Study Purpose and Objectives

Creating a long-term plan for the management of Wilket Creek

Study being undertaken by the City of Toronto and Toronto and Region Conservation Authority (TRCA).

**Purpose:**
- to develop a long-term management plan (i.e. Master Plan) for Wilket Creek that takes account of natural processes, aquatic and wildlife habitat, and public amenities

**Key objectives:**
(a) protect infrastructure at risk due to erosion impacts during large storm events

- exposed manholes
- exposed sewers
- pedestrian bridges

(b) protect well-wooded valleyland and trail system
Why are we developing a Master Plan for Wilket Creek?

- Significant storm events of 2000, 2005, and 2008 have caused major damage to the channel and local infrastructure including bridges, pathways, manholes, and sanitary sewers
- Interim repair efforts have been successfully implemented at three sites in Wilket Creek Park
- Ongoing erosion impacts and infrastructure damage confirms the need for the development of a longer term management plan that takes into account natural channel processes

What will be the outcome?

The Master Plan will:

- Recommend projects to stabilize sections of Wilket Creek and protect infrastructure from future erosion impacts
- Incorporate habitat considerations to improve riparian and wildlife habitat within the channel
- Prioritize projects (e.g. short-term, medium term, long-term)
- Identify mitigation measures to reduce impacts of recommended projects to the greatest extent possible
INSERT LARGER OVERVIEW MAP OF AREA including labels for York Mills Road, Windfields Park, Country Lane, Post Road, Wilket Creek Park, Sunnybrook Park
This study is following the *Master Planning* provisions of a Municipal Class Environmental Assessment.
This study is following a process founded in the principles of Adaptive Environmental Management (AEM), as outlined in the document “The Adaptive Management of Stream Corridors in Ontario (2001)”

This process has Four Phases:

1. **Assess**
   - Identify the Problem

2. **Explore**
   - Explore the Problem

3. **Confirm**
   - Alternatives and Implications

4. **Choose**
   - Making the Choice

When making the choice of what to do, we can:

1. **Do Nothing** – monitor the situation
2. **Use Land-use Planning Tools** – land-use designations / zoning, protect the feature
3. **Design** – detailed analysis for planning and design
4. **Manage the existing situation** – best management practices, habitat restoration
1. Do Nothing
   • No human intervention
   • Creek conditions monitored and allowed to function in current erosive state

2. Local Improvements
   • Infrastructure repairs
   • Stream bank and slope stabilization
   • Stream bed stabilization and grade control
   • Minor planform adjustments/ realignments

Bank Stabilization Options

Bioengineering Methods

Engineered Methods
3. **Complete Channel Realignment**

- Re-establish natural meandering pattern with pools and riffles
- Construct new channel within constraints of available property
- Planform, profile, and cross-sectional shape developed in balance with existing sediment and flow regime to reduce erosive forces and promote a self-maintaining system
- Restore bank stability, grade controls, and natural vegetation within new creek corridor

**Before Realignment**

**After Realignment**
1. Natural Environment
   a) Channel Form and Function – will this alternative provide erosion protection while allowing natural channel function?
   b) Slope Stability – does this alternative address current and potential future valley slope stability issues?
   c) Natural Environment – what will be the impacts on aquatic and terrestrial habitats?

2. Social / Cultural Environment
   a) Private Property – how will this alternative impact lands under private ownership?
   b) Public Perception – will this alternative have perceived impacts on public interests (e.g. safety, recreation, privacy)?
   c) Cultural Heritage – will this alternative have impacts on known or unknown cultural resources?

