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3. Priamo





MMM Group Limited  
100 Commerce Valley Drive West  
Thornhill, ON Canada L3T 0A1  
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[www.mmgrouplimited.com](http://www.mmgrouplimited.com)

August 9, 2016

Upper Thames River Conservation Authority  
1424 Clarke Road  
London ON N5V 5B9

**Attn: Tracy Annett, Manager, Environmental Planning and Regulations**

**RE: Summary of Technical Work  
Proposed Redevelopment at 1234 – 1246 Richmond Street, City of London**

Dear Ms. Annett;

Textbook Suites Inc. has proposed redevelopment of the properties at 1234-1246 Richmond Street to introduce a student housing complex in place of 6 existing residences. The surrounding area is characterized by a variety of existing development and redevelopment, along the Richmond Street corridor which is slated for intensification as a transit corridor by City of London Planning. The area is protected from flood risk by a series of dykes along the west bank of the river.

Textbook initially consulted with UTRCA on December 18, 2014 regarding this property and subsequent correspondence from the UTRCA has stated that:

1. The application was premature due to an on-going policy review.
2. Safe access provisions for the proposed development are of concern.
3. Confirmation is required as to whether the site is considered to be within the 'flood fringe' or 'floodway' in accordance with MNRF criteria.

To respond to these concerns, we undertook an assessment of flood risk under existing and redevelopment scenarios based on currently approved modelling and mapping. This standard hazard mapping and HEC-RAS model for the North Thames River in London were forwarded by UTRCA on December 9, 2015.

Our analysis mimicked approaches completed for the adjacent approved redevelopment at 1235-1253 Richmond Street.



Our analysis revealed that the configuration of the proposed redevelopment required refinement to mitigate impacts to flow regime, and to rectify existing safe access concerns. As a result, Textbook revised the concept specifically to address these concerns, and correspondence was provided to UTRCA demonstrating that the new concept would achieve the requirements and would constitute an improvement relative to the existing conditions.

Our final technical submissions dated June 14 and July 20, 2016, confirmed that the proposed redevelopment satisfies all prevailing criteria, and further asserted that the site is contained within the flood fringe of the watercourse in accordance with MNRFP guidelines.

Our work confirms that the redevelopment will ensure safe access to property and inhabitants by emergency response personnel and vehicles during a regulatory event. Likewise, the redevelopment will not adversely impact the existing flood regime through the area.

To conclude, on the basis of our technical analyses, we confirm that the proposed redevelopment of 1234-1246 Richmond Street satisfies current technical and policy requirements, constitutes an improvement over the existing conditions, and as such we respectfully request that UTRCA withdraw its objection to the application.

Sincerely,

WSP | MMM Group

A handwritten signature in black ink, appearing to read 'Abe Khademi'. The signature is fluid and cursive, written in a professional style.

Abe Khademi, P.Eng.  
Director, Water Resources  
Infrastructure

Cc: Textbook Suites Inc.



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July 20, 2016

Upper Thames River Conservation Authority  
1424 Clarke Road  
London ON, N5V 5B9

Attn: Tracy Annett, MCIP, RPP.

**SUBJECT: File No: OZ-8552 – UTRCA Comments on Flood Path Assessment**  
**Applicant: Textbook (Ross Park) Inc., 1234-1246 Richmond St., London**  
**MMM Project: 1016024-001-SW1**

In advance of our meeting to discuss your correspondence dated July 19, 2016, we offer the following:

The issues associated with the current state of maintenance and resulting performance of the Broughdale Dyke are not addressable by our client as they are located on public lands. The state of the Dyke is therefore the responsibility of the City of London and the UTRCA. Nevertheless, I direct you to the following quote from the OMNR Technical Guide on River and Stream Systems: Flooding Hazard Limit, Chapter 4.

#### **4.1.2 Dykes and Flood Walls**

Where a dyke has been properly designed and constructed to the flood standard, and a suitable maintenance program is in place, the area behind the dyke can be considered as flood fringe. As such, new development would still be required to be floodproofed to the flood standard. The floodway would be considered to be contained within the dyke area. If new development in the flood fringe cannot be floodproofed to the flood standard, then special policy area status may be requested, subject to the appropriate requirements.

