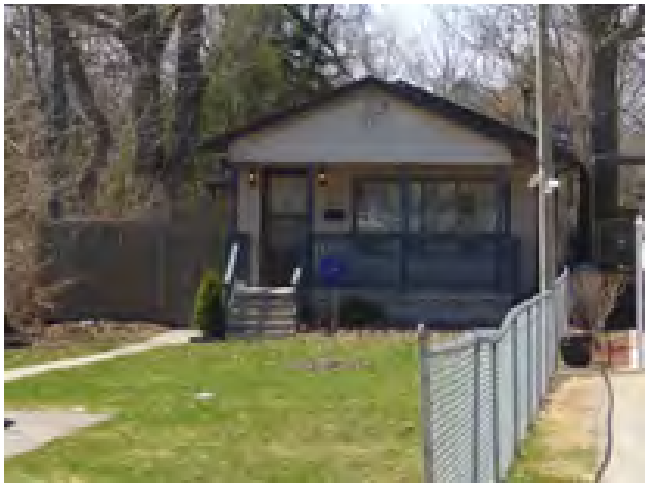
City of London

Resource Type:

Residence

Associated Dates:

Undetermined



Description:

The property contains a residence.

The residence is a one storey front gable structure with a low pitched roof and modern siding that sits on an undetermined foundation. On the front façade, there is a door and a large pane window that sits underneath a covered front gable porch that has wood railings and concrete steps. A wall dormer is visible on the north side of the residence. A small steel chimney stack can be seen at the rear of the residence. Attached to the south of the residence is a tall wooden fence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The residence is contextually linked with its surroundings.

Identified Heritage Attributes:

Residence: Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-50

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

52 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid to late 20th century



Description:

The property contains a residence.

The residence is a one and one half storey structure with a hipped roof and a front gable that sits on a concrete foundation. The majority of the house has brick exterior, with some portions with modern siding. On the front façade there is a bay window with three pans with modern trim and base. Modern siding also appears around the front door of the residence. A small carport is attached to the south side of the residence where a brick chimney stack is also visible.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

48 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Early 20th century



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched roof and modern siding that sits on a rusticated concrete block foundation. On the front façade of the upper storey, decorative wooden shingles are visible around a large window along with intricate gable detailing supported by heavy brackets. On the lower storey, there is a door with a transom light and a large window. The windows and door have green trim. A concrete block chimney stack is visible on the south side of the residence. On the north side of the residence are three windows. At the rear of the residence there is a modern one storey addition with modern siding.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of early 20th century residential design characteristic of Edwardian Classicism.

Historical or Associative Value:

None identified.

Contextual Value:

Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, decorative wood shingles, decorative gable detailing.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-51

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

46 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Early 20th century



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched roof and modern siding that sits on a concrete foundation. On the front façade there is one upper storey window and one window and door on the lower storey. A shed dormer window is present on the south side of the residence along with two windows on the lower storey and two small basement windows. The front porch has wood railings and concrete steps. A brick chimney stack is visible near the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Early 20th century residential design characteristic of Edwardian Classicism.

Historical or Associative Value:

None identified.

Contextual Value:

Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, steep pitched roof, shed dormer window.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-52

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

44 Argyle Street

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Mid-20th century



Description:

The property contains a residence.

The residence is a one and one half storey front gable residence with modern siding that sits on a concrete foundation. On the upper storey of the front façade, a window sits underneath the gable, while a door with windows on either side are underneath a covered porch. Hipped dormers extend the full length of the residence, along both sides of the front gable roof. On the north side, the residence has a side door with a covered porch.

A detached single bay garage is situated north of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

None identified.

Identified Heritage Attributes:

None identified.

Identification of CHVI: No

Completed by (name): JS

Date Completed: 6/18/2015

Heritage Resource/Landscape Number:

N/A

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

5 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched roof and modern siding that sits on a rusticated concrete block foundation. A projecting front gable acts as a covering for the front porch. A three pane bay window is visible on the front façade on the lower storey. On the west side of the residence there is a projecting bay window with white shutters, two lower storey windows and a gabled dormer window.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Good example of style used in late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, multiple front gables, gabled dormer window. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 7/16/2015

Heritage Resource/Landscape Number:

CHR-53

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

4 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a low pitched hipped roof and a front gable. The residence has yellow brick siding and sits on a rusticated concrete block foundation.

On the front façade of the upper storey, decorative wooden shingles are visible around paired windows along with intricate gable detailing. The front porch with wooden railings sits underneath a covering that is supported by wooden piers. A window with a segmental half circle with green shutters and a door with a transom light are on the front façade of the residence. A brick chimney stack is visible near the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Unique example of materials and decorative details used in late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, hipped roof, yellow brick exterior, decorative wood shingles, gable detailing. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-54

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

6 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a two and one half storey front gable structure with a steep pitched roof with brick siding on the lower half and modern siding on the upper half. The residence sits on a rusticated concrete block foundation. On the front façade, there are two upper storey windows and one window with three panes on the lower storey. The residence has an inset porch with intricate detailing and rounded spindle work. A front door with transom light and a separate small window sit within the porch.

The upper storey of the residence appears to be an addition to the original residence. On the upper storey addition, two shed dormers with windows protrude from the roof, facing west.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings.

Identified Heritage Attributes:

Residence: Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-55

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

8 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London



Resource Type:

Residence

Associated Dates:

1880s

Description:

The property contains a residence.

The residence is a one storey front gable structure with a medium pitched roof with modern and white painted brick siding. The residence sits on a rusticated concrete block foundation. On the front façade, there is a small upper storey window surrounded by modern siding within a pediment gable. There is a bay window with three panes with a simple decorative brick voussoir. An inset porch with wooden steps and railings leads to a front door which has a transom light. On the east side of the residence, there are two large windows and one small window. On the west side of the residence, there are three large windows. A modern one storey addition is attached at the rear of the original residence. A chimney stack is visible near the middle of the residence on the west side.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, brick exterior, gable window. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-56

Municipal Address:

10 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one storey front gable structure with a medium pitched hipped roof and a front gable. The residence has modern and white painted brick siding and sits on a rusticated concrete block foundation. The residence has a front gable that is surrounded by modern siding. On the front façade, there are two windows and a front door. A wooden deck is situated in front of the residence. On the west side of the residence, there are two windows while on the east side there are two smaller windows. A modern one storey addition is attached to the rear of the original residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one storey, hipped roof, front gable with detail, brick exterior. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/18/2015

Heritage Resource/Landscape Number:

CHR-57

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

12 Rogers Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey side gable structure with a steep pitched roof that sits on a rusticated concrete block foundation. The residence has both modern and brick siding.

On the front façade, there is a window, front door and a projecting bay window with three panes. A large shed centre dormer with a window, with an extension on the west end, faces the street. A brick chimney stack is visible on the west side of the residence while three windows are visible on the east side.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

None identified.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-58

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

57 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a medium pitched hipped roof. The residence sits on a rusticated concrete block foundation.

On the front façade, there is a small upper storey window surrounded by fish scaling shingles that sits underneath a decorative gable. On the front façade, there is a window with a segmental half circle and a front door positioned within an inset porch.

Modern additional double shed dormers with two windows protrude from the south side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, brick exterior, front gable, hipped roof, fish scaling shingles, decorative gable. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-59

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

49 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Early 20th century



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a steep pitched roof and modern siding that sits on a concrete foundation.

The front façade has one upper storey window, one lower storey window, and a door with transom light. A simple decorative gable with decorative trim is visible along the gabled roof. A modern addition shed dormer window protrudes from the roof, facing north. The residence has two windows on each of its north and south sides. A simple wooden porch leads to the front door.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative example of materials and style used in early 20th century residential design characteristic of Edwardian Classicism.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, decorative gable and roof trim. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-60

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

47 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a moderate pitched hipped roof with a steep front gable window. The stucco cladding residence sits on a rusticated concrete block foundation.

On the front façade of the residence, a window and door are situated underneath a covered porch that is supported by concrete piers. A shed dormer with windows, that is nearly the length of the entire residence, protrudes from the south roof side of the building. Near the rear of the residence stands a brick chimney stack. A modern one storey addition is attached at the rear of the original residence. A detached single car garage is situated at the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of materials and style used in late 19th century residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the residence is contextually linked with the road and its surroundings. Design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, hipped roof, front gable window. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-61

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

45 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

1880s



Description:

The property contains a residence.

The residence is a one and one half storey side gable structure with a low pitched hipped roof. The yellow brick residence sits on an undetermined foundation. The residence has a centre gable window with decorative finial detail. On the front façade with symmetrical design there is a door and one window on either side. Shed dormers, presumably with windows, are visible.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of late 19th century Gothic Revival Ontario Cottage residential design.