3. Technical / Economic Factors
   a) Risk Assessment – what is the degree of risk that failure / damage will occur, and when could it be anticipated?
   b) Access / Constructability – are there limits or constraints to construction of this alternative (e.g. slopes, property ownership, significant environmental features)? Is the site accessible for the required construction machinery / techniques to build the alternative and maintain it in the future?
   c) Immediate (Capital) Costs – what will be the capital costs to carry out this alternative?
   d) Long-term Maintenance – how long will the alternative last? Will additional work need to be completed again, and when? How much will it cost?
Stream analyses must consider the **reach scale** (large) to the **habitat / aquatic organism scale** (fine).
# Wilket Creek Park - Evaluation Findings

<table>
<thead>
<tr>
<th>Alternative 1: Do Nothing</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
|                           | • No immediate cost impacts  
• No site disturbance  
• No interruption of park use due to construction | • Continued bank erosion and bed incision  
• Continued impacts on sewer infrastructure; risk of damage is high  
• No improvement in aquatic habitat  
• Continued safety concerns for trail and bridge users |

<table>
<thead>
<tr>
<th>Alternative 2: Local Improvements</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
|                                   | • Addresses immediate risks to sewer infrastructure  
• Some improvement to aquatic habitat  
• Some improvement to geomorphic form  
• Some decrease in erosion impacts | • Moderate construction costs  
• Moderate site disturbance  
• Requires some vegetation removal and replanting (wider channel) |

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<tr>
<th>Alternative 3: Complete Realignment</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
|                                     | • Removal of impacts/risk on sewer infrastructure and park amenities  
• Establishment of stable planform, profile and cross section  
• Improves sediment transport  
• Reduces erosive forces promoting a self-maintaining system  
• Lowest long-term maintenance costs | • Large construction costs  
• Large site disturbance  
• Disruption to park use during construction  
• Requires most vegetation removal and replanting (new planform and wider channel) |
Wilket Creek Park – Recommended Solution

IMPROVE
FIGURE AND
NEED TO
CORRECT SITE
NUMBERING TO
MATCH TRCA
Wilket Creek Reach 5 - Problems and Opportunities (December 2013 PIC)

- Stormwater outlet on LB
- Major erosion along LB of residential property backyard
- Erosion along LB
- Exposed sanitary sewer
- Exposed sanitary sewer across channel bed and manhole on LB potentially at risk
- Armour stone along RB and in channel
- Valley wall contact

Legend:
- Wilket Creek
- Reach Break
- Sanitary Pipe
- Stormwater Pipe
- Water Pipe

US and DS refer to Upstream and Downstream
LB and RB refer to Left Bank and Right Bank
(Left bank and right bank are identified based on looking in the downstream direction)
<table>
<thead>
<tr>
<th>Alternative 1: Do Nothing</th>
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<th>Disadvantages</th>
</tr>
</thead>
</table>
|                          | • No immediate cost impacts  
|                          | • No site disturbance  
|                          | • No disturbance to private property owners | • Impacts and high risk to sewer infrastructure remains  
|                          | | • Continued bank erosion and bed incision  
|                          | | • Valley wall contact/ slope stability issues remain  
|                          | | • No improvement in aquatic habitat |
| Alternative 2: Local Improvements | • Addresses impacts and immediate risks to sewer infrastructure  
|                          | • Some improvement in geomorphic form  
|                          | • Some improvement to aquatic habitat  
|                          | • Some decrease in erosion impacts | • Moderate construction activity and costs  
|                          | | • Moderate site disturbance  
|                          | | • Requires some vegetation removal and replanting  
|                          | | • Disturbance to private property owners |
| Alternative 3: Complete Realignment | • Addresses impacts and removes risks to sewer infrastructure  
|                          | • Establishment of stable planform, profile, and cross section  
|                          | • Decreases erosion impacts  
|                          | • Improves aquatic habitat  
|                          | • Lowest long-term maintenance costs | • Extensive construction activity and costs  
|                          | | • Difficult site access  
|                          | | • High site disturbance  
|                          | | • Disturbance to private property owners  
|                          | | • Requires substantial vegetation removal and replanting |
Wilket Creek Reach 5
Recommended Solution

IMPROVE figure SHOWing WHERE SPOT TREATMEN TS CAN HAPPEN
## WC-R6 - Evaluation Findings

<table>
<thead>
<tr>
<th>Alternative 1: Do Nothing</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
|                          | • No immediate cost impacts  
|                          | • No site disturbance  
|                          | • No disruption to private property owners | • Continued bank erosion and bed incision risk to private property  
|                          |                          | • Risk to private pedestrian bridges remains  
|                          |                          | • Aesthetics low at highly eroded locations  
|                          |                          | • No improvement in aquatic habitat |