We note that the Broughdale Dyke meets the criteria listed above as it was constructed to the appropriate flood standard and that at the time of construction, a suitable maintenance plan was in place, but over time, the Dyke has been allowed to deteriorate to the state documented by the AECOM report. Therefore, the repair of the Dyke is the activity preventing the site from being considered in the flood fringe and resulting in UTRCA's opinion on the flood fringe status of the property. A repair activity on the Dyke would therefore provide the conditions that would restore flood fringe status to the property and we recommend that the appropriate public agencies undertake such an activity at their earliest opportunity in the name of public safety, as all properties behind the Dyke are now at risk of flood inundation if the Dyke remains in its current state.

Nevertheless, we have undertaken the exercise presented in our June 2016 Flood Path Assessment to demonstrate that the site meets the flood risk profile of a flood fringe site under the current conditions of the Broughdale Dyke, as per the flow management approaches contained in section 4.1.1 (relevant excerpt below)

## 4.1 Flood Hazard Standards Downstream of a Control Structure

### 4.1.1 Dams

Dams and dykes can reduce flood risk downstream or behind a dyke, but they do not eliminate the risk. The purpose of a dam or a dyke is to protect existing development, but not to free up additional land and allow for new development.

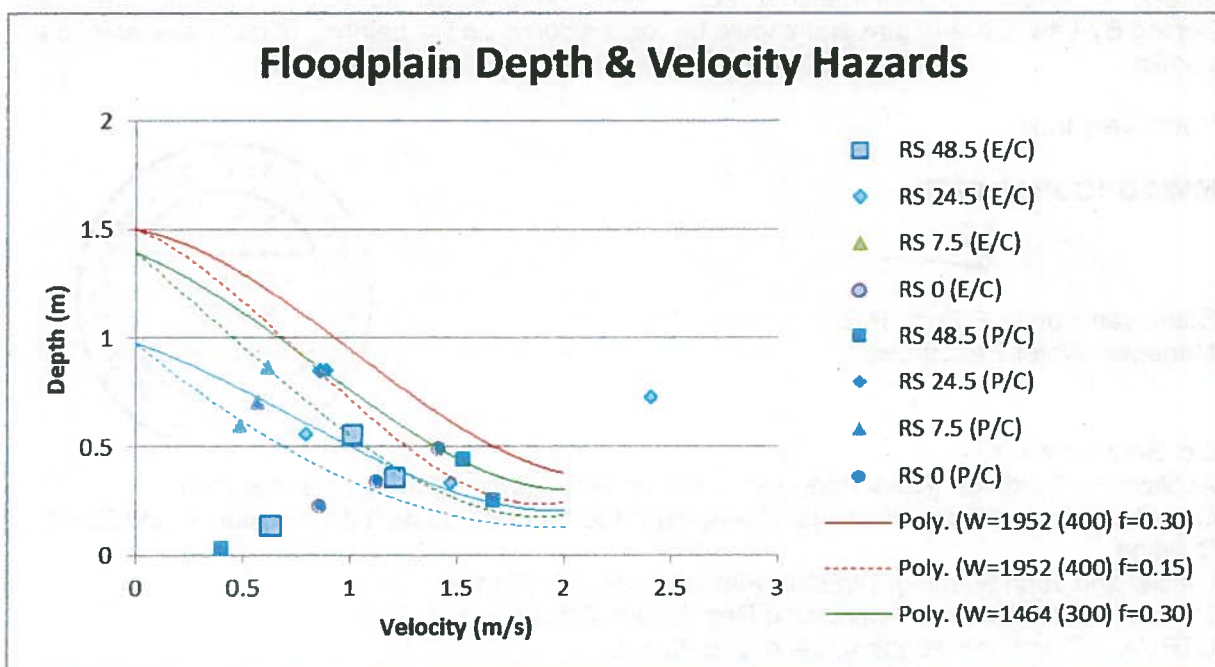
A number of flow management approaches concerning dams and downstream flood hazards are available: 1) Use reduced regulated flow, 2) Use unregulated flow and 3) Use flow resulting from failure.

Reduced peak flows based on the operation of the dam is not always in the public interest, since funds to maintain and replace the structure in the future cannot be assured. Also, projected flood peak attenuation may not be achieved as a result of ice, debris or sediment accumulation that affect storage, operating problems that alter discharge capacity, or floods that vary from the design event in terms of timing, volume and hydrograph shape. The use of peak flows resulting from a dam failure is the most conservative option, and the recommended option where public safety is the issue. The preferred approach is the use of unregulated flow to identify flood hazard limits downstream of a dam.