Historical or Associative Value:

None identified.

Contextual Value: Popular design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, side gable, centre gable window, yellow brick exterior, symmetrical design.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-62

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

43 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Early 20th century



Description:

The property contains a residence.

The residence is a one and one half storey front gable structure with a gambrel steep pitched overhanging roof. The residence has brick siding along the sides and modern siding on the front façade. On the front façade of the upper storey, there are two windows with red shutters. A covered and enclosed porch with multiple windows and front door with sidelights is situated at the front of the residence. A brick chimney stack is visible near the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of early 20th century Edwardian residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road. Design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, gambrel roof. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-63

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

41 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Early 20th century



Description:

The property contains a residence.

The residence is a two storey front gable structure with a low pitched hipped roof with wide eaves. The brick residence sits on a concrete foundation. A hipped dormer is visible on the roof of the residence. On the front façade there are two upper storey windows. A large window and door sit underneath a full width covered porch that is supported by brick columns. On the south side of the residence is a door, one upper storey window and two lower storey windows. A brick chimney stack is visible on the north side of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative of early 20th century Edwardian residential design.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of the building is contextually linked with the road and its surroundings. Design and date of construction support the urban character of the area.

Identified Heritage Attributes:

Residence: two storey, brick exterior, low pitched hipped roof, shed dormer. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 6/16/2015

Heritage Resource/Landscape Number:

CHR-64

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx

Municipal Address:

51 Wilson Avenue

Former Township or County:

London Township

Municipality:

City of London

Resource Type:

Residence

Associated Dates:

Early 20th century



Description:

The property contains a residence an outbuilding.

The residence is a one and one half storey front gable structure with a steep pitched roof and modern siding that sits on a concrete foundation. An upper storey window with white trim sits underneath the pointed front gable. A window and door are visible underneath a full width covered porch that has half-timber walls and is supported by wooden piers. On the south side of the residence, there are three windows and one small window. Two windows are present on the north side of the residence. Attached to the rear of the residence is a one storey addition with a sloped roof.

A small outbuilding is situated at the rear of the residence.

Evaluation of Cultural Heritage Value or Interest According to O. Reg. 9/06:

Design or Physical Value:

Representative example of materials and style used in early 20th century residential design characteristic of Edwardian Classicism.

Historical or Associative Value:

None identified.

Contextual Value:

The setback of building is contextually linked with the road and its surroundings. Date of construction supports the urban character of the area.

Identified Heritage Attributes:

Residence: one and one half storey, front gable, decorative gable and roof trim. Relationship of residence to road and surrounding residences.

Identification of CHVI: Yes

Completed by (name): JS

Date Completed: 7/16/2015

Heritage Resource/Landscape Number:

CHR-65

Filepath: c:\users\mmrivard\documents\wld\rpt_160311371_hia_20140225_fin.docx



Appendix 6.2

Stage 1 Archaeology Assessment Report

Stage 1 Archaeological Assessment: West London Dyke Master Repair Plan

Part of Lot 16, Concession 1 and Part of Lot 16, Concession 2 Geographic Township of London, Middlesex County,
now City of London, Ontario

Prepared for:
City of London
300 Dufferin Avenue
P.O. Box 5035
London, ON N6A 4L9

and

Upper Thames River Conservation Authority
1424 Clarke Road
London, ON N5V 5B9

Prepared by:
Stantec Consulting Ltd.
600-171 Queens Avenue
London, ON N6A 5J7

Licensee: Parker Dickson, MA
License Number: P256
PIF Numbers: P256-0321-2015
Project Number: 165630035

ORIGINAL REPORT

June 10, 2015

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by the Upper Thames River Conservation Authority in partnership with the City of London to complete a Stage 1 archaeological assessment for the proposed West London Dyke Master Repair Plan in the City of London, Ontario. The West London Dyke study area consists of a 2,374 metre long dyke that runs along the west bank of the North Thames River from Oxford Street to the Forks of the Thames, and then along the west bank of the main branch of the Thames River to the west side of the Wharncliffe Road Bridge. The study area is located in part of Lot 16, Concession 1 and part of Lot 16, Concession 2, Geographic Township of London, former Middlesex County, now City of London, Ontario. Portions of the dyke have come to the end of its useful life and require significant repair and/or replacement.

The focus of this Stage 1 archaeological assessment is a segment of the West London Dyke from Riverside Drive/Queens Avenue to the existing Canadian Pacific Rail (CPR) rail line just north of Oxford Street, including the existing West London Dyke footprint. The Stage 1 assessment, conducted by Stantec, was undertaken in the preliminary planning and design process for a Schedule B Municipal Class Environmental Assessment under the Ontario *Environmental Assessment Act* (Government of Ontario 1990).

The Stage 1 archaeological assessment of the West London Dyke study area determined that there are small pockets in the study area that have archaeological potential. The remainder of the study area has no archaeological potential due to steep slope, low and wet conditions, and modern disturbances. Therefore, in accordance with Section 1.3 and Section 7.7.4 of the Ministry of Tourism, Culture and Sport's (MTCS) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **portions of the study retain archaeological potential and any area of archaeological potential that will be subject to construction disturbance will be subject to a Stage 2 archaeological assessment prior to construction. It has also been determined that portions of the study area do not retain archaeological potential and no further archaeological assessment is recommended for those areas.**

The objective of the Stage 2 archaeological assessment will be to document archaeological resources within the study area and to determine whether these archaeological resources require further assessment. The Stage 2 archaeological assessment of the study area will consist of a test pit survey in accordance with Section 2.1.2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). If the archaeological field team judges any lands to be low and wet, steeply sloped, or disturbed during the course of the Stage 2 field work, those areas will not require assessment, but will be photographically documented instead in accordance with Section 2.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Further, in accordance with Section 2.1.7 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of

Ontario 2011), due to the potential for deeply buried archaeological resources in the area of the former Samuel Peter's distillery, the Stage 2 assessment of that portion of the study area will include mechanical excavation to identify subsurface cultural features as per Standard 3 and on-site monitoring during construction activities as per Standard 4.

The MTCS is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports. Additional archaeological assessment is still required for portions of the study area and so these portions recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

1.0 PROJECT SUMMARY

1.1 DEVELOPMENT CONTEXT

Stantec Consulting Ltd. (Stantec) was retained by the Upper Thames River Conservation Authority (UTRCA) in partnership with the City of London (the City) to complete a Stage 1 archaeological assessment for the proposed West London Dyke (WLD) Master Repair Plan in the City of London, Ontario (Figure 1). The WLD study area consists of a 2,374 metre long dyke that runs along the west bank of the North Thames River from Oxford Street to the Forks of the Thames, and then along the west bank of the main branch of the Thames River to the west side of the Wharncliffe Road Bridge. The study area is located in part of Lot 16, Concession 1 and part of Lot 16, Concession 2, Geographic Township of London, former Middlesex County, now City of London, Ontario. Portions of the dyke have come to the end of its useful life and require significant repair and/or replacement.

The focus of this Stage 1 archaeological assessment is a segment of the WLD from Riverside Drive/Queens Avenue to the existing Canadian Pacific Rail (CPR) rail line just north of Oxford Street, including the existing WLD footprint, as shown in Figure 2. The Stage 1 assessment, conducted by Stantec, was undertaken in the preliminary planning and design process for a Schedule B Municipal Class Environmental Assessment (EA) under the Ontario *Environmental Assessment Act* (Government of Ontario 1990).

1.1.1 Objectives

For the purposes of this Stage 1 archaeological assessment, the Ministry of Tourism, Culture and Sport's (MTCS) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) were followed. The objectives of the Stage 1 assessment were to compile available information about the known and potential archaeological heritage resources within the study area and to provide specific direction for the protection, management, and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 Archaeological Overview/Background Study are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork and current land conditions;
- To evaluate in detail the study area's archaeological potential which will support recommendations for Stage a 2 survey for all or parts of the property; and
- To recommend appropriate strategies for a Stage 2 survey.

To meet these objectives Stantec archaeologists employed the following research strategies:

- A review of relevant archaeological, historic, and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- An examination of the City of London's *Archaeological Master Plan*;
- An examination of the Ontario Archaeological Sites Database (ASDB) to determine the presence of known archaeological sites in and around the project area; and
- A property inspection of the study area.

Permission to access the study area was provided by the City of London and the UTRCA.