<table>
<thead>
<tr>
<th>Alternative 2: Local Improvements</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
|                                   | • Stabilizes banks and protects private property  
|                                   | • Some improvement to geomorphic form  
|                                   | • Some decrease in erosion impacts  
|                                   | • Some improvement to aquatic habitat | • Moderate construction costs  
|                                   |                          | • Moderate site disturbance  
|                                   |                          | • Requires some vegetation removal and replanting  
|                                   |                          | • Disruption to private property owners  
|                                   |                          | • Risk to private pedestrian bridges remains |

<table>
<thead>
<tr>
<th>Alternative 3: Complete Realignment</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
|                                    | • Ensures minimal risks to sewer infrastructure remains  
|                                    | • Establishment of stable planform and cross section  
|                                    | • Decreases erosion impacts  
|                                    | • Risk to private pedestrian bridges addressed  
|                                    | • Improvement to aquatic habitat  
|                                    | • Lowest long-term maintenance costs | • High construction costs  
|                                    |                          | • High site disturbance (including private pedestrian bridges)  
|                                    |                          | • High disruption to private property owners  
|                                    |                          | • Requires most vegetation removal and replanting |
Wilket Creek Reach 7 - Problems and Opportunities (December 2013 PIC)
## WC-R7 - Evaluation Findings

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| **Alternative 1: Do Nothing** | • No immediate cost impacts  
• No site disturbance  
• No interruption of trail use due to construction | • Continued bank erosion and highly active planform adjustments  
• Continued risk to sewer infrastructure due to migration  
• No improvement in aquatic habitat  
• Continued safety concerns for trail users  
• High long-term maintenance costs |
| **Alternative 2: Local Improvements** | • Addresses existing risk to sanitary sewer infrastructure  
• Some improvement to aquatic habitat  
• Some decrease in erosion impacts  
• Reduction in debris jams  
• Vegetation removal minimized  
• Best alternative for preservation of mature forest | • Moderate immediate cost impact  
• Moderate long-term maintenance costs  
• Moderate site disturbance  
• Disturbance to park use during construction  
• Requires some vegetation (old growth) removal and replanting |
| **Alternative 3: Complete Realignment** | • Addresses existing risk to sanitary sewer infrastructure  
• Lowers long-term risk to sewer infrastructure  
• Establishment of stable planform, profile, and cross section decreases erosion impacts  
• Some improvement to aquatic habitat and riparian vegetation  
• Minimize debris jams  
• Lowest long-term maintenance costs | • High immediate cost impact  
• High site disturbance  
• Disturbance to park use during construction  
• Requires some vegetation (old growth) removal and replanting |
Wilket Creek WC-R7
Recommended Solution

SHOW WHERE
SPOT
TREATMENTS/MINOR
REALIGNMENTS/BANK
SHAVING/regrading
CAN HAPPEN
<table>
<thead>
<tr>
<th>Alternative 1: Do Nothing</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• No immediate cost impacts</td>
<td>• Continued bank erosion</td>
</tr>
<tr>
<td></td>
<td>• No site disturbance</td>
<td>• Degraded infrastructure (e.g. gabions and stormwater outlets) provides low aesthetic value</td>
</tr>
<tr>
<td></td>
<td>• No interruption of park use due to construction</td>
<td>• No improvement in aquatic habitat – barrier to aquatic organisms remains (weir)</td>
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<td></td>
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<td>• Continued safety concerns for trail users</td>
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<table>
<thead>
<tr>
<th>Alternative 2: Local Improvements</th>
<th>Advantages</th>
<th>Disadvantages</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>• Addresses localized bank erosion issues</td>
<td>• Moderate construction costs</td>
</tr>
<tr>
<td></td>
<td>• Some improvement to geomorphic form</td>
<td>• Low to Moderate site disturbance</td>
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<tr>
<td></td>
<td>• Some improvement to aquatic habitat and terrestrial systems</td>
<td>• Minor disruption of park use</td>
</tr>
<tr>
<td></td>
<td>• Improves aesthetics</td>
<td></td>
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<table>
<thead>
<tr>
<th>Alternative 3: Complete Realignment</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Establishment of stable planform, profile, and cross section ensures long-term stability of infrastructure (sewer, pathway, bridges)</td>
<td>• Large construction costs</td>
</tr>
<tr>
<td></td>
<td>• Decreases erosion impacts</td>
<td>• Large site disturbance</td>
</tr>
<tr>
<td></td>
<td>• Improves aquatic habitat and terrestrial systems</td>
<td>• Potential disturbance to private property owners</td>
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<tr>
<td></td>
<td>• Lowest long-term maintenance costs</td>
<td>• Major disruption to park use</td>
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<td></td>
<td>• Improve aesthetics</td>
<td>• Requires some vegetation removal and replanting</td>
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### Wilket Creek – Summary of Recommended Solutions