We draw your attention to the fact that our application is a redevelopment of an existing site, not new development, and is therefore consistent with the first highlighted point. Secondly, the analysis presented in the Flood path assessment has utilized the recommended option as public safety is the paramount concern in this application.

In a Regulatory Event overtopping the dyke, the resulting flows on the existing site are consistent with the recommendations in the MNR Technical Guide, particularly the 3x3 rule documented in Appendix 6, save for one area where the product of depth and velocity exceeds the recommended value. The post-development site has implemented MMM's recommendations for floodproofing, consistent with UTRCA floodproofing standards and corrects this issue, bringing in all areas to levels consistent with this rule, thereby improving the situation significantly.

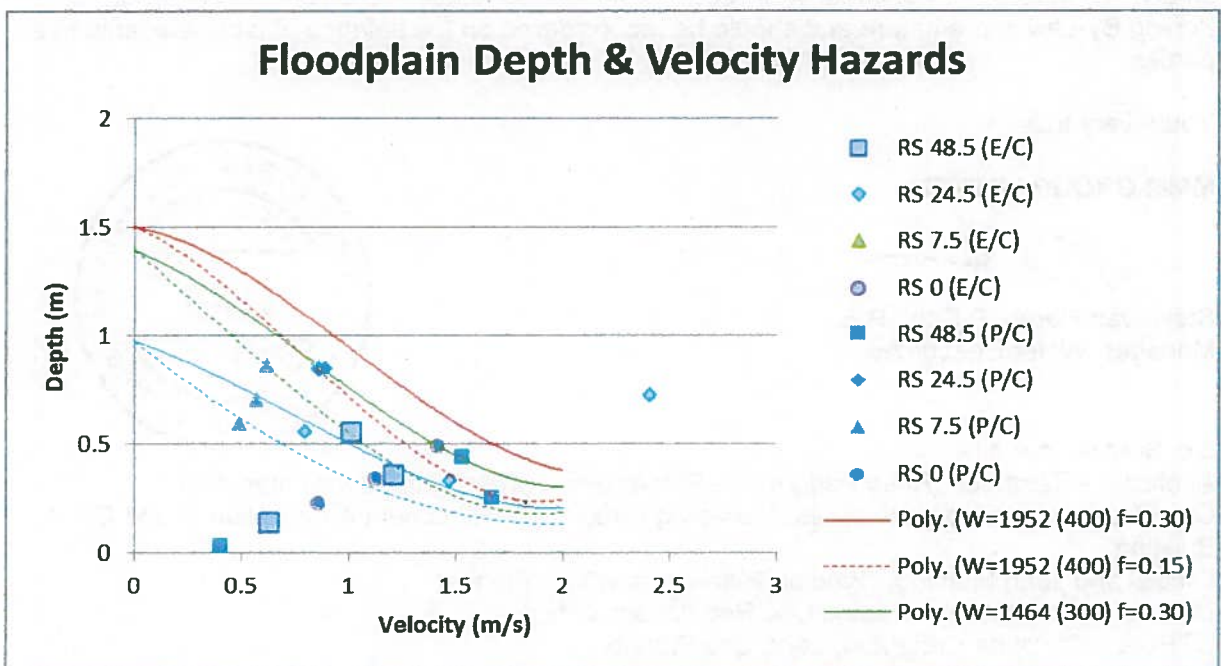
Secondly, to address your points on pedestrian access on the site and the significantly more stringent requirements, I have plotted the Flooding Depth & Velocity products from Tables 1 & 2 from our flood path analysis against the recommended curves from Appendix 6 of the MNR Technical Guide. The Existing Condition (E/C) values clearly show the outlier value that is outside of safe limits for pedestrians. The Proposed Condition (P/C) values are all within the various ranges for different sized individuals. As we have stated in our Flood Path Assessment, we acknowledge that the site is subject to flood risk, but the analysis below demonstrates that the post-construction risk is tolerable. Additional means to further improve stability under flood conditions can be investigated at the detailed design stage (such as material treatments to increase friction on surfaces during flood conditions and/or lighted pathways with lower overall flood depths and velocities with possible surface treatments to convey pedestrians from building exits to marshalling areas.)