1.2 HISTORICAL CONTEXT

1.2.1 Pre-contact Aboriginal Resources

This portion of southwestern Ontario has been demonstrated to have been occupied by people as far back as 11,000 years ago as the glaciers retreated. For the majority of this time, people were practicing hunter gatherer lifestyles with a gradual move towards more extensive farming practices. Table 1 provides a general outline of the cultural chronology of Middlesex County, based on Ellis and Ferris (1990).

Table 1: Cultural Chronology for Middlesex County

Period	Characteristics	Time Period	Comments
Early Paleo-Indian	Fluted Projectiles	9000 - 8400 B.C.	spruce parkland/caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8400 - 8000B.C.	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8000 - 6000 B.C.	slow population growth
Middle Archaic	Brewerton-like points	6000 - 2500 B.C.	environment similar to present
Late Archaic	Lamoka (narrow points)	2000 - 1800 B.C.	increasing site size
	Broad Points	1800 - 1500 B.C.	large chipped lithic tools
	Small Points	1500 - 1100B.C.	introduction of bow hunting
Terminal Archaic	Hind Points	1100 - 950 B.C.	emergence of true cemeteries
Early Woodland	Meadowood Points	950 - 400 B.C.	introduction of pottery
Middle Woodland	Dentate/Pseudo-Scallop Pottery	400 B.C. - A.D.500	increased sedentism
	Princess Point	A.D. 550 - 900	introduction of corn

Period	Characteristics	Time Period	Comments
Late Woodland	Early Ontario Iroquoian	A.D. 900 - 1300	emergence of agricultural villages
	Middle Ontario Iroquoian	A.D. 1300 - 1400	long longhouses (100m +)
	Late Ontario Iroquoian	A.D. 1400 - 1650	tribal warfare and displacement
Contact Aboriginal	Various Algonkian Groups	A.D. 1700 - 1875	early written records and treaties
Late Historic	Euro-Canadian	A.D. 1796 - present	European settlement

1.2.2 Post-contact Aboriginal Resources

The post-contact Aboriginal occupation of Southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking communities by the New York State Iroquois and the subsequent arrival of Algonkian-speaking groups from northern Ontario at the end of the 17th century and beginning of the 18th century (Konrad 1981; Schmalz 1991). By 1690, Algonkian speakers from the north appear to have begun to repopulate Bruce County (Rogers 1978:761). This is the period in which the Mississaugas are known to have moved into southern Ontario and the lower Great Lakes watersheds (Konrad 1981). In southwestern Ontario, however, members of the Three Fires Confederacy (Chippewa, Ottawa, and Potawatomi) were immigrating from Ohio and Michigan in the late 1700s (Feest and Feest 1978:778-779).

The nature of Aboriginal settlement size, population distribution, and material culture shifted as European settlers encroached upon their territory. However, despite this shift, "written accounts of material life and livelihood, the correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to Iroquoian systems of ideology and thought" (Ferris 2009:114). As a result, First Nations peoples of Southern Ontario have left behind archaeologically significant resources throughout Southern Ontario which show continuity with past peoples, even if they have not been recorded in historical Euro-Canadian documentation.

The study area first enters the Euro-Canadian historic record on September 7, 1796 as part of Treaty Number 6, which:

> *...conveyed by the Principal Chiefs, Warriors and People of the Chippewa Nation of Indians to the Crown, of that tract of land situate lying and being on the north side of the River Thames or River La Tranche and known by the Indian name Escunnisabe, on the 7th of September, 1796, and comprising part of the Township of North Dorchester in Middlesex County and of North Oxford in Oxford County.*
>
> (Morris 1943:21)

While it is difficult to exactly delineate treaty boundaries today, Figure 3 provides an approximate outline of Treaty Number 6 (identified by the letter "I").

During Governor John Grave Simcoe's journey from to Detroit from Niagara in 1793, a daily log of the trip was written by Major Edward B. Littlehales. The trip was aided by numerous Aboriginal inhabitants and included encampment among existing Aboriginal camps, cabins, and villages. A transcription of a portion of the journey to Detroit documents one of the earliest written accounts of the interaction between European explorers and First Nations inhabitants in the Thames River area, now City of London:

> *We went between an irregular fence of stakes, made by the Indians to intimidate and impede the Deer and facilitate their hunting. After crossing the main branch of the Thames, we halted to observe a beautiful situation – a bend of the River, a grove of Hemlock and Pine, and a large creek. We passed some deep ravines, and made our wigwam by a stream on the brown of a hill, near a spot where Indians were interred. The burying ground was of earth raised, neatly covered with leaves and wickered over; adjoining it a large pole with painted Hieroglyphic on it, denoting the nation, tribe and achievements of the deceased, either as Chiefs, Warriors or Hunters.*
>
> (Bremner 1900:12-13)

On the return trip through the London area, Littlehales writes:

> *We walked over a rich meadow, and at its extremity came to the forks of the River…Various figures were delineated on trees at the forks of the River Thames, done with charcoal and vermilion. The most remarkable were the imitation of men with deer's heads. We saw a fine eagle on the wing, and two or three large birds, perhaps vultures.*
>
> (Bremner 1900:16-17)

Nearly 40 years later, Lewis Grant produced a map of the fork of the Thames region based on surveyor field notes from 1792-93 by Augustus Jones (Grant 1830). This sketch identifies "Old Indian Cornfields" on the west bank of the river, south of the fork of the Thames (Image 1). No physical evidence of Simcoe's encampment areas or old cornfields has been identified.

Bremner (1900:20) notes that "[s]ome years ago Indian remains" were encountered in the area of Blackfriars Bridge. Corroborating this account, Pearce *et al*. (1994:2-3) describe the unearthing of a single grave and Aboriginal artifacts during the excavation of a house foundation in the Blackfriars Bridge area in 1849 by John McDowell. Based on diagnostic characteristics of the artifacts recovered, the site has been interpreted as a Glacial Kame burial (Pearce *et al*. 1994:3; see also Cunningham 1948:27 and Spence and Fox 1996:12).

1.2.3 Euro-Canadian Resources

Middlesex County was first settled in 1793 after Lieutenant Simcoe passed through the area on his way to visit Detroit (Page & Co. 1878) and was initially comprised of ten townships: Aldborough, Dunwich, Southwold, Yarmouth, Malahide, Bayham, Delaware, Westminster, Dorchester, and London. By 1842, the population of Middlesex County had reached over 31,000 inhabitants. The area developed quickly and over the next two years roughly 7,300 hectares of land became cleared for agricultural purposes and by 1844, the county's agricultural lands exceeded 52,000 hectares (Smith 1846). Between 1846 and 1849, Middlesex County comprised the Townships of Adelaide, Aldborough, Bayham, Caradoc, Delaware, Dorchester, Dunwich, Ekfrid, Lobo, London, Metcalfe, Mosa, Malahide, Southwold, Westminster, Williams, Yarmouth, and the Town of London. The Townships of Yarmouth, London, Westminster, Southwold, and Malahide were the most widely settled, and on the whole, the county contained many good farms with large clearings and expansive orchards (Smith 1846). Elgin County was organized in 1851 and a number of these townships were partitioned from Middlesex County; however, London Township remained in Middlesex County (Middleton and Landon 1927).

Colonel Burwell began the survey of London Township in 1810. The survey progressed slowly and was put on hold due to the War of 1812. The survey picked back up in1818 and soon finished in the spring of 1819. Lots were divided into 200 acre parcels and arranged in 16 concessions and three additional concessions that are broken due to the Thames River. In 1818, Colonel Talbot began assigning lots to immigrants in London Township. Often, settlers were given 100 acres, approximating half of a surveyed lot. Colonel Talbot knew it was difficult for these first settlers in the township to obtain money; therefore, it was often 10 to 15 years after they settled on the parcel that Colonel Talbot was able to collect fees and issue an actual property deed. Generally, London Township is well drained with fertile soil giving the settlers a way of providing for themselves and their families. In 1819, the assessment returns shows the population of London Township as 170 people, jumping to 464 people in 1820, and by 1851 the population swelled to 6,735 with over half having been born in the township (Rosser 1975).

With its strategic location at the forks of the Thames River, the township saw an influx of immigrants around the settlement area known as London which was located on the township's southern boundary, east of the river. The first Euro-Canadian settlers in the vicinity of the study area included John Kent in 1823 and Walter Nixon in the early 1820s. After initial settlement in 1826, the population of London grew to 1,816 in 1840 becoming an incorporated village the same year. In 1847, London became a town and by 1851 the population swelled to 6,735 with over half having been born in the township (Rosser 1975). Later, in 1855, London became incorporated as a city with a population over 10,000 (Page and Co. 1878:8). By 1878, the city core was roughly bounded by Thames River to the west and south, Huron Street to the north and Adelaide Street North to the east.