<table>
<thead>
<tr>
<th>Wilket Creek Park</th>
<th><strong>Complete Realignment</strong></th>
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<tbody>
<tr>
<td></td>
<td>- Establish stable, meandering planform with pool-riffle sequence within property constraints to promote a self-maintaining system</td>
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<tr>
<td></td>
<td>- Placement of riffle features at address high-risk locations such as sanitary sewer crossings</td>
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<td></td>
<td>- Establish optimal configuration of path network and bridge placement to ensure safety of recreational amenities</td>
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<table>
<thead>
<tr>
<th>WC-R5</th>
<th><strong>Local Improvements</strong> (including minor planform realignments)</th>
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<tbody>
<tr>
<td></td>
<td>- Address immediate high-risk locations and provide some improvement in geomorphic form</td>
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<tr>
<td></td>
<td>- Bank/slope stabilization at downstream end</td>
</tr>
<tr>
<td></td>
<td>- Riffle-type feature over downstream exposed sewer crossing</td>
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<tr>
<td></td>
<td>- Minor channel realignment and riffle feature at exposed sewer crossing mid-reach</td>
</tr>
<tr>
<td></td>
<td>- Bank/slope stabilization of eroding backyard at upstream end and minor realignment away from sanitary sewer</td>
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</tbody>
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<tr>
<th>WC-R7</th>
<th><strong>Local Improvements</strong> (including minor planform realignments)</th>
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<tbody>
<tr>
<td></td>
<td>- Minor planform adjustments/ realignments (e.g. complete developing cut-offs) to promote creek migration in the ‘safest’ direction and minimize disturbance to forest</td>
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<td></td>
<td>- Bank stabilization and/or re-grading to improve geomorphic form</td>
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<td></td>
<td>- Monitor and adaptive management</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>WC-R6, WC-R8, WC-R9</th>
<th><strong>Local Improvements</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- No existing locations at high-risk → localized restoration and improvements as required (e.g. bank stabilization, degraded infrastructure repair/removal, barrier removal, plantings, etc.)</td>
</tr>
</tbody>
</table>
After tonight’s workshop,

• Compile and review input received from public consultation into the study report

• Establish a risk-based implementation plan
  – identify when alternatives should be implemented, e.g. immediately, 0-5 years, 5-10 years...

• Issue Notice of Completion for the Master Plan; 30-day public and agency comment period

Upon Completion of Environmental Assessment Process (pending regulatory and budgetary approvals)

• Implementation / Construction of preferred alternatives

• Monitor resulting conditions – successes, failures, adaptation
Thank you for participating in this study.

*Your input is important.* Please submit your completed **Comment Sheet** to staff at the Registration Table. Alternatively, your comments can be submitted by Fax, Email, or Mail, using the contact information below, by **June 30, 2014**. Pre-addressed envelopes are available upon request.

**Contact:** Patricia Newland, Environmental Engineering Projects - Restoration Services Division

**Address:** Toronto and Region Conservation Authority, 1 Eastville Avenue, Toronto, ON, M1M 2N5

**Phone:** 416-392-9690  **Fax:** 416-392-9726  **Email:** pnewland@trca.on.ca

For more information about this project and to access the workshop materials, please visit the study website at [http://www.trca.on.ca/wilketcreek/](http://www.trca.on.ca/wilketcreek/)