You make reference to the draft Broughdale Dyke Flood Characterization study (DRAFT – May 2016), and state that it has technical information that can inform questions “regarding floodway/flood-fringe/access in the Broughdale area”, and state that your preliminary review confirms that safe access does not appear feasible, and that the subject lands should be considered to be located within the floodway (not within the flood fringe). We note this draft report has not been circulated to our team, and therefore we cannot provide any challenge to the findings therein or concur with them, yet the findings of the draft report based on your review to date are cited as the reasons to declare that safe access is not feasible.

Lastly, we note from the definitions in Appendix 2 of the MNR Technical Guide that for Flood Fringe areas, the depth and velocities of flooding are generally less severe than those experienced in the

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**UPPER THAMES RIVER**  
**CONSERVATION AUTHORITY**

"Inspiring a Healthy Environment"



December 17, 2012

The Corporation of the City of London  
Development Services  
P.O. Box 5035  
London, Ontario N6A 4L9

Attention: Sara Bellaire (sent via e-mail)

Dear Ms. Bellaire:

**Re: File No. SP12-012179 - Application for Site Plan Control**  
**Applicant: 2180040 Ontario Limited**  
**Agent: Zelinka Priamo Ltd.**  
**1235-1253 Richmond Street, London, Ontario**

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The Upper Thames River Conservation Authority (UTRCA) has reviewed this application with regard for the policies in the *Environmental Planning Policy Manual for the Upper Thames River Conservation Authority (June 2006)*. These policies include regulations made pursuant to Section 28 of the *Conservation Authorities Act*, and are consistent with the natural hazard and natural heritage policies contained in the *Provincial Policy Statement (2005)*. The *Upper Thames River Source Protection Area Assessment Report* has also been reviewed in order to confirm whether the subject lands are located in a vulnerable area. The Drinking Water Source Protection information is being disclosed to the Municipality to assist them in fulfilling their decision making responsibilities under the Planning Act. We offer the following comments.

**PROPOSAL**

The applicant is proposing a 19 storey residential apartment building.

**CONSERVATION AUTHORITIES ACT**

As shown on the enclosed mapping, the subject lands are regulated by the UTRCA in accordance with Ontario Regulation 157/06 made pursuant to Section 28 of the *Conservation Authorities Act*. The Regulation Limit is comprised of a riverine flooding hazard associated with the Thames River. The UTRCA has jurisdiction over lands within the regulated area and requires that landowners obtain written approval from the Authority prior to undertaking any site alteration or development within this area including filling, grading, construction, alteration to a watercourse and/or interference with a wetland.



**UTRCA ENVIRONMENTAL PLANNING POLICY MANUAL (June, 2006)**

The policies which are applicable to the subject lands include:

**3.2.2 General Natural Hazard Policies**

These policies direct new development and site alteration away from hazard lands. Any development which is permitted in hazard lands must provide appropriate floodproofing measures, protection works and safe or dry access during times of flooding, erosion and other emergencies. Furthermore, no new hazards are to be created and existing hazards should not be aggravated.

**3.2.3 Riverine Flooding Hazard Policies**

These policies address matters such as the provision of detailed flood plain mapping, uses that may be permitted in the flood plain subject to satisfying UTRCA permit requirements, one & two zone flood plain policy areas as well as special policy areas.

**3.2.3.2 Flood Fringe Policies**

Flood fringe policies are applied in those specific cases where a Two Zone Policy Approach is implemented. Development and site alteration may be permitted in flood fringe areas subject to satisfying the Authority's flood proofing requirements which are implemented through the Section 28 Permit process. For infill development and re-development, vehicular and pedestrian access must be safe, within 0.3 metres of the Regulatory Flood Elevation or determined using the *Technical Guide – River & Stream Systems: Flooding Hazard Limit* (OMNR & Watershed Science Centre, 2002).

**The subject lands are located within a flood fringe zone.** While development may be permitted in the flood fringe, a proponent must first demonstrate that the development will not result in any new hazards and that existing hazards will not be aggravated. The UTRCA requested a hydraulic floodway analysis as a condition of the rezoning of these lands in order to assess the potential impacts of this development on flooding depths and velocities as well as on adjacent properties.