In 1848, John Kent had his land between the fork of the Thames River and the road to Blackfriars Bridge subdivided into 'Park Lots'. Samuel Peters, who owned the land north of Blackfriars Bridge, subdivided his land into small lots in 1854. Peters' lots would eventually become the village of

Petersville (Golder 2014). The *Plan of Petersville-London West* (Stott 1999) shows the location of Samuel Peters' distillery, mill, and cattle shed next to the bridge (Image 2). The distillery is also visible in Image 3, identifiable by the smokestack.

Development of the area occurred quickly and by 1857, 50 lots had been purchased and 30 people had taken up residence. By 1862, 80 people had taken up residence in the area. This led to development of industries with the establishment of the grist and clothing mills to the north of the distillery and Blackfriars Bridge, known as the North Branch Mills. The increase in population also led to the construction of a schoolhouse and churches (Stott 1999). Kensington, a suburb located to the south at the Fork of the Thames developed in much the same way, albeit slower due to the area's repeated flooding (Golder Associates Inc. [Golder] 2014). In 1874, Petersville and Kensington amalgamated into an incorporated village and was renamed London West. London West remained an incorporated village until 1897 when the residents voted to amalgamate with the City of London (Golder 2014).

The Blackfriars Bridge was originally the only bridge linking the east and west sides of the Thames River. The date of construction of the original wooden bridge is unknown; however, it is illustrated on an 1840-41 Plan of London (Bremner 1900:12). The original bridge was destroyed in 1850 and a new one was built. By 1870, the wooden bridge was in danger of collapse and an iron bridge was constructed in 1875, under the supervision of Isaac Crouse. The 1875 version of Blackfriars Bridge still stands today and was designated by the City of London in 1992 for its heritage value and is recognized as a provincially significant structure on the Ontario Heritage Bridge list. The Oxford Street Bridge was an iron bridge built in 1881 and was replaced by a steel bridge after it was destroyed by the 1883 flood (Golder 2014). Blackfriars Bridge is considered a heritage attribute within the Heritage Conservation District plan and was identified as a key heritage attribute that contributes to the cultural heritage value or interest of the Heritage Conservation District (Golder 2014).

The southern end of the study area includes Labatt Park. The area was used for outdoor activities due to its location at the fork of the Thames in the 1870s. By 1877, a stadium was built to support the London Tecumsehs, now London Majors, baseball team. The park was renovated after the 1937 flood and remains in use today (Golder 2014).

By the mid-19th century, London became a large industrial centre. This is evidenced by the presence of distilleries and manufacturing shops and plants in and around London. To help support the industries of the city to ship goods, railways were constructed in 1854 and 1858 by the Great Western Railway Company and the Port Sarnia Railway Company, respectively. The two railways greatly stimulated London's growth by giving the city rail access to markets in Sarnia, Toronto, and Niagara Falls, while also giving the city its industrial character. An additional railway was constructed in 1889 by the Ontario and Quebec Railway Company to provide rail access to Chatham and Windsor.

Construction of the West London Dyke began in the late 1880s. The dyke was reinforced, extended, and raised twice by the early 1900s. At present, the West London Dyke is 2,374 metres long, running along the west bank of the North Thames River from Oxford Street to the Forks of the Thames, and then along the west bank of the main branch of the Thames River to the west side of the Wharncliffe Road Bridge (UTRCA 2015).

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

The southern half of the study area is located within the limits of the physiographic region known as London Annex of the Caradoc Sand Plain (Chapman and Putnam 1984). This physiographic region defined as:

> *Immediately surrounding the City and extending several miles eastward there is a basin lying between 850 and 900 feet a.s.l. Into this basin the earliest glacial spillways discharged muddy water, laying down beds of silt and fine sand. Later, when standing water had retired westward to lower levels, gravelly alluvium was spread over the lower parts of the basin.*
>
> (Chapman and Putnam 1984:146)

The northern half of the study area is located within the Stratford Till Plain physiographic region (Chapman and Putnam 1984). The Stratford Till Plain is:

> *…broad clay plain of 1,370 square miles, extending from London in the south to Blyth and Listowel in the north with a projection toward Arthur and Grand Valley. It is an area of ground moraine interrupted by several terminal moraines. The moraines are more closely spaced in the southwestern portion of the region; consequently that part resembles the Mount Elgin Ridges….Throughout this area the till is fairly uniform, being a brown calcareous silty clay whether on the ridges or the more level ground moraine. It is a product of the Huron ice lobe. Some of the silt and clay is calcareous rock flour, probably a good deal of it coming from previously deposited varved clays of the Lake Huron Basin.*
>
> (Chapman and Putnam 1984:133)

The closest potable water source is the North Branch of the Thames River, which is adjacent to the study area. Historically, the area was prone to seasonal flooding. The Thames River is a natural divide between the historic City of London and the old neighbourhoods west of the river including those within the study area. Use of the Thames River has evolved over time from being a transportation route used by early Aboriginal inhabitants and Euro-Canadian explorers and settlers, to an industrial power source to support the early mills of the area, and finally to a water course used for recreational purposes throughout the 20th and 21st centuries.

1.3.2 Previously Identified Archaeological Sites and Surveys

In order to compile an inventory of archaeological resources, the registered archaeological site records kept by the MTCS were consulted. In Ontario, information concerning archaeological sites is stored in the ASDB maintained by the MTCS. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 kilometres east to west and approximately 18.5 kilometres north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are number sequentially as they are found. The study area under review is within Borden Block AfHh.

Information concerning specific site locations is protected by provincial policy, and is not fully subject to the *Freedom of Information and Protection of Privacy Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the ASDB has shown that there are six registered archaeological sites within a one-kilometre radius of the study area, and four previous archaeological assessments have been conducted within 50 metres of the study area. Table 2 provides the details of the known archaeological sites.

Table 2: Registered Sites within One Kilometre of the Study Area

Site Name	Borden Number	Cultural Affiliation	Site Type
London Regional Art and Historical Museums	AfHh-182	Euro-Canadian	Cemetery
Talbot Block	AfHh-234	Euro-Canadian	Homestead, privy
N/A	AfHh-239	Undetermined Aboriginal Pre-Contact	Findspot
Victoria Park Site	AfHh-244	Euro-Canadian	Infantry Barracks
North Branch Mills	AfHh-321	Euro-Canadian	Mill
Thornwood	AgHh-94	Late Woodland, Glen Meyer	Campsite

Table 3 provides a summary of the previous archaeological assessments conducted within 50 metres of the study area.

Table 3: Archaeological Assessments within 50 Metres of the Study Area

Year	Title	Author
2001	*Archaeological Assessment (Stages 1 & 2) Forks of the Thames Revitalization Project, City of London, County of Middlesex, Ontario*	Golder Associates Ltd.
2006	*Stage 1 Arch. & Heritage Background Study for Forks of the Thames Proj. Phase IV (Proposed New Water Feature/Park at the Forks of the Thames River), City of London, Middlesex County*	Robert Pearce
2009	*The Archaeological Component of Phase 2 of the Thames Valley Corridor Plan, City of London, Middlesex County, Ontario*	D.R. Poulton & Associates Inc.
2014	*Stage 2 Archaeological Assessment M.A. Baran Park Improvements Part of Lot 16, Concession 1 Geographic Township of London, City of London, Middlesex County, Ontario*	Timmins Martelle Heritage Consultants Inc.

1.3.3 City of London's *Archaeological Master Plan*

In 1995, Wilson and Horne (1995) produced *The City of London Archaeological Master Plan* (the *Master Plan*) for the City of London's Department of Planning and Development Planning Division. The *Master Plan* "provides specific, municipally approved direction with regard to archaeology for the preparation and review of development proposals, the identification of conditions of development approval, and the planning of improvements to public services and facilities" and can be used towards the identification, evaluation, and conservation of archaeological resources through effective long-range planning (Wilson and Horne 1995:3).

The *Master Plan* determined that approximately 45% of the land within City limits exhibits high to moderate potential for the recovery of archaeological resources. Distance to water, and in particular, distance to different water sources, provided the basis for the most efficient model for Aboriginal site potential modelling. Euro-Canadian site potential modelling for the City of London focused on areas which would provide evidence for some of the earliest settlement of area, including historic roads, such as Wharncliffe Road, Dundas Street, and Blackfriars Street. Potential modelling for the City of London also included the "Early Urban Core" which:

> *…identified [the] limits of early historic London (pre-1845). This includes the portion of the City bounded by Wellington Street to the east, the Thames River to the south and west and Dufferin Avenue to the north. Only small portions of this area still retain sufficient integrity to possess mitigatable archaeological sites, however there are various important resources known to be present, ranging from historic cemeteries to the Talbot Block.*

(Wilson and Horne 1995:81)

Wilson and Horne (1995) further established integrity mapping for archaeological potential within the City of London related to the nature of previous disturbance activities and the degree to which archaeological sites and heritage features have been retained. Based on the integrity mapping (Wilson and Horne 1995:84), very few areas within the current study area contain sufficient integrity to retain archaeological resources. Extensive land disturbance can eradicate archaeological potential (Wilson and Horne 1995).

1.4 EXISTING CONDITIONS

The study area consists of the current West London Dyke structure, asphalt walking trails, manicured lawn, buried and above ground utilities (e.g. sewer and lighting), city roadways, and previous construction from Labatt Park and associated facilities. The WLD study area consists of a 2,374 metre long dyke that runs along the west bank of the North Thames River from Oxford Street to the Forks of the Thames, and then along the west bank of the main branch of the Thames River to the west side of the Wharncliffe Road Bridge. The study area is located in part of Lot 16, Concession 1 and part of Lot 16, Concession 2, Geographic Township of London, former Middlesex County, now City of London, Ontario. The Stage 1 archaeological assessment, including a property inspection of the study area, was conducted under PIF P256-0321-2015 issued to Parker Dickson, MA, of Stantec.

2.0 FIELD METHODS

Initial background research compiled the available information concerning any known and/or potential archaeological resources within the study area. A property inspection was conducted under archaeological consulting license P256 issued to Parker Dickson, MA, of Stantec by the MTCS. The property inspection was completed on April 15, 2015 under PIF P256-0321-2015 in accordance with Section 1.2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The property inspection involved examining the entirety of the study area to identify the presence or absence of any features of archaeological potential. During the property inspection the weather was sunny and warm. The lighting and visibility of land features was excellent. At no time were field, lighting, or weather conditions detrimental to the identification of features of archaeological potential.

The study area is generally bounded by the North Branch of the Thames River to the east, Oxford Street to the north, residential properties to the west, and Queens Avenue to the south. The study area includes 2,374 metres of existing dyke along the west bank of the Thames River and occupies approximately 4.87 hectares of land, including: existing dyke infrastructure, asphalt lanes, city roads, residential structures and lawn, and flood plain; as well as buried and on ground utility infrastructure.

The photography from the property inspection conducted on April 15, 2015 is presented in Section 7.2 and confirms that the requirements for a Stage 1 property inspection were met, as per Section 1.2 and Section 7.7.2 Standard 1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

Photos 1 to 3, and 16, illustrate areas within the study area that were identified as retaining archaeological potential. These areas consist of manicured lawn where it is not evident that extensive land disturbance and alteration has eradicated archaeological potential.

Photo 4 depicts an area that is steeply sloped and has no archaeological potential.

Photo 5 depicts an area of the Thames River flood plain, which is low and often wet due to seasonal flooding, and has no archaeological potential.

Photos 6 to 15 illustrate areas within the study area that have been subject to extensive and deep land alterations that have removed archaeological potential. These disturbed areas include: construction berm related to the dyke construction and maintenance, asphalt/concrete lanes and paths, existing roadways, buried and on ground utility infrastructure, and portions of Labatt Park.

3.0 ANALYSIS AND CONCLUSIONS

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Stantec applied archaeological potential criteria commonly used by the MTCS (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography and the general topographic variability of the area. However, it is worth noting that extensive land disturbance can eradicate archaeological potential (Wilson and Horne 1995).

Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential. Finally, extensive land disturbance can eradicate archaeological potential.

As discussed above, distance to water is an essential factor in archaeological potential modeling. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site location and type to varying degrees. The MTCS categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

The closest source of potable water is from the North Thames River, which is adjacent to the study area. Further examination of the study area's natural environment identified soil conditions suitable for Aboriginal and Euro-Canadian agriculture and areas of elevated topography. Storck (1982) notes that archaeological sites, particularly Paleo-Indian sites, tend to be in situated in areas of elevated topography as these areas would possess better drainage and would provide a broad view of the surrounding terrain for game watching.

There are two previously registered Aboriginal archaeological sites within one kilometre of the study area. As detailed in Section 1.2.2, numerous references are noted regarding post-contact encounters with First Nations groups. Taken these factors into consideration, as well as the information obtained from the City of London's *Archaeological Master Plan*, the pre-contact

and post-contact Aboriginal archaeological potential of the study areas is judged to be moderate to high.

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* or property that local histories or informants have identified with possible historical events, activities, or occupations. The study area is in close proximity to numerous roads that were surveyed for Kent's and Peters' subdivided lots, such as Wilson Street, Empress Avenue, and Blackfriars Street, including the historically significant Blackfriars Bridge. Considering the above, the Euro-Canadian archaeological potential of the study areas is judged to be moderate to high.

However, the property inspection has determined that extensive land disturbance within the study area has eradicated archaeological potential for much of the study area (Figure 5). The numerous roadways transecting the study area, asphalt lanes, utility infrastructure, and dyke-related berms, as well as the existing dyke itself, have created numerous areas of modern disturbance. Thus, these areas retain no further archaeological potential.

In addition to the above, the property inspection has also determined that small areas of archaeological potential remain within the study area. These areas are noted on Figure 5, and include small pockets of manicured lawn that could not be determined as previously disturbed based upon visual inspection alone (Photos 1 to 3, and 16).

In summary, while the archaeological potential for pre-contact Aboriginal, post-contact Aboriginal, and Euro-Canadian sites is deemed to be moderate to high within the study area based on historical documentation, the Stage 1 property inspection has determined that much of the study area, approximately 95%, has been subject to extensive land disturbance which has removed archaeological potential. As noted above, the remaining 5% of the study area retains potential for the identification and documentation of archaeological resources. The potential for archaeological resources also includes the potential for deeply buried resources to the north of Blackfriars Bridge at the site of the, former, Samuel Peters distillery (Photo 3).

4.0 RECOMMENDATIONS

The Stage 1 archaeological assessment of the West London Dyke study area determined that there are small pockets in the study area that have archaeological potential. The remainder of the study area has no archaeological potential due to steep slope, low and wet conditions, and modern disturbances. Therefore, in accordance with Section 1.3 and Section 7.7.4 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **portions of the study retain archaeological potential and any area of archaeological potential that will be subject to construction disturbance will be subject to a Stage 2 archaeological assessment prior to construction (Figure 5). It has also been determined that portions of the study area do not retain archaeological potential and no further archaeological assessment is recommended for those areas.**

The objective of the Stage 2 archaeological assessment will be to document archaeological resources within the study area and to determine whether these archaeological resources require further assessment. The Stage 2 archaeological assessment of the study area will consist of a test pit survey in accordance with Section 2.1.2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). If the archaeological field team judges any lands to be low and wet, steeply sloped, or disturbed during the course of the Stage 2 field work, those areas will not require assessment, but will be photographically documented instead in accordance with Section 2.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Further, in accordance with Section 2.1.7 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), due to the potential for deeply buried archaeological resources in the area of the former Samuel Peter's distillery, the Stage 2 assessment of that portion of the study area will include: mechanical excavation to identify subsurface cultural features as per Standard 3 and on-site monitoring during construction activities as per Standard 4.

The MTCS is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports. Additional archaeological assessment is still required for portions of the study area and so these portions recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Government and Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

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7.0 IMAGES AND PHOTOGRAPHS

7.1 IMAGES

Image 1: *The Site of London* depicting "Old Indian Cornfields"