**HYDRAULIC FLOODWAY ANALYSIS**

The UTRCA has signed off on the Proposed *Residential Development 1235-1253 Richmond Street Hydraulic Floodway Analysis Report* prepared by AECOM dated November 2012. Accordingly we have advised City Planning Staff that the Authority has no objections to the removal of the (h-129) provision from the current zoning that applies to these lands.

**DRINKING WATER SOURCE PROTECTION**

The *Clean Water Act (CWA)*, 2006 is intended to protect existing and future sources of drinking water. The Act is part of the Ontario government's commitment to implement the recommendations of the Walkerton Inquiry as well as protecting and enhancing human health and the environment. The CWA sets out a framework for source protection planning on a watershed basis with Source Protection Areas established based on the watershed boundaries of Ontario's 36 Conservation Authorities. The Upper Thames River, Lower Thames Valley and St. Clair Region Conservation Authorities have entered into a partnership for The Thames-Sydenham Source Protection Region. Drinking Water Source Protection represents the first barrier for protecting drinking water including surface and ground water from becoming contaminated or overused thereby ensuring a sufficient, clean, safe supply now and for the future.

**Assessment Reports:**

The Thames-Sydenham Source Protection Region has prepared *Assessment Reports* that identify vulnerable areas associated with drinking water systems; assess the level of vulnerability in these areas; and identify activities within those vulnerable areas which pose threats to the drinking water systems, and assess the risk due to those threats. The Assessment Report for the Upper Thames watershed delineates three types of vulnerable areas: Well Head Protection Areas, Highly Vulnerable Aquifers and Significant Groundwater Recharge Areas. A small portion of 1235 Richmond Street is situated in an area with Highly Vulnerable Aquifers. Mapping which shows these areas is available at:

**Highly Vulnerable Aquifers:**

[http://www.sourcewaterprotection.on.ca/downloads/assessment\\_reports/UTRCA/Appendices/A1-Maps/Map4-3-2\\_Highly%20Vulnerable%20Aquifers.pdf](http://www.sourcewaterprotection.on.ca/downloads/assessment_reports/UTRCA/Appendices/A1-Maps/Map4-3-2_Highly%20Vulnerable%20Aquifers.pdf)

**Source Protection Plans:**

Using the information in the *Assessment Report*, a *Source Protection Plan* is being developed for the Upper Thames watershed. It is anticipated that this *Plan* will consist of a range of policies that together, will reduce the risks posed by the identified water quality and quantity threats in the vulnerable areas. These policies will include a range of voluntary and regulated approaches to manage or prohibit activities which pose a threat to drinking water. Activities that can lead to; low, medium and significant threats have been identified in Appendix 10 of the *Upper Thames River Source Protection Area Assessment Report*, dated August 12, 2011 which is available at:

[http://www.sourcewaterprotection.on.ca/downloads/assessment\\_reports/UTRCA/Appendices/A10-Threats%20and%20Risk%20Assessment.pdf](http://www.sourcewaterprotection.on.ca/downloads/assessment_reports/UTRCA/Appendices/A10-Threats%20and%20Risk%20Assessment.pdf)

AREA OF VULNERABILITY	VULNERABILITY SCORE	THREATS & CIRCUMSTANCES
Highly Vulnerable Aquifers (HVA)	6	Moderate & Low Threats

NOTE: At this time, certain activities on this property may be considered *Moderate or Low* threats to drinking water.

Given that the *Source Protection Plan* is being developed, the UTRCA cannot speculate what the *Plan* might dictate for these areas. Under the CWA, the Source Protection Committee has the authority to include policies in the *Source Protection Plan* that may prohibit or restrict activities identified as posing a *significant threat* to drinking water. Proponents planning to undertake changes in these areas need to be aware of this possibility.

**Provincial Policy Statement (PPS, 2005):**

Section 2.2.1 requires that:

"Planning authorities shall protect, improve or restore the quality and quantity of water by: d) implementing necessary restrictions on development and site alteration to:

1. protect all municipal drinking water supplies and designated vulnerable areas; and
2. protect, improve or restore vulnerable surface and ground water features, and their hydrological functions"

Section 2.2.2 requires that:

"Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored".

UTRCA Comments  
File No. SP12-012179

Municipalities must be consistent with the Provincial Policy Statement when making decisions on land use planning and development.