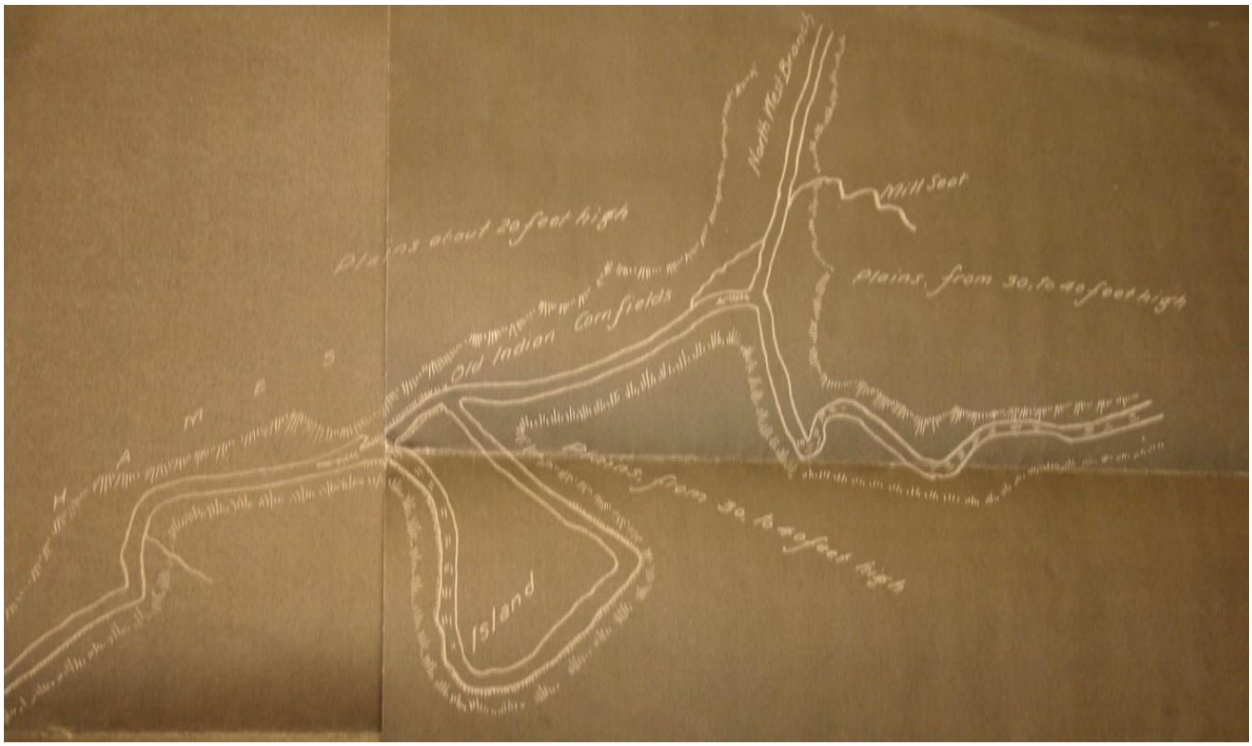


Image 2: *Plan of the Village of Petersville-London West*

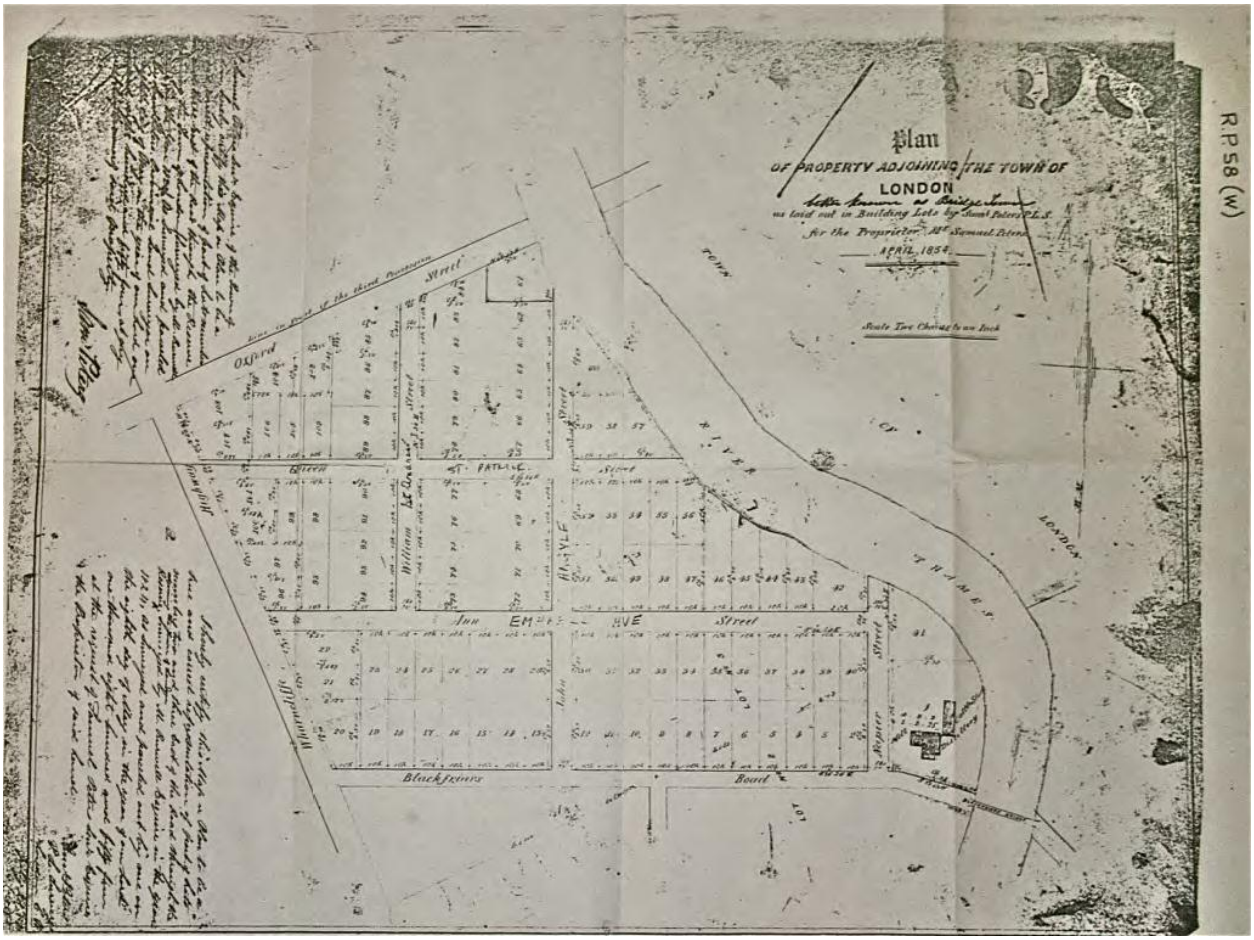


Image 3: View of Samuel Peters Distillery in 1870 (Leonard Album, UWO Archives)



7.2 PHOTOGRAPHS

Photo 1: Manicured Lawn Area Retaining Archaeological Potential north of Oxford Street, facing southeast



Photo 2: Manicured Lawn Area Retaining Archaeological Potential Adjacent to Disturbed Dyke-related Construction Berm, facing southeast



Photo 3: Manicured Lawn Area Retaining Archaeological Potential north of Blackfriars Bridge Adjacent to Disturbed Dyke-related Construction Berm, facing north



Photo 4: Area Showing Steep Slope with Gravel Laneway – No Archaeological Potential, facing south



Photo 5: Thames River Flood Plain Prone to Seasonal Flooding – No Archaeological Potential, facing south



Photo 6: Existing Dyke and Asphalt Lane – Disturbed and No Potential, facing southeast



Photo 7: Existing Dyke and Asphalt Lane – Disturbed and No Potential, facing north



Photo 8: Existing Dyke and Asphalt Lane – Disturbed and No Potential, facing south



Photo 9: Existing Asphalt/Concrete Lane and City Roads – Disturbed and No Potential, facing southeast



Photo 10: Existing Asphalt Lane and Buried Utilities – Disturbed and No Potential, facing west



Photo 11: Existing Asphalt Lane and Dyke-related Construction Berm – Disturbed and No Potential, facing south



Photo 12: Existing City Road and Dyke-related Construction Berm – Disturbed and No Potential, facing southeast



Photo 13: Existing Asphalt Lane and Dyke-related Construction Berm – Disturbed and No Potential, facing southeast



Photo 14: Existing Gravel Parking Area – Disturbed and No Potential, facing northeast



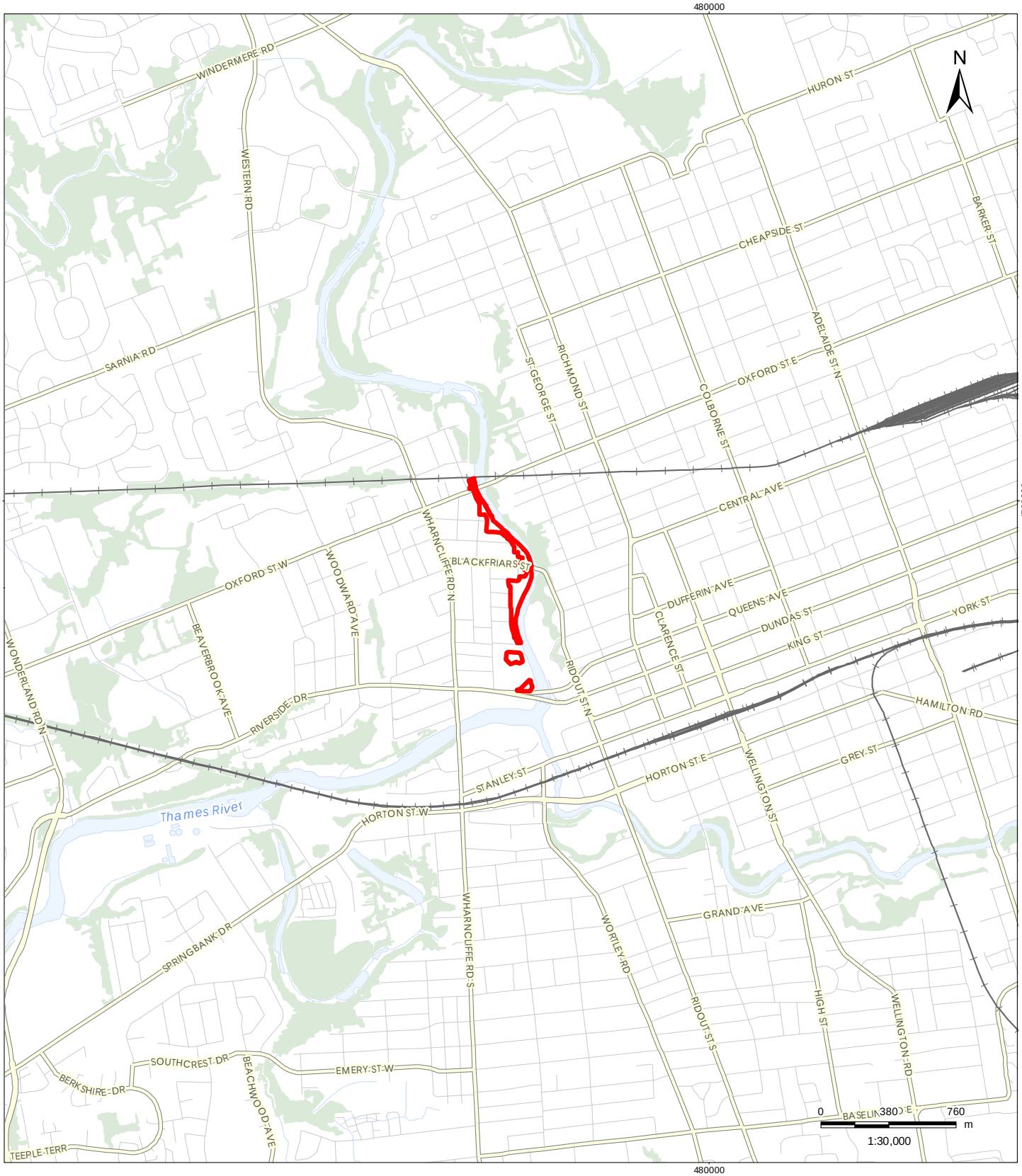
Photo 15: Existing Asphalt Parking Lot – Disturbed and No Potential, facing northeast



Photo 16: Manicured Lawn Area north of Labatt Park Retaining Archaeological Potential, facing northeast



8.0 MAPS



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Revised: 2015-04-29 By: kbuchanan

April 2015
165630035

Stantec

Legend

- Project Location
- Parcel

Client/Project

Upper Thames River Conservation Authority - West London Dyke
Stage 1 Archaeological Assessment

Figure No.

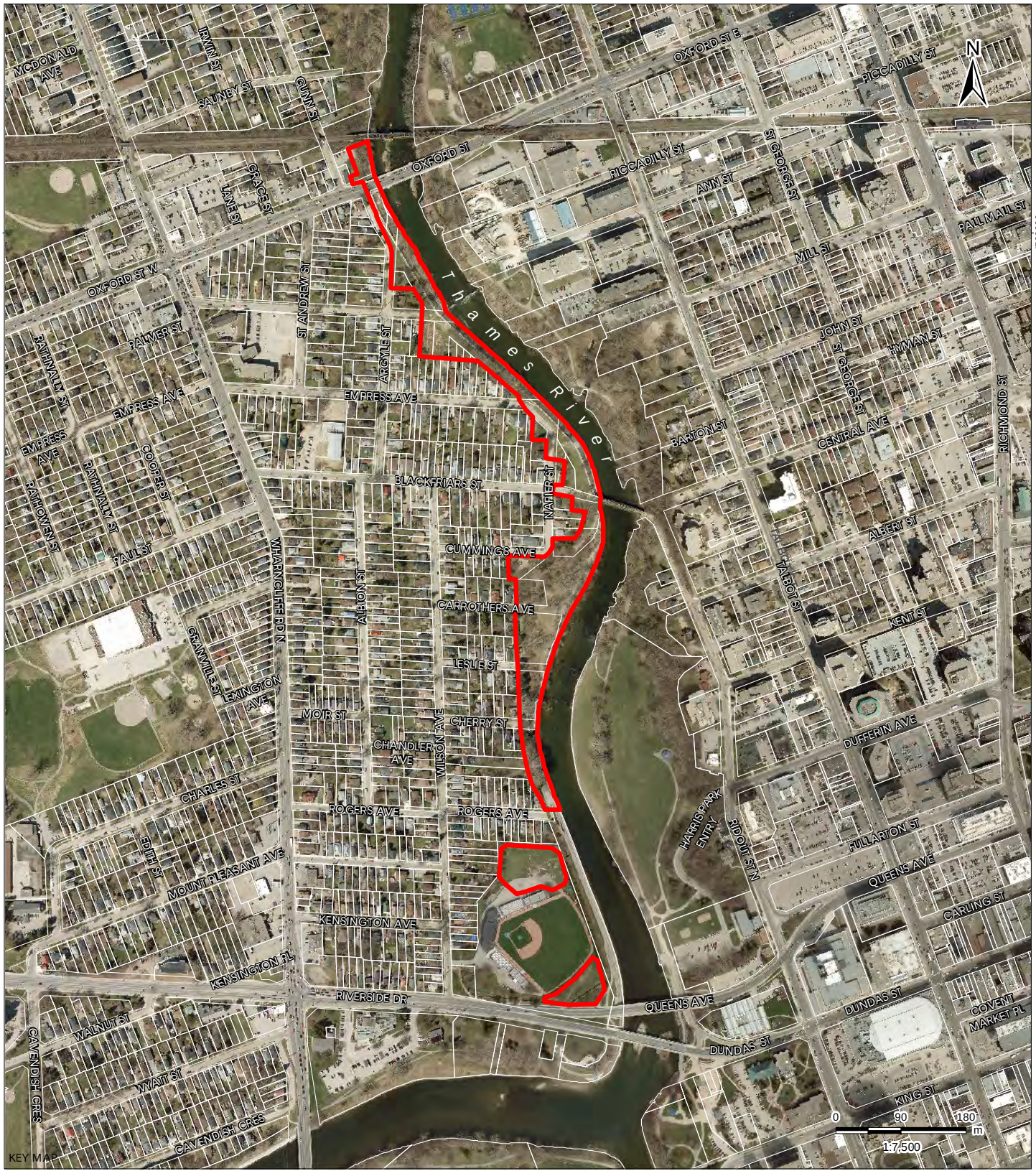
1

Title

Location of Study Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2014.



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Revised: 2015-04-29 By: kbuchanan

April 2015
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- Project Location
- Parcel

Client/Project

Upper Thames River Conservation Authority - West London Dyke
Stage 1 Archaeological Assessment

Figure No.