**RECOMMENDATION**

The UTRCA has no objections to this application for Site Plan Control. Furthermore, we wish to advise that the applicant has submitted a Section 28 permit application which is on hold until such time as all of the planning matters have been addressed.

**UTRCA REVIEW FEES**

Consistent with UTRCA Board of Directors approved policy, Authority Staff are authorized to collect fees for the review of Planning Act applications including site plan applications. Our fee for this review is \$200.00 and will be invoiced under separate cover.

Thank you for the opportunity to comment. If you have any questions, please contact the undersigned at extension 293.

Yours truly,  
UPPER THAMES RIVER CONSERVATION AUTHORITY

*Christine* 

Christine Creighton  
Land Use Planner  
CC/cc

Enclosure – Regulations Mapping (please print on legal size paper to ensure that the scales are accurate)

c.c. Sent via e-mail  
Applicant – 2180040 Ontario Limited  
Agent – Zelinka Priamo Ltd.  
UTRCA – Mark Snowsell, Land Use Regulations Officer

# Regulation Limit

Highways shown on this map are shown in the same way as they appear on the ground. The location of the roads is shown on the map for information only. The location of the roads is shown on the map for information only.

- Legend**
- Road Labels (1:5000)
  - Assessment Parcel
  - Watercourse
  - Open
  - Thed
  - MNR Wetland Unit (May 2011)
  - Unassessed Wetland (UTRCA)
  - London Hazard
  - PL0250
  - Recent Valley
  - State Slope
  - The Erosion - State Slope
  - Top of Slope
  - Flooding Hazard
  - Erosion Hazard
  - Wetland Interference
  - Regulation Limit

The Regulation Limit depicted on this map schedule is a representation of O.Reg 157/06 under O.Reg 87/04. The Regulation Limit is a conservative estimation of the hazard areas within the UTRCA and is not intended to be used as a basis for the Regulation Limit may be subject to change.

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CONSERVATION AUTHORITY  
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No. 1235-1253 Richmond Street, London  
Created by CC December 17, 2013

\* Please note: Any information shown on this map is only approximate and is not intended to be used as a basis for any legal action.



**City of London  
&  
Upper Thames River Conservation Authority**

# **LONDON EARTH DYKES**

## **OPERATION, MAINTENANCE & SURVEILLANCE (OMS) MANUAL**

**Corporation of the  
City of London  
300 Dufferin Avenue  
London, Ontario  
N6A 4L9**

**Upper Thames River Conservation  
Authority  
1424 Clarke Road  
London ON  
N5V 5B9**

**AECOM Canada Ltd.  
290-50 Sportsworld  
Crossing Road  
Kitchener, Ontario  
N2P 0A4**

**FINAL**

**JUNE 2013**

## 5. Condition of the London Earth Dykes Structures

### 5.1 Hazard Potential and Inflow Design Flood

Preliminary Hazard Potential Classification (HPC) ratings for each dyke based on the number of protected structures and the Ministry of Natural Resources guidelines (2011) may be considered as:

- Very High: Ada-Jacqueline, Broughdale, Coves Dykes
- High: Byron, Clarence-Nelson, Riverview-Evergreen Dykes

Note that these ratings are based only on a conceptual assessment of the potential risk of breach and the properties and infrastructure protected by the dyke. It is recommended that the HPC ratings be confirmed through a study to be undertaken by a qualified Professional Engineer in order to determine maintenance and inspection requirements.

### 5.2 Major Repairs and Modifications

Major repairs have been planned and are underway for the West London Dyke. No other major repairs on the other dykes are known at this time.

### 5.3 Inspections

The London Dykes are inspected at least on an annual basis by UTRCA staff to identify erosion, stability or vegetation management issues.

### 5.4 Known Problems and Incidents

Some previous studies have been undertaken for the London Dykes (particularly for the West London Dyke) and identified potential stability, erosion, and vegetation management issues:

- Some vegetation maintenance has already been completed at the Ada-Jacqueline Dyke.
- The UTRCA has completed a Master Repair Plan for the West London Dyke, and the first phases of these repairs are underway.

The "London Earth Dykes Stability Review" (AECOM and LVM, 2013) represents the first baseline condition assessment for the London Dykes and serves to inventory and catalogue potential stability and condition issues. A summary of the stability and condition ratings for each dyke section is included in Table 5-1.