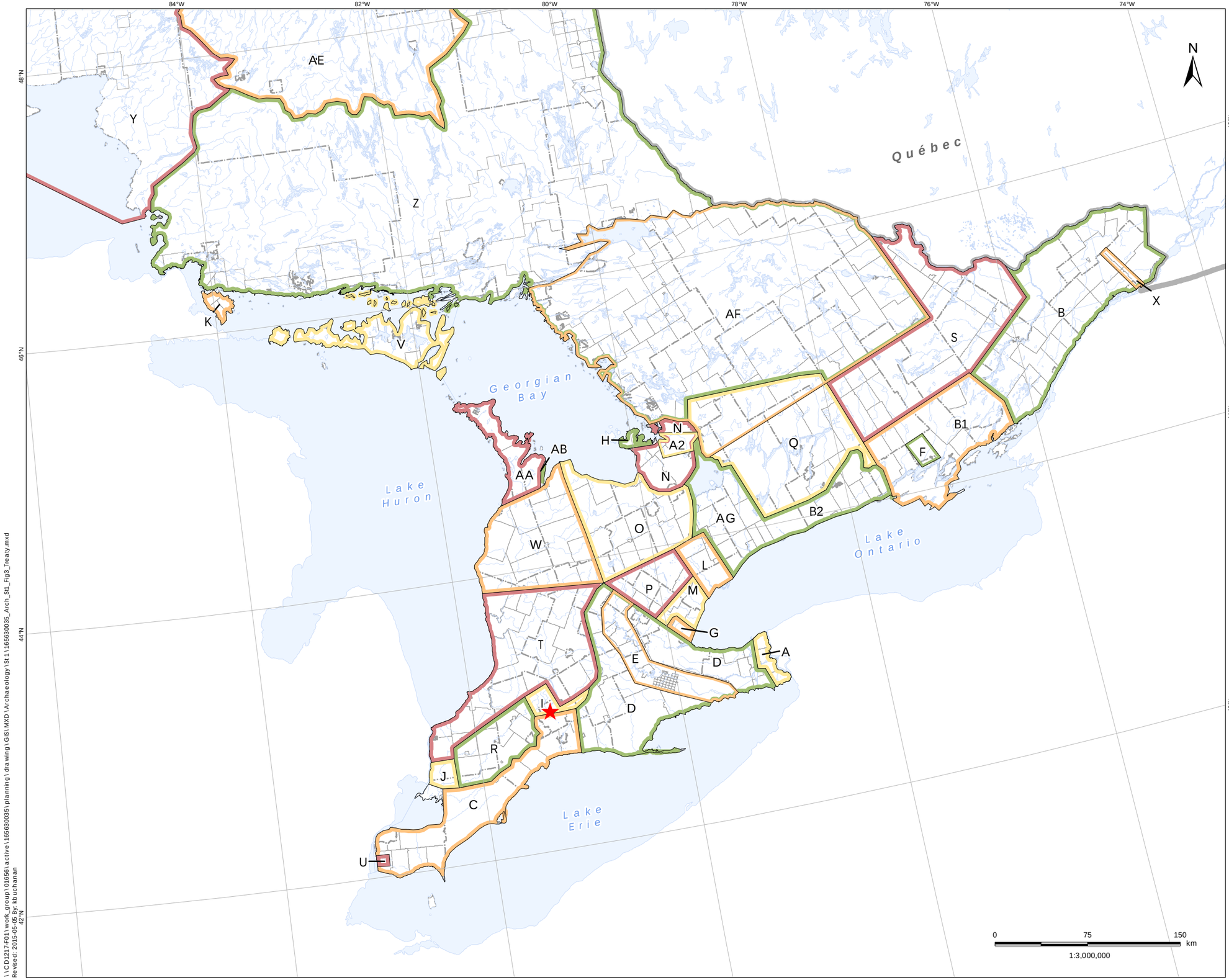
2

Title

Study Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, © 2014.



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Legend

- Project Location
- Municipal Boundary - Upper Tier
- Municipal Boundary - Lower or Single Tier
- Watercourse
- Waterbody

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
B Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
A2 John Collins' Purchase, 1785 (Chippewa)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract:from the Crown to the Mohawk, 1793
F Tyendinaga:from the Crown to the Mohawk, 1793
G Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
I Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No.16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Z Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AF Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG Williams Treaty, October 31st, 1923 (Chippewa)

Notes

1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2014.
3. Treaty boundaries adapted from Morris 1943 (1964 reprint). For cartographic representation only.

May 2015
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Client/Project

Upper Thames River Conservation Authority
West London Dyke
Stage 1 Archaeological Assessment

Figure No.

3

Title

Treaties and Purchases (Adapted from Morris 1943)

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Revised: 2015-05-27 By: kbuchanan

May 2015
165630035

Stantec

Legend

Approximage Location of Project Location

Client/Project

Upper Thames River Conservation Authority - West London Dyke
Stage 1 Archaeological Assessment

Figure No.

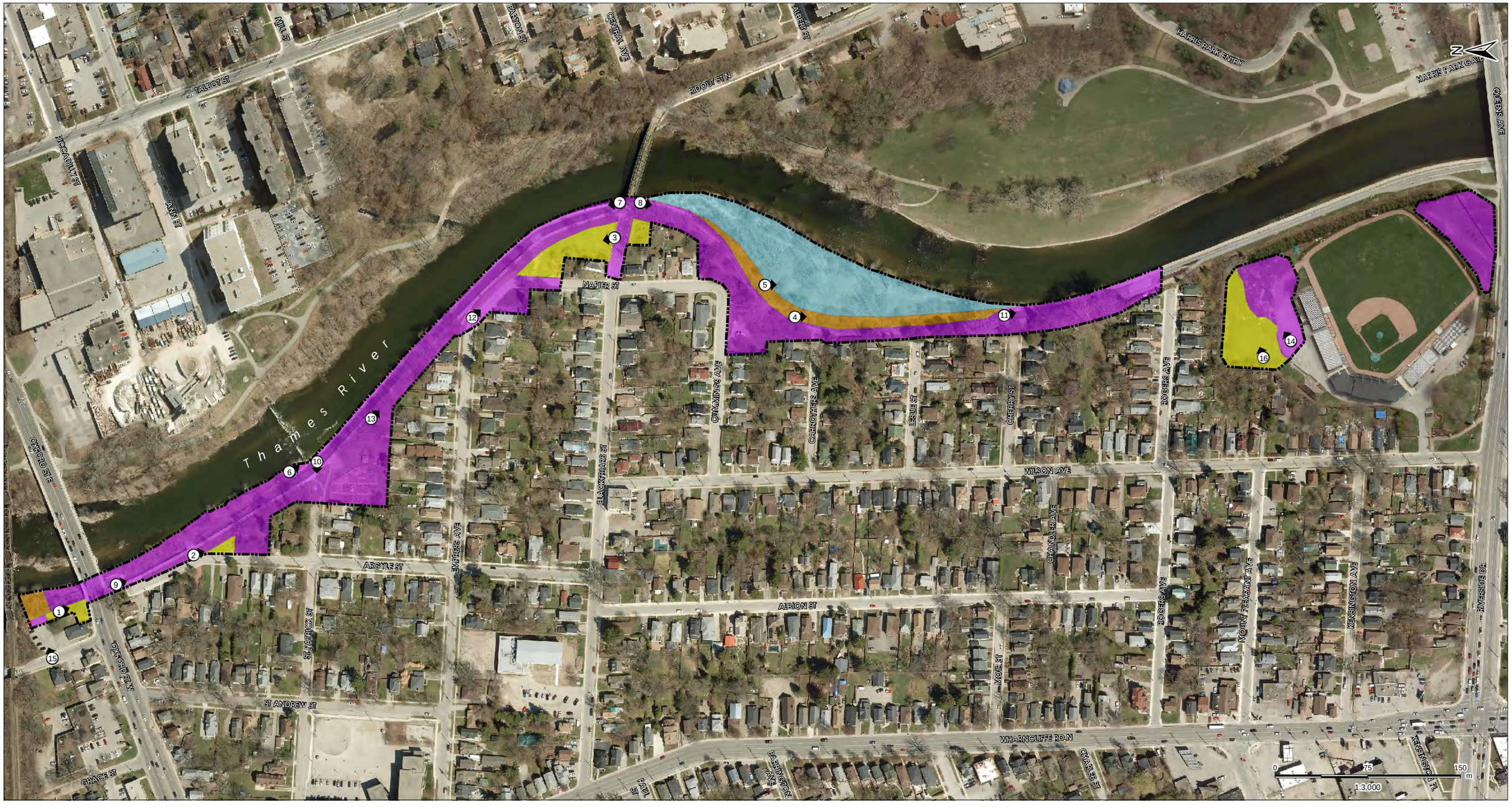
4

Title

Portion of the 1878 Historical Map of London Township

Notes

1. Historical information not to scale.
2. London Township map from Page, H.R. and Co. 1878. *Illustrated Historical Atlas of the County of Middlesex, Ont.* Toronto.



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Revised: 2015-06-03 By: kbuchanan

June 2015
165630035

Stantec

Legend

- Project Location
- Parcel

Archaeological Potential

- Moderate to High Archaeological Potential - Stage 2 Required
- Previously Disturbed Area, No Archaeological Potential - No Stage 2 Required
- Steeply Sloped Area, No Archaeological Potential - No Stage 2 Required
- Low and Seasonally Wet Area, No Archaeological Potential - No Stage 2 Required

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Imagery and base features used under license with the City of London, 2014.

Client/Project

Upper Thames River Conservation Authority
West London Dyke
Stage 1 Archaeological Assessment

Figure No.

5

Title

Archaeological Potential

9.0 CLOSURE

This report has been prepared for the sole benefit of the City of London and the Upper Thames River Conservation Authority and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and the City of London.

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

STANTEC CONSULTING LTD.

Reviewed by _____
(signature)

Parker Dickson, MA

Reviewed by _____
(signature)

Jim Wilson, MA