**Table 5-1 - Summary of Dyke Stability and Condition Ratings**

Dyke Section	Condition Rating <sup>2</sup>	Avg. Low Stability Factor <sup>3</sup>	Key Condition Issues for Monitoring
<b>Ada-Jacqueline Dyke</b>			
Sta. 0+000 to Sta. 0+140 (West of Adelaide Street)	4	1.6	Rip rap in outlet channel, hazard trees
Sta. 0+190 to Sta. 0+350 (North of Ada Street)	4	0.95	Maintain recent vegetation clearing
Sta. 0+350 to Sta. 0+520 (East Side of Jacqueline Street)	3	0.7	Rip rap slope treatment, hazard trees, stormwater outfalls

Dyke Section	Condition Rating <sup>2</sup>	Avg. Low Stability Factor <sup>3</sup>	Key Condition Issues for Monitoring
<b>Broughdale Dyke</b>			
Sta. 0+000 to Sta. 0+425 (Ross Park)	4	1.8	No significant issues
Sta. 0+425 to Sta. 0+625 (North Side of Raymond Street)	4	1.0	Overgrown vegetation, hydro poles
Sta. 0+625 to Sta. 0+720 (Easterly end of Bernard Ave to Meadowdown Rd)	2	0.65	Degraded retaining walls, overgrown vegetation, hazard trees
<b>Byron Dyke</b>			
Sta. 0+000 to Sta. 0+374	3	0.8	Hazard trees, loose fill
<b>Clarence-Nelson Dyke</b>			
Sta. 0+000 to Sta. 0+150 (Paved trail section from Hill Street to South Street)	2	0.4	Hazard trees, visible erosion, loose fill
Sta. 0+150 to Sta. 0+550 (Richard B Harrison Park)	2	0.6	Hazard trees, visible erosion, loose fill
<b>Coves Dyke</b>			
Sta. 0+000 to Sta. 0+371	4	1.5	Erosion around floodgate structure
<b>Riverview-Evergreen Dyke</b>			
Sta. 0+000 to Sta. 0+100 (Paved Trail)	3	0.75	Hazard trees, loose fill
Sta. 0+100 to Sta. 0+200 (Along Thames River)	2	0.4	Hazard trees, visible erosion, loose fill
<b>West London Dyke</b>			
Sta. 0+000 to Sta. 0+525 (Oxford Street to Blackfriars Bridge)	2 to 3	0.75	Movement of concrete panels, vegetation growth
Sta. 0+525 to Sta. 0+980 (Blackfriars Bridge to Rogers Street)	2 to 3	0.75	Movement of concrete panels, vegetation growth
Sta. 1+350 to Sta. 1+805 (Riverside Drive to Wharncliff Road)	3	0.95	Hazard trees, loose fill
Sta. 1+825 to Sta. 1+985 (Concrete panel section west of Wharncliff Road)	2 to 3	0.7	Cracking/bulging concrete panels, vegetation growth, loose fill
Sta. 1+985 to Sta. 2+035 (Section with rip rap facing)	3	0.9	Rip rap, vegetation growth, toe erosion
Sta. 2+035 to Sta. 2+275 (West end)	3	0.9	Hazard trees, loose fill, erosion at riverbank, storm outfalls

- 1 Rank numbers are repeated for those sections with equal average lowest stability factor values and lowest stability factor values. Otherwise, ties are decided by the lowest stability factor value.
- 2 General assessment of dyke condition ranging from 1 (unsafe) to 5 (good condition)
- 3 Average of two lowest dyke stability factor of safety out of four loading conditions (AECOM/LVM, 2013), desired factor of safety is 1.2 to 1.5, depending on loading condition.

Note that the majority of dyke sections are potentially unstable under certain loading conditions (typically after rapid drawdown of high water levels, and under seepage conditions). It is critical that all dykes be inspected following high water level events (described further in Sections 6 to 8).

Surveillance and maintenance efforts should be concentrated on those sections of dyke that have known stability and condition issues. For details on specific condition or stability concerns, refer to the "London Earth Dykes Stability Review" (AECOM and LVM, 2013).

## 5.5 Available Drawings

Updated engineering base plan and profile drawings were developed for each of the London Dykes and are included in Appendix